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UNIT 1

THE GRAPHIC PRODUCTION FLOW

Task 1 Read the text and try to do the followings.

- 1. List 05 sentences in which the main verbs are used in the passive voice then change them into active voice.
- 2. List 03 simple sentences, 03 compound sentences and 03 complex sentences.
- 3. How many printing methods are mentioned in the text? What are they?
- 4. Use the flowchart to show the steps of graphic production flow.
- 5. Explain the difference between the nouns: print and proof.

Graphic production can be divided into nine phases. The first two phases involve the development of the creative concept. The next two focus on the implementation and further modification of this concept. The last five steps are more industrial in nature. A fundamental truth of graphic production is that in order to make the best design and material choices in the initial phases, you must understand the options available to you in all subsequent phases of production. This means thinking about the project "in reverse". For example, the type of off press processing (postpress) you'll be doing in phase eight might determine what paper you need to use in the original design concept; your choice of paper and printing method might, in turn, determine how images should be scanned and color separated in the image production phase, etc.

1/ Strategic phase
2/ Creative phase
3/ Production of artwork
4/ Production of images
5/ Output/Rasterizing
6/ Proofs
7/ Printing plates and printing
8/ Postpress processing
9/ Distribution

Strategic phase: Now is the time to consider the project as a whole and determine if a printed product is what is really needed. Ask questions that will help define the product you want to create: more clearly: What are the goals of this project? For whom is this product intended ? What will this product be used for?

Creative phase: The creative phase is about developing the design, determining the message of the work and how best to communicate with the audience for whom that message is intended. More questions bring the project into focus: What type of printed product should be created? What should this product say? How should it say it? What should this product look like?

Production of original artwork: This phase involves writing the necessary text copy, producing original artwork, and designing page layouts. Photography is ordered and images are scanned. This phase often runs parallel with the image production in phase four. When the image production is finished, digital images are installed in the original, completing this process. It is often necessary at this stage to send one or more proofs to interested parties (i.e. clients) for review and approval before moving on to step five, output/ rasterizing.

Production of images: In this phase, images are photographed and developed, then scanned into the computer for further editing. The images are cropped, converted into CMYK, and adjusted as appropriate for the printing process to be used. Other types of image editing, including masks, retouches and color corrections, are also done in this phase. As with the production of original artwork, one or more proofs are usually sent out for approval before moving on to the next step.

Output/Rasterizing: Text, images and original artworks are now ready to be output on film or paper. This output can take the form of color printouts, transparencies, graphic films or paper originals. Laser printers, ink-jet printers and imagesetters are a few of the types of peripheral printing units commonly employed in this phase.

Proofs: To get a sense of what the final print will look like, a proof is made. It is an important step in the process, as it is the last opportunity to check the material and make any necessary changes. The proof also serves to show the printing house how the final print is supposed to look. The proof can be analog or digital. A digital proof is made using high-quality color printers, which means the proof can be made before producing the films and plates. An analog proof is made based on the films used to make the printing plates.

Printing plates and printing: Once the proofs are approved, it's time to make the printing plate that will be used to strike the actual prints. This plate is often made using graphic film. There are a number of different printing methods. Offset printing is probably the most widely used. Other methods include gravure printing, flexography, screen printing and digital printing. The printing method used depends upon the product desired. Paper, of course, is the material most commonly used for printing, but you can also print on materials like plastic or fabric.

Postpress processing: After printing, the raw prints still need to be turned into a finished product. For instance, prints might be cut to size, folded, glued or stitched into books or booklets, laminated or lacquered, depending on the finished product desired.

Distribution: Distribution is the last phase of graphic production. The printed, finished product is now distributed to the end user.

Task 2Word formation: Make sentences with mentioned words in Task2.1 & 2.2

1. What are the nouns related to the verbs in column A.

Column A

a/	to	divide
c/	to	edit
e/	to	photograph

b/ to meand/ to communicatef/ to change

2. What are the verbs corresponding to the nouns in column B

Column B	
a/ production	b/ choice
c/ approval	d/ distribution
e/ development	f/ process

Task 3Match the words in column A with the suitable meaning in columnB.

Column A

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Column B

- Plate a/ Illustrations, photos, graphs, or other artistic works
 Phase prepared for inclusion in a publication.
- Postpress
 Printed product
 b/ An object normally worn on the face, typically for protection or entertainment.
- 5. Design
 c/ The creation of a plan for the construction of an object system or an artwork.
- 6. Original d/ The earliest form of something, from which copies
 7. Printing process may be made.
- 8. Artwork
 9. Mask
 e/ The term used in the printing industry for the process that occur after pages have been printed.
 - f/ A flat piece of metal with words and/or pictures on it that can be used for printing

g/ A method for reproducing texts and images using a master form or plate.

h/ Something that is made by any of the printing methods.

i/ A distinct period or stage in a process of change or production..

- Task 4 What are the meanings of the noun FILM?
- Task 5Find out all the words ending in AL used as adjectives in the text
then list them along with the nouns they modify.
- Task 6Identify key words in a sentence.

1. Circle the subjects and underline the main verbs in these sentences.

a/ The next two focus on the implementation and further modification of this concept.

b/ Other types of image editing, including masks, retouches and color corrections, are also done in this phase.

c/ As with the production of original artwork, one or more proofs are usually sent out for approval before moving on to the next step.

d/ The printing method used depends upon the product desired.

e/ Text, images and original artworks are now ready to be output on film or paper.

2. Underline the main verbs and circle the objects in these sentences.

a/ This phase involves writing the necessary text copy, producing original artwork, and designing page layouts.

b/ Other methods include gravure printing, flexography, screen printing and digital printing.

- c/ The printing method used depends upon the product desired.
- d/ The printed, finished product is now distributed to the end user.
- e/ The first two phases involve the development of the creative concept.

UNIT 2

WORKING WITH LIGHT AND COLOR

Task 1List all the terms (as many as possible) relating to color that you've
learned so far.

Task 2Read the text and then answer the questions.

- 1. What are the meanings of the word "light" used as an adjective, a noun, and as a verb?
- 2. Tell some kinds of light sources as you know.
- 3. Draw a simple picture to show the difference between incoming light and reflected light.
- 4. How is the temperature of air in a room expressed or measured?
- 5. How do you read these: 32° C, 80° F.

Light is an important factor in determining how the eye perceives colors. Even if the brain often forgives color variations in different light sources, the practical consequences of using different types of light can be relatively significant, both when photographing images and when viewing and editing images during production. The thing that makes the type of light so important in these instances is the fact that its color composition can vary drastically. The colors of the objects we see are, as mentioned earlier, the result of the light reflected off those objects. The color of the reflected light is affected by the color composition of the incoming light. There is a big difference in the appearance of an object seen in reddish light, as opposed to that same object seen in bluish light. A surface that looks red under white light will be perceived as orange if illuminated by yellow light, for example.

Because of this, it's important to view photographs and printed products in the correct light. The color of light is usually expressed as a "color temperature" measured in Kelvin (K). A normal, neutral lighting has a color temperature of about 5,000 K. This is approximately the equivalent of daylight and is used as a reference light when viewing images, proofs and prints. A higher color temperature gives off a colder, bluish light, while a lower color temperature provides a warmer, more yellow light.

There are several solutions to managing light in a work place. You can have light boxes and viewing boxes with the correct color temperature for viewing transparencies, reflectives, proofs and prints. The ideal solution is to light the entire workspace with lighting that has the right temperature and composition.

The eye can also fool us. A particular color can be perceived in different ways depending on the color it is placed next to. A single color may be perceived as two totally different colors when placed next to different shades. This phenomenon is called contrast effect. There is also the situation in which two colors that look identical in particular light become completely different in another light. This phenomenon is referred to as metamerism and is a result of the composition of the light and how the printing ink filters it.

Task 3 Word formation

Adjective or Noun ---- ish (Suffix) >>>>→ Adjective

Red	Reddish	Blue	Bluish
Child	Childish	Snob	Snobbish

Give other examples with the same formation.

Task 4 Match the words in column A with the suitable meaning in column B.

Column A

Column B

- 1. Transparencya/ Trial copy of sth printed or engraved, for approval2. Reflectivebefore other copies are produced.
- 3. Proof4. Filmb/ Roll or sheet of thin flexible material for use in photography.
- 5. Printoutc/ Picture or text on photographic film, made visible by
light behind it.

d/ A page of printed material produced by a computer's printer.

e/ Picture or text on a substrate that is capable of reflecting light or other radiation.

Task 5Underline the main clauses in these sentences.

- 1. A particular color can be perceived in different ways depending on the color it is placed next to.
- 2. A surface that looks red under white light will be perceived as orange if illuminated by yellow light, for example.
- 3. The type of off press processing (postpress) you'll be doing in phase eight might determine what paper you need to use in the original design concept.
- 4. It is an important step in the process, as it is the last opportunity to check the material and make any necessary changes.
- 5. Once the proofs are approved, it's time to make the printing plate that will be used to strike the actual prints.

Task 6What kind of sentences are these 5 sentences? Underline the
phases in these sentences.

- 1. The color of the reflected light is affected by the color composition of the incoming light.
- 2. This is approximately the equivalent of daylight and is used as a reference light when viewing images, proofs and prints.
- **3.** There is also the situation in which two colors that look identical in particular light become completely different in another light.
- 4. A digital proof is made using high-quality color printers, which means the proof can be made before producing the films and plates.
- 5. Paper, of course, is the material most commonly used for printing, but you can also print on materials like plastic or fabric.

Task 7Find in the text sentences that have similar meanings as these:

- 1. When light in the visible part of the spectrum hits our eyes, we perceive it as white light.
- 2. The color you see is the result of the reflected wavelengths of light.
- 3. The eye is more sensitive to tonal variations in light areas than in dark.
- 4. Metamerism is when two colors that are not actually the same appear the same under certain lighting conditions.
- 5. Neutral white is found in the middle between warm and cool white light. On the Kelvin scale, it's around 4,000K.

Task 8Explain the difference between:

- a/ printed product and printing method
- b/ boiled water and boiling water
- c/ burned house and burning house
- d/ incoming light and reflected light
- e/ edited text and editing software

UNIT 3

SCANNERS

Task 1Discuss the ways of capturing and transferring an image into a
computer. Make a list.

Task 2 Read the text and then answer the questions.

- 1. What is document scanning?
- 2. What types of documents can we scan?
- 3. If we scan a document with the size of 6X4 inches at 150 dpi, how many pixels can we create?
- 4. What's the function of photomultipliers (PTM) and CCD cells in scanners?
- 5. Tell the advantages of PTM over CCD cells

In order to transfer original images to a computer for viewing and editing, you use a scanner, which reads the original image and converts it into a digital image. There are two main types of scanners: drum scanners and flatbed scanners. In a drum scanner, the originals are mounted on a glass drum, while in a flatbed scanner they are placed on a flat glass surface, much like they would be in a copier. Scanners range in price from a couple hundred dollars up to a fifty thousand dollars. What differentiates them is primarily the quality of the scan, productivity and how advanced their control programs are.

How does a scanner work?

When scanning an image, the scanner divides the surface of the original image into a checkered pattern, in which every little square corresponds to a scanning point. The denser the bitmap you select (the higher the resolution), the more image information the scanner will record - resulting in a larger file. Each scanning point is converted to a picture element (pixel) in the computer. The scanning resolution is measured in the number of pixels per inch (ppi). The scanner illuminates each point with white light. The light that is reflected (if you are using reflective art) or transmitted (if you are using transparent art) from the scanning point will pick up the color from the respective point on the original image.

The reflected or transmitted light is then divided into 3 components - red, green and blue - by color filters, providing the RGB value for any given color. Different intensities of red, green or blue light beams create different colors. When the reflected or transmitted light is divided into the three basic components, the scanner translate the intensity of each respective component to a numerical value between 0 and 255. The intensity of each primary color determines the numerical value between 0 (no light at all) and 255 (full intensity). Each primary color can thus be reproduced in 256 tonal steps/ intensity levels.

Each scanning point on the original image will be a pixel in the computer. The color of the pixel is described by the mixture of the three color values in RGB that combine to approximate the color of the scanned point on the original. For example, the mixture red=O,

green=O and blue=O will appear black (no light) and red=255, green=255 and blue=255 will appear white (maximum intensity). When all the scanning points in the original image have been read by the scanner, the result can be thought of as a mosaic made up of tiny picture elements. This mosaic is called a "bitmap".

Drum scanners

The drum scanner gets its name from the large glass drum on which the original artwork is mounted for scanning. The maximum size of the original varies depending on the manufacturer, but is usually A3. For obvious reasons, a drum scanner can only scan flexible original images.

If, for example, you want to scan a book cover, you have to photograph it first. Otherwise you have to scan it in a flatbed scanner. Slides have to be taken out of their frames before they are mounted on the glass drum. Drum scanners are usually very large and expensive but provide high quality and productivity. They are generally used by prepress service providers and commercial printers who need to produce high-quality results in large volume.

Flatbed scanners

During the last couple of years, flatbed scanners have become much more common. Original images are placed flat on a glass plate, which is an advantage if you have inflexible originals. As with drum scanners, the maximum size of the original is usually A3, though it can vary depending on the manufacturer. Flatbed scanners are usually cheaper and easier to work with than drum scanners. They are available in a number of price and quality ranges, from a couple of hundred dollars up to tens of thousands of dollars. The best and most expensive flatbed scanners are comparable to the best drum scanners in terms of image quality.

Photo multipliers and CCD cells

The quality of the photo multipliers or CCD cells in a scanner is important for ensuring the correct translation of light signals. CCD cells can have difficulty distinguishing tonal differences, especially in the darker parts of an image. CCD cells also have a tendency to age, which reduces their ability to reproduce colors and tonal transitions precisely. High-quality CCD cells with a long life span are extremely expensive to produce.

Task 3 Underline the phrases in these sentences.

- 1. A particular color can be perceived in different ways depending on the color it is placed next to.
- 2. A surface that looks red under white light will be perceived as orange if illuminated by yellow light, for example.
- 3. The type of off press processing (postpress) you'll be doing in phase eight might determine what paper you need to use in the original design concept.

- 4. It is an important step in the process, as it is the last opportunity to check the material and make any necessary changes.
- 5. Once the proofs are approved, it's time to make the printing plate that will be used to strike the actual prints.
- 6. In order to transfer original images to a computer for viewing and editing, you use a scanner, which reads the original image and converts it into a digital image.
- 7. In a drum scanner, the originals are mounted on a glass drum, while in a flatbed scanner they are placed on a flat glass surface, much like they would be in a copier.
- 8. When scanning an image, the scanner divides the surface of the original image into a checkered pattern, in which every little square corresponds to a scanning point.
- 9. The light that is reflected (if you are using reflective art) or transmitted (if you are using transparent art) from the scanning point will pick up the color from the respective point on the original image.
- 10. The quality of the photo multipliers or CCD cells in a scanner is important for ensuring the correct translation of light signals.
- Task 4What are slides? Tell the reason why they are so called.
- Task 5Complete the text by filling in the blanks with appropriate words
given below.

electronic images quality cost-saving digital software reliability resolutions scanning transmitting

A scanner is an device which can **capture** from physical items and convert them into formats, which in turn can be stored in a computer, and viewed or modified using applications.

Different types of scanners are available with different In the world of electronic data transmission, is considered to be the most cost-effective and reliable way of images.

Prominent features of a scanner include:

-- Unlike certain forms of data transmission, scanning involves only transfer of hard images to digital forms. The role of the end-user is limited in case of scanning. And as they are not dependent on two-way communication, they can also help in storing important information or transmitting important information.
- Efficiency Modern scanners are built for efficiency and speed. And it comes with ease of use as well as convenience.

- Scanning ensures the best resolution possible for digital images. Compared to fax machines, which may find it difficult to reproduce the accurate details, scanners can reproduce images with high resolution and precisions.
- One of the biggest advantage of scanning is the replacement of physical files/forms with digital ones. Along with saving physical space, which has to be used for storage, there are also environmental benefits by using scanner.
- Task 6Word formation Complete the table below with related nouns of
the verbs in Column 1.Make sentences to show different meanings of these words.

Verbs	Nouns	denote	objects,	Nouns express activities
	events, p	ersons		
Design				
Process				
Print				
Scan				
Edit				
Light				

- Task 7Word formation Use suffixes ize & ization to form new words
relating to: standard, digit, minimum, computer.
- Task 8Fill in the gaps of these sentences with suitable forms of: design,
process, print, scan, edit, light, standard, digit, minimum, computer.
 - 1. condition is the most important factor in process.
 - 2. Your perception of color can be changed under different sources.
 - 3. To errors in color, you should understand color set up by CIELAB.
 - 4. Nowadays, products must meet high in regulations of environment protection.
 - 5. To become a good in graphic arts, students must have both knowledge and skills in and printing technology.
 - 6. One of the latest developments is printing which is now increasingly used.
 - 7. A is a device that optically scans images, text and converts them into a image.

- 8. For high-speed, a drum Is often recommended.
- 9. Digital video software is software that allows users to use to video and audio.
- 10..... is the process of converting information into a format while is the implementation and usage of devices to perform complex operations on behalf of human.

Task 9Use appropriate information from the text to complete this table of
differences between two main types of scanner.

	Drum scanner	Flatbed scanner
Kind of originals	Flexible	
Price		
Shape of originals		
mounting part		
Quality &		
productivity		
Receiver of light signals		CCD cells

- Task 10Listen to Recording 1 about scanners and then answer these
questions.
 - 1. What do CCD and CIS stand for?
 - 2. If you want to buy a suitable scanner, what and where should you check?
 - 3. What are the advantages & disadvantages of CIS over CCD?
 - 4. What additional parts are there in a color scanner?

UNIT 4

IMAGE EDITING

Task 1Read the text and then answer the questions.

- 1. How is a smooth workflow?
- 2. Is it better to choose the highest resolution when scanning pictures?
- 3. In what phase of graphic production flow is this image editing task carried out?
- 4. What's the purpose of image editing?
- 5. When editing an image, what happens if there is too much loss of image information?

There are a number of image editing procedures that are regularly executed during graphic production to ensure good image quality. However, most image editing procedures cause a loss of information in the image, compromising fine details, colors, etc. This means you can destroy an image if you are careless or perform too many tasks. It is therefore important to edit an image as little as possible and to perform the steps in the correct order. You would also want to keep a smooth workflow. Despite the fact that all steps technically "destroy" the image, the final result will generally give the impression of a better image. That is the whole purpose of image editing.

To avoid unnecessary loss of image information, adjustments to brightness, contrast and color should as much as possible be performed when the image is scanned. We will now review the steps of image editing, using a scanned image as our example.

THE ORDER OF THE STEPS

We recommend the following order when it comes to editing an image: first, shrink and crop the image to its final content and size, this will, make the rest of the work faster and simpler. Next, make any aesthetic adjustments to the image that affect the print as a whole, followed by those affecting only specific areas of the print. Finally, make any changes needed to accommodate the printing process you plan to use, such as setting the sharpness and the color conversion.

1. Crop the image: Start by making sure the composition of the image is correct. Remove any unnecessary parts of the image by cropping it so you're not working with a larger image surface than you need. A smaller image makes for faster editing.

2. Correct resolution: After scanning, and particularly if the image is retrieved from a digital archive, etc., the resolution of the image has to be adjusted to that needed for the final print. We covered the process for calculating the optimal resolution earlier in this chapter.

3. Set the black point and white point: Because the print has a more limited tonal range than reality and the original image, you should enhance the tonal range of the print as much as possible. This is primarily done by setting the correct black and white points. These settings determine the contrast of the image, ensuring that what appears as white in the digital image also appears white in print, and that the black areas in the image will print a true black.

4. Adjust brightness and contrast: In most cases, you will probably want to adjust the brightness and contrast of the image, if only in certain areas. For example, you might want to lighten up just the dark areas and maintain the brightness and contrast of the rest of the image.

5. Adjust certain colors: Sometimes you might want to adjust particular colors in an image. Often it is natural reference colors, like skin tone, the color of the grass or the sky, etc., that need to be corrected.

6. Store the image: If the image needs to be stored for future products you should do it now, while it is still in RGB mode. As soon an image has been adjusted for a specific print it is difficult to reuse efficiently for other purposes.

7. Sharpen the image: If the image appears "soft" it is generally due to a lack of sharp transition between the dark and light hues in an outline. In order to increase the impression of the sharpness in the overall image, you have to find these soft tonal transitions and sharpen them. This type of artificial sharpening is conducted on most images to varying degrees.

8. Separation: When CMYK converting, you have to define print adjustment values in advance because the conversion has to be adjusted according to the particular printing process.

9. Save the image in the right format: There are really only two image formats that are used in graphic production, TIFF and EPS. There is no noticeable difference in quality between the two formats, and they both take up about the same amount of memory. They are basically differentiated based on the features they handle.

Task 2 Use a flowchart to show required steps in image editing.

Task 3Transitive verbs – Note these transitive verbs, which are used often
in graphic arts: edit - adjust - design - save - convert. In graphic arts
they take a limited range of objects.

Edit an image/ a text/ Adjust color/ resolution/ contrast/ brightness Design artworks/ a page layout/ a book cover Save a file/ information/ a format/ time/ money Convert color/ AC to DC/ RGB to CMYK Complete each sentence with appropriate verb form.

- 1. If your PDF document is mostly text, you may that PDF into a Word document.
- 2. Learn how quick and easy to text and images in PDFs with Adobe Acrobat DC on desktop.
- 3. To data in image format (.jpg or .png), access data on one of these displays then right-click and select Save As...
- 4. The page layout for the new magazine was by an IT freshman.
- 5. To make images and text easier to read we can the resolution of our computer screen.
- Task 4Word formation Adjectives can be changed to verbs by adding EN
as a prefix or a suffix to them.

sharp - large - rich - long - bright

Make a sentence with each of these verbs

- Task 5Which one is correct in spelling: color or colour? Give other
Examples to show the difference between British English and
American English in spelling.
- Task 6Cause & Effect Match each action (1-9) with its consequence (a-i).
 - 1. Color adjustments
 - 2. Merging of images
 - 3. Brightening
 - 4. Selecting part(s) of an image
 - 5. Enhancing images
 - 6. Sharpening images
 - 7. Resizing images
 - 8. Cropping an image
 - 9. Softening images
 - a. Applying a change selectively without affecting the entire picture
 - b. Making images larger or smaller
 - c. Selecting a desired rectangular portion from the image being cropped
 - d. Improving the quality of a digitally stored image
 - e. Making images seem clearer, seemingly adding details

- f. Causing images (portraits) to appear more pleasing
- g. Making one or more individual images into a single file
- h. Causing underexposed shadows brighter without affecting the rest of the image
- i. Fading in and out color and changing tones

Task 7Make sentences to express cause & effect with examples in Task 6.

Task 8Study these two sentences:

- 1. Next, make any aesthetic adjustments to the image that affect the print as a whole, followed by **those** affecting only specific areas of the print.
- 2. After scanning, and particularly if the image is retrieved from a digital archive, etc., the resolution of the image has to be adjusted to **that** needed for the final print.
 - Analyze them (kinds of sentences, clauses, phrases)
 - What do **those** and **that** replace?
 - What part of speech are those and that?

PASSIVE VOICE

Passives are very common in technical writing where we are more interested in facts, processes, and events than in people.

We form the passive by using the appropriate tenses of the verb **to be** followed by the past participle of the verb we are using.

+ **Facts and processes**: When we write or talk about facts or processes that occur regularly, we use the present passive.

- Data is transferred from the internal memory to the central processing unit along channels known as buses.
- Graphic production can be divided into nine phases.
- In this phase, images are photographed and developed then scanned into the computer for further editing.

+ **Events**: When we write or talk about past events, we use the past passive.

- Microsoft was founded on the basis of the development of MS/DOS.
- Lithography was invented and developed in Germany in the early 19th century by Aloys Senefelder.
- A hundred years later, the first analog computer was built, but the first digital computer was not completed until 1946.

SENTENCE STRUCTURE

A complete sentence is a group of words containing a subject and a verb to express complete thoughts.

There are four kinds of sentences in English: Simple sentence, Compound sentence, Complex sentence, Compound-Complex (Mixed) sentence.

1/ Simple sentences:

A simple sentence contains only one independent clause. An independent clause is a group of words (with a subject and a finite verb) that expresses a complete meaning.

<u>Note</u>: Finite verb or Main verb forms show tense, person and number. For example, I go, she goes, we went...

Non-finite verb forms don't show tense, person and number. Typically, they are infinitive forms with/without to, -ing forms and -ed forms.

- We're students.
- The fat cat is happily drinking a bowl of fresh milk in the kitchen.
- I usually get up early every morning to have more time for breakfast before going to school.
- Offset printing is probably the most widely used.
- After printing, the raw prints still need to be turned into a finished product.
- Laser printers, ink-jet printers are a few of the types of peripheral printing units commonly employed in this phase.
- They don't know how to scan this document properly.
- This book helps you to understand the whole process and what to accomplish with your tools.
- Different printing methods also have limitations as to the thickness and sheet size of the paper.

2/ Compound sentences:

A compound sentence contains at least two independent clauses. These clauses are joined by a coordinating conjunction or a semicolon. A coordinating conjunction is a world that glues words, phrases, or clauses together.

There are seven conjunctions: For, And, Nor, But, Or, Yet, So. It's a good idea to use the mnemonic "FANBOYS" to memorize them easily.

- Mr. Brown waited for the bus, but it didn't come.
- They left the wedding party early so we did not see them there.
- With objects like small text, fine linear patterns or illustrations with fine details, misregistration is much more evident, and objects appear blurry as a result.
- Preferably, the colors should follow the American color model SWOP, but some proofs follow the European color scale.
- The denser the bitmap you select (the higher the resolution); the more image information the scanner will record resulting in larger file.
- Paper have other properties in common, such as grain direction and hygroscopic (i.e interaction with moisture) properties, but they vary tremendously depending on the cellulose fiber used, the fiber preparation, as well as the surface and finish given the paper in manufacture.

3/ Complex sentences:

A complex sentence contains at least two clauses - a subordinate clause and an independent clause (main clause). A subordinate clause is a group of words that has a subject and a verb but does not express a complete thought.

The main clause is connected to a subordinate clause by a subordinating conjunction or a relative pronoun.

- Relative pronouns: which, that, who (whom).
- Subordinating conjunctions: after, before, when, whenever, while, until (till), since, as, though, although, even though, if, unless, because, where, wherever...
 - The color you see is the result of the reflected wavelengths of light.
 - We could say that light is "filtered" by the surface on which it falls.
 - If you are using the glue binding technique when biding your printed product, the thicker and lighter the paper the more durable the binding will be.
 - Finally, the paper has to be resistant to high temperatures because of how the toner is heat-fixed to the paper surface.
 - The pages must be placed on the paper in such a way that preserves their correct relationship to one another when they are folded and cut.

4/ Compound-complex sentences:

A compound-complex sentence contains at least three clauses. Two of them form a compound sentence and the others form a complex sentence.

- Since the results you can obtain with different types of printer will vary substantially, here is a guide to help you decide which one is most suitable for your needs.
- Each chapter begins with a page listing all the different steps of graphic production, and the steps that a particular chapter focuses on are highlighted.
- The book is written so that you can read straight through from beginning to end or skip around to find just the specific information you need.
- When the ink is absorbed into the paper, it not only sweeps down into the paper but it spreads out as well.
- Printing with an ink-jet printer requires paper that is stable dimensionally, so it does not wrinkle because of the liquid ink.
- Proofs are used to assure that prepress work is accurately executed, and they provide an opportunity to make necessary corrections before the printing plate is produced.

FLOWCHARTS

A useful way of remembering the main points of what we read is to transfer the important information into a different form, such as a table, a diagram or a flowchart.

A flowchart is a diagram using symbols, words or pictures to show the stages of a process in sequence from beginning to end.

Flowcharts are often used to describe processes. They allow the readers to identify essential steps quickly and easily.



THE -- ing FORM OF VERBS

We can use the **--ing form** of the verbs in five ways:

1/ As an integral part of continuous tenses of verbs.

- Students are performing mathematical operations under teacher's supervision in the classroom.
- Break-throughs in technology, such as speech recognition, are enabling new ways of interacting with computers.
- They have been doing the same work for nearly 30 years.
- She was watching television when I came to her house last night.

2/ After prepositions.

- We look forward to having cheaper and faster computers.
- Don't switch off without closing down your PC.
- Computers have circuits for performing arithmetic operations.
- There are several solutions to managing light in a work place.
- The creative phase is about developing the design, determining the message of the work and how best to communicate with the audience for whom that message is intended.
- This plate is often made (by) using graphic film.

3/ Some verbs are followed by – ing form of the verb.

- This process involves producing and editing images.
- Please avoid exposing the film in direct sunlight.
- Printers enjoy working in a comfortable environment.
- Programmers (mostly academics and students) began using Linux.
- He admitted cheating on the test.
- The doctor generally advised drinking low-fat milk.
- The certificate requires completing two courses.

Some verbs are followed by a gerund or an infinitive with a difference in meaning.

- I forgot giving you my book
- I forgot to lock the front door.
- I remember telling her the address yesterday.
- Please remember to tell her my address.
- He stopped smoking.
- He stopped to smoke.

Some verbs are followed by a gerund or an infinitive with a little difference in meaning.

- They began learning Chinese. Or They began to learn Chinese.
- I love swimming. Or I love to swim.
- He prefers sitting at the back of the movie theater. Or He prefers to sit at the back of the movie theater.

4/ As an adjective to modify a noun.

- Your choice of paper and printing method might, in turn, determine how images should be scanned and color separated in the image production phase.
- The color of the reflected light is affected by the color composition of the incoming light.
- Paper can be tested for curling tendency.
- The microprocessor within the speed gun measures the difference in outgoing and returning signals then calculates the speed of each vehicle.
- An operating system is a set of programs that lies between applications software and the computer hardware.
- Most machines today have enough processing power and memory to play MP3s immediately.

5/ As a noun (gerund). It can be the subject, object or complement of a sentence.

- Glazing occurs when gum, drying oils, and metallic driers are absorbed during printing.
- Cropping simply means cutting the paper down to the desired size with some kind of blade.
- We like surfing the Web in free time.
- Another function of the operating system is executing and providing services for applications software.

A gerund can be modified by an adjective, an adverb, and can take a direct object.

- Routine cleaning will keep these moving parts working freely.
- Swimming in the ocean has been her passion since she was five years old.
- Managing the computer's resources is an important function of the operating system.

As with nouns, the gerund may be preceded by the indefinite article (a, an) or by the definite article (the) and also by pronouns, such as:

- My playing of the violin is horrible.
- His examining of my bank statement is scary.
- Her coming to the party is not confirmed.

PAST PARTICIPLES & PRESENT PARTICIPLES USED AS AJECTIVES

1/ Past participle can be used as an adjective modifying a noun to imply passive meaning.

- Printed product. Edited image. Scanned image. Reflected light. Boiled water.
- Air-conditioned room. Leased line. Structured language. Frozen food.

2/ Present participle can be used as an adjective modifying a noun to imply active meaning.

- Printing process. Printing plate. Incoming light. Boiling water.
- Air-conditioning system. Operating system.

Nouns refer to objects, events or states	Gerunds express activities, processes, actions
fish	fishing
shop	shopping
wire	wiring
print	printing
light	lighting
code	coding
color	coloring

NOUN versus GERUND

VERB − ER (OR) → NOUN DENOTING DEVICES OR PERSONS

Verb	Noun	Verb	Noun
Scan	Scanner	Manage	Manager
Compute	Computer	Print	Printer
Сору	Copier	Produce	Producer
Transmit	Transmitter	Design	Designer
Mix	Mixer	Manufacture	Manufacturer
Multiply	Multiplier	Photograph	Photographer
Process	Processor	Edit	Editor
Reflect	Reflector	Distribute	Distributor

CLAUSE & PHRASE

A clause is a group of words containing a subject and predicate and functioning as a sentence or as part of a sentence (a member of a compound or complex sentence).

A subordinate clause is a clause that is connected to the main clause in a complex sentence. In view of meaning, there are three kinds of subordinate clauses:

1/ **Noun clause** is a subordinate clause that acts like a noun in the sentence.

- The size of a bus, called bus width, determines how much data can be transmitted.
- In the 1980s, we saw computers become smaller, faster and cheaper.
- We could say that **light is "filtered" by the surface** on which it falls.
- Finally, the paper has to be resistant to high temperatures because of how the toner is heat-fixed to the paper surface.
- Since the results you can obtain with different types of printer will vary substantially, here is a guide to help you decide **which one is most suitable for your needs**.
- How he can successfully perform the work surprises all of us.

2/ Adjective clause (Relative clause) is a subordinate clause that acts like an adjective modifying a noun in the sentence;

- Young people who have grown up with PCs and mobile phones are often called the digital generation.
- Hardware is any electronic or mechanical part you can see or touch.
- The program and data **which pass through the processor** must be loaded into the main memory in order to be processed.
- The color **you see** is the result of the reflected wavelengths of light.
- We could say that light is "filtered" by the surface **on which it falls**.
- When you want to move an image, you must position the pointer on the object **you want to move**.
- Since the results **you can obtain with different types of printer** will vary substantially, here is a guide to help you decide which one is most suitable for your needs.
- Visual alerts are indications **that alert the deaf user** when they receive new mail or when there is a system error.
- Formatting erases any existing files on a disk, so do not format disks on which data **that you don't want to lose** is stored.
- One of the features of a computer virus **that separates it from other kinds of computer program** is that it replicates itself, so that it can spread to other computers.

- Each chapter begins with a page listing all the different steps of graphic production, and the steps **that a particular chapter focuses on** are highlighted.
- The book is written so that you can read straight through from beginning to end or skip around to find just the specific information **you need.**
- Printing with an ink-jet printer requires paper **that is stable dimensionally**, so it does not wrinkle because of the liquid ink.

3/ Adverb clause is a subordinate clause that acts like an adverb modifying a verb to show manner, time, place, reason, condition, degree, frequency, result.

- As you move the mouse on your desk, the pointer on the screen moves in the same direction.
- The pages must be placed on the paper in such a way that preserves their correct relationship to one another **when they are folded and cut**.
- Since the results you can obtain with different types of printer will vary substantially, here is a guide to help you decide which one is most suitable for your needs.
- One of the features of a computer virus that separates it from other kinds of computer program is that it replicates itself, **so that it can spread to other computers**.
- Proofs are used to assure that prepress work is accurately executed, and they provide an opportunity to make necessary corrections **before the printing plate is produced**.
- If the ink is absorbed into the paper, it not only sweeps down into the paper but it spreads out as well.

A phrase is a group of two or more words that expresses a single idea but does not form a complete clause or sentence. In meaning, there are three kinds:

1/ Noun phrase is a group of words that acts like a noun.

- They don't know how to scan this document properly.
- This book helps you to understand the whole process and what to accomplish with your tools.
- With objects like small text, fine linear patterns or illustrations with fine details, misregistration is much more evident, and objects appear blurry as a result.
- Preferably, the colors should follow **the American color model SWOP**, but some proofs follow **the European color scale**.
- **One of the features of a computer virus** that separates it from other kinds of computer program is that it replicates itself, so that it can spread to other computers.

2/ An adjective phrase (adjective equivalent) is a group of words that acts like an adjective.

- Laser printers, ink-jet printers are a few of the types of peripheral printing units **commonly employed in this phase.**
- Different printing methods also have limitations as to the thickness and sheet size of the paper.
- Peripherals are the physical units **attached to the computer**.
- The nerve center of a desktop computer is the processor, also called the CPU (Central Processing Unit).
- Paper have other properties in common, such as grain direction and hygroscopic (i.e interaction with moisture) properties, but they vary tremendously depending on the cellulose fiber used, the fiber preparation, as well as the surface and finish given the paper in manufacture.
- The average time **required for the read/write heads to move and find data** is called seek time (or access time) and it is measured in milliseconds (ms).
- Each chapter begins with a page **listing all the different steps of graphic production**, and the steps that a particular chapter focuses on are highlighted.

3/ An adverb phrase (adverb equivalent) is a group of words that acts like an adverb.

- I usually get up early every morning to have more time for breakfast before going to school.
- This book helps you to understand the whole process and what to accomplish with your tools.
- Computers help students to perform mathematical operations and *improve their math skills*.
- A school website allows teachers to publish exercises for students to complete online.
- Paper have other properties in common, such as grain direction and hygroscopic (i.e interaction with moisture) properties, but they vary tremendously **depending on the cellulose fiber used, the fiber preparation, as well as the surface and finish given the paper in manufacture**.
- Students can also enroll for courses **via the website** and parents can download official reports.
- Computers may soon take over many daily tasks, but **in the meantime** ordinary people must continue to do them themselves.
- The program and data which pass through the processor must be loaded **into the main memory** *in order to be processed*.

- As you move the mouse **on your desk**, the pointer on the screen moves **in the same direction**.
- If you are using the glue binding technique **when binding your printed product**, the thicker and lighter the paper the more durable the binding will be.
- In 1980, IBM decided that there was a market for 250,000 PCs, so they set up a special team to develop the first IBM PC.
- The book is written so that you can read straight through **from beginning to end or skip** around to find just the specific information you need.

Noun or Adjective	- ize → Verb r	neans to mak	- ization $ ightarrow$ Noun refers to action
	or cause to beco	me	process, or result of making
Computer	Computerize		Computerization
Standard	Standardize		Standardization
Magnet	Magnetize		Magnetization
Polymer	Polymerize		Polymerization
Pasteur (Proper name	Pasteurize		Pasteurization
Industrial	Industrialize		Industrialization
Normal	Normalize		Normalization
Global	Globalize		Globalization
Modern	Modernize		Modernization
National	Nationalize		Nationalization
Personal	Personalize		Personalization
Digital	Digitalize		Digitalization
Real	Realize		Realization
Minimum	Minimize		Minimization
Adjective or Noun		- en → Ver	b
sharp		sharpen	
short		shorten	
wide wid		widen	
bright bright		brighten	
long – length (n) length		lengthen	
strong – strength (n) strengthen			
rich enrich			
large	enlarge		
sure		ensure	

WORD FORMATION

TRANSITIVE VERBS & INTRANSITIVE VERBS

Transitive verbs are followed by a direct object (and an indirect object) and can be used in the passive (when the object becomes the subject).

- The magnetic field induces a voltage.
- The battery charger can convert AC voltage from mains supply into required DC voltage.

These active sentences can be changed to passive sentences:

- A voltage is induced by the magnetic field.
- AC voltage from mains supply **can be converted** into required DC voltage by the battery charger.

An intransitive verb is the opposite of a transitive verb: it does not require an object to act upon.

- They jumped in the garden.
- The dog ran wildly into the street.
- She sang with a louder voice.

Some verbs can be classified as both transitive and intransitive depending on how they are used in a sentence.

- Urged by the others, she **sang**.
- She sang the national anthem at the hockey game.
- After he cleaned up, he left.
- He left the gift on the table.

To decide whether the verb is being used transitively or intransitively, all you need to do is to determine whether the verb has an object. Does she sing something? Does he leave something? The verb is only transitive when the answer is yes.

When in doubt, look it up in the dictionary, verbs will be listed as transitive, intransitive, or both right under the pronunciation key, and any possible differences in meaning between the two uses will be given as well.

Verb	Transitive	Intransitive
move	Could you move your car please?	The trees were moving in the breeze.
start	Taylor was found guilty of starting the fire.	The match starts at 3 p.m.
change	Marriage hasn't changed her.	The area's changed greatly in the last

		decade.
close	Close your eyes; I've got a surprise for you.	Most shops here close at 5.30 p.m.
open	Open the window; it's too hot in here!	The museum opens at 10 a.m.
stop	Greg tried to stop her from leaving.	When the rain stopped, we went for a walk.
do	Have you done your coursework?	Joe's doing well in his new job.
set	Kate set a chair next to the bed.	The sun was setting and a red glow filled the sky.
run	Michelle used to run a restaurant.	The path ran over the hill.
live	He was living a life of luxury abroad	They live in a big city.
wash	Have you washed your hands?	I washed, dressed, and went out.
write	Write your name here.	Kevin couldn't read or write.

Be aware of common transitive/intransitive verb pairs in which the verbs sound similar but one requires an object and the other cannot take an object.

Transitive	Intransitive		
Raise: They easily raise the heavy weight.	Rise: The sun always rises in the East.		
Lay: I forgot where I had laid my glasses.	Lie: I found that my glasses had lain on		
	the laboratory bench all day.		
Set: Can we set a date for the meeting ?	Set: The printing ink sets quickly.		
	Sit: We sat around the conference table.		
Do: They have done their homework.	Work: We work eight hours a day.		
Make: She's making a cake in the kitchen.			

CAUSE AND EFFECT

Understanding the different ways of expressing the relationship between the causes and the effects of an action is very important when you are reading English. This cause - effect relationship is commonly used in texts about computing.

We can mention the cause before the effect.

(cause) (effect) Dust often **causes** the recording condition of disks to deteriorate.

We can mention the effect before the cause.

(effect) (cause) Deteriorarion in the recording condition of disks is often due to dust.

There are many different ways of expressing cause and effect.

1. Verbs linking cause and effect:

result	produce	allow	prevent	enable	cause
result in	result from		bring about		

The introduction of computer technology **brought about** significant changes in office routines. (cause $\dots \rightarrow$ effect)

Computers can create artificial objects in their memories. This **allows** developers to. test product design without actually creating a real prototype (cause $- \rightarrow$ effect)

The extensive use of computers in schools is resulting in a new generation of computer-literate students. (cause $\dots \rightarrow$ effect) ,

The problems were caused by the volume of network traffic. (effect $- \rightarrow$ cause)

2. Connectives introducing cause:

due to as the / a result of since because in response to as

Early computers developed quickly as a result of their use in military applications. (effect <----- cause)

Teachers must rethink their roles **as** computer technology is creating a revolution in the classroom. (effect <------ cause)

Because off- the-shelf programs do not always fit a company 's needs, software often has to be specially developed. (effect <----- cause)

3. Connectives introducing result:

With the result that so that thus therefore consequently hence for this reason thereby

Computers can remove many of the routine and boring tasks, thereby leaving us with more time for interesting, creative work. (cause ---- > effect)

When using an online database service, you must pay for the time you use.

Consequenty, you should have a good idea of what you want before you log on.

(cause ---- \rightarrow effect)

4. Another way of showing causal relationship is by introducing the cause with if. Both the cause clause and the effect clause verbs are in the present tense.

If your company has a LAN, you can share the use of a printer with your colleagues. (cause $--- \rightarrow$ effect)

It is easy to transport your data to another location if it is stored on a disk. (ef[ect <----- cause)

UNIT 5

DENSITOMETER USING GUIDE

Task 1 Discuss these things.

- 1. What does a densitometer do?
- 2. How many kinds of densitometers are there?
- 3. Describe a reflective densitometer and the functions of its main parts.

Task 2Read the text and then answer the questions followed.

DENSITOMETER USING GUIDE

Here's an easy question. What makes a successful printing business? Having many happy, satisfied clients. Pretty easy answer, wasn't it! Now. How do you satisfy your clients? Not so easy. Quality? That's probably the No.1 answer. And it has to be consistently good quality too. We all know that as even more stringent printing criteria and requirements must be met, standardizing the color proofing operation is the key to an efficient printing job involving the minimum in time loss and materials.

DAINIPPON SCREEN now offers you the answer, the DM-800 handy-type color reflection densitometer. Equipped with all the latest in electronic innovation, this densitometer offers you more than just the usual range of features: Simultaneous measurement and color detection. Dot gain and trapping measurement. Polarizing filters. Display reversal. It all may sound rather daunting, but you'd be surprised at how simple it is to use. Happy, satisfied customers just go to prove how important good color proofing really is.

Features

1. Simultaneous measurement and color detection

Measurements are no longer a touch-and-go situation. The DM-800 does it all for you automatically, doing away with manual filter wheel adjustments and the erroneous measurements that always used to accompany this. The selected filter appears on the display, and values with the other filters are stored making remeasurement a thing of the past.

2. Easy positioning of the measuring head

Once you've chosen the function and the mode, all you have to do is to position the measuring aperture over the spot to be measured and press the rear of the unit down. The measuring head will extend. And the compact size means that the DM-800 will not shift out of position as it fits neatly into the palm of your hand.

3. All the functions you could possibly need

The DM-800 gives you a full range of standard measurement functions: density, density difference, dot gain, dot area, coarse/fine, trapping, hue error and grayness. Also built into the DM-800 are reference and tolerance values that can be called up whenever you need them. Moreover, vital calibration and reference values can only be accessed by a special data

protection key which means that valuable data measurements remain safe and consistent.

4. Dry or wet proofs? No problem.

Polarizing filters are supplied as standard with the DM-800 which means that you can obtain a direct comparison between wet and dry proofs. This facilitates match-up of the proof with the production print.

5. Display reversal

Ever used something designed for a right-handed person when you're left-handed? To put it mildly, it's an inconvenience. Well, now you'll appreciate another feature of the DM-800. The display reversal function. Just press a button and the display will be reversed. Also, those who like to take notes during measurements can take advantage of this handy little function.

6. Error display

Measurement data is not the only information that is displayed on the unit. Should any error occur, such as too low a density or low battery power, then you're informed of that error instantly so that you can take the required measures.

7. Battery operation

Portability doesn't necessarily mean restricted use. You get ample use from a single battery charge. What's more, if you forget to turn the power switch off, then don't worry. Included in the unit is an automatic OFF switch function that switches the densitometer off once a preset amount of time has elapsed.

8. Wide selection of filters

You can choose from a range of filters to meet your measurement requirements: narrow band or wide band.

9. Efficient Data Management

The built-in RS 232 standard interface links you with an optional printer for printout of all measuring results. You also have a direct transmission capability to a personal computer for statistical evaluation and monitoring.

- 1. How is the size of the DM-800 densitometer?
- 2. What is the function of polarizing filters?
- 3. What is statistical evaluation? Its advantage?
- 4. Explain a feature that helps save battery power?
Task 3 What is the meaning of densitometer?

Task 4 What do you call a device which is used to:

- 1. measure the speed of moving objects such as cars, motorbikes.
- 2. measure the temperature of something or surrounding air.
- 3. measure the voltage of mains supply?
- 4. measure the resistance of resistors?
- 5. measure the current in an electric circuit?
- 6. measure the parameters of electric circuits as voltage, current, resistance.

Task 5Each word in column A often goes before one word from column B.For instance, image quality. Find other word pairs.

Column A	Column B
1. image	a. range
2. color	b. layouts
3. tonal	c. conversion
4. printing	d. quality
5. printed	e. text
6. digital	f. process
7. graphic	g. product
8. page	h. proof
9. ink-jet	i. production
10. scanned	i. printer

Task 6Analyze these sentences. Circle main verbs and underline phrasesin each sentence.

- 1. We all know that as even more stringent printing criteria and requirements must be met, standardizing the color proofing operation is the key to an efficient printing job involving the minimum in time loss and materials.
- 2. Equipped with all the latest in electronic innovation, this densitometer offers you more than just the usual range of features.
- 3. The DM-800 does it all for you automatically, doing away with manual filter wheel adjustments and the erroneous measurements that always used to accompany this.

- 4. The selected filter appears on the display, and values with the other filters are stored making remeasurement a thing of the past.
- 5. Once you've chosen the function and the mode, all you have to do is to position the measuring aperture over the spot to be measured and press the rear of the unit down.
- 6. Also built into the DM-800 are reference and tolerance values that can be called up whenever you need them.
- 7. Ever used something designed for a right-handed person when you're left-handed?
- 8. Should any error occur, such as too low a density or low battery power, then you're informed of that error instantly so that you can take the required measures.
- 9. The denser the bitmap you select (the higher the resolution), the more image information the scanner will record resulting in a larger file.

Task 7Explain the meaning of these compound nouns.

Group A: network computer – notebook computer – palmtop computer – desktop computer - laptop computer – microcomputer – mainframe computer.

Group B: computer network – computer system – computer engineer – computer room – computer language.

Group C: color composition – color separation – color management – color reproduction – color space – color model – color component – color filter.

Group D: background color – text color – reference color – skin color – CMYK color – sunlight color – spot color.

Group E: laser printer – ink-jet printer – thermal printer – dot-matrix printer

Group F: offset printing – gravure printing – screen printing – digital printing.

Task 8Match the terms (1-10) with their definitions (a-j).

1. Trapping

- 2. Color space
- 3. Color model
- 4. (Optical) density
- 5. Dot area
- 6. Grayness
- 7. Hue error
- 8. Dot gain
- 9. Tonal range
- 10. Color detection
- a. The ratio between the amount of light reflected back, or transmitted, through a given halftone versus the amount of light collected back from or through a solid of the same color.
- b. The degree of darkness of a photographic or semi transparent material or of a reflecting surface.

- c. The phenomenon occurs in multi-color printing when the inks are overprinted: less ink is transferred onto an existing layer of ink than onto a blank sheet.
- d. A neutral achromatic color midway between white and black.
- e. The degree of contamination of one process color ink by another.
- f. The quality of color and tone within an image, ranging from the darkest to brightest area and everything in between.
- g. The feature to determine the class of pixel color in a given image.
- h. A specific organization of colors.
- i. An abstract mathematical model describing the way colors can be presented.
- j. A measurement of the change in size of the halftone dot from film to print.

UNIT 6

PAPER CHARACTERISTICS

Task 1 Discuss these things.

- 1. What kind of unit is used to classify papers in terms of thickness?
- 2. Name the materials that can be used to make paper.
- 3. What are the meanings of paper and papers?
- 4. The advantages of coated paper?
- 5. What is recycled paper?

Task 2Read the text and then answer the questions.

- 1. What's the difference between paper and paperboard?
- 2. How many types of paper are there?
- 3. What is pick resistance?
- 4. How can we get cellulose fiber?
- 5. Besides cellulose fiber, what are other elements of normal papers?

There are many varieties, grades, and finishes of paper and paperboard. All are composed mainly of cellulose fiber. They have other properties in common, such as grain direction and hygroscopic (i.e., interaction with moisture) properties, but they vary tremendously depending on the cellulose fiber used, the fiber preparation, and the surface and finish given the paper in manufacture.

For satisfactory performance on the press, sheet papers must meet the following basic requirements:

Flatness. The sheets must be flat enough to feed properly and to pass through the impression nip under pressure (squeeze) without wrinkling or distorting.

Proper relative humidity. When skids or feeder piles are exposed to the pressroom atmosphere, the paper must have a relative humidity (RH) close to that in the pressroom (i.e., between 8% RH drier and 8% RH moister), especially when the job calls for two or more printings. Greater RH differences result in wavy or tight edges that cause distortion, misregister, wrinkles, and feeding problems.

Because the papermaker must make all paper to one specification and because the printer cannot effectively control this RH, the pressroom RH must be controlled. For paper to be run through the press only once, a RH of 40% to 55% is usually satisfactory. If the sheet is to be run more than once, closer control is required.

Freedom from lint and dust. Loose fibers and dust particles quickly destroy print quality. Furthermore, runnability (runability) is impaired if the press operator must frequently stop to clean plates and blankets.

Adequate moisture resistance. The press moisture should not soften surface sizing or coating adhesive enough to permit transfer of surface fibers, mineral filler, or coating pigment to the offset blanket.

Adequate pick resistance. Sufficient surface strength will prevent picking without excessive reduction of ink tack.

Freedom from active chemicals. Paper must contain no chemical that blinds or sensitizes printing plates or causes scumming, tinting, or ink emulsification.

Good ink-drying qualities. The paper should not contribute to setoff, chalking, or other drying problems.

Accurate trimming. Sheets should be trimmed so that edges are straight and corners are square. A convex or concave gripper edge can cause misregister, especially in printing thin, flexible papers. Subsequently, the press operator may have managed to run these sheets only to find that they cannot be handled in the bindery.

In addition to these basic requirements, there are certain qualities required for special work. Sheet papers for multicolor work should usually be grain long. Dimensional changes, which are much greater across than with the grain, can then be compensated for by changes in plate and blanket packing to maintain fit. Dimensional stability or resistance to mechanical stretch is important in multicolor work. Part of this stretch is purely plastic, and the sheets return to their original size. But if there is any permanent stretch, it will vary from sheet to sheet and make register of subsequent colors impossible. Embossed, pebbled, and lightweight papers have poor dimensional stability.

After being printed, some thin papers curl toward the printed side. The paper first curls away from the printed side and then reverses. This curling is caused by the slight moistening that papers get through contact with the offset blanket. It can render labels, wrappers, and other printed articles unusable. Paper can be tested for curling tendency and rejected if it is excessive.

Common paper problems, their causes and remedies, are listed below. When these problems occur, the printer should consult with the paper supplier.

Task 3List 03 simple sentences, 03 compound sentences, 03 complex
sentences and 01 mixed sentence in the text.

Task 4Match paper components with their corresponding functions.

- a/ cellulose fibers
- b/ surface fibers
- c/ mineral fillers
- d/ coating pigments

e/ binders f/ chalk

1/ They are usually kaolin and calcium carbonate. They are used to improve certain properties of paper and to lower the consumption of more expensive binder material.

2/ This material solution is used to coat a special type of paper for security purpose. The postmark cannot be removed without damaging the surface of the stamp.

3/ They are generally water-soluble polymers that influence the paper's color viscosity, water retention, sizing and gloss.

4/ They are used to increase the brightness of the paper. The most commonly used ones are blue and violet dyes.

5/ They improve the surface strength, printability, and water resistance of the paper.

6/ They are the primary structural components of paper, most of them coming from plants.

Task 5Find out all complex sentences which contain relative clauses in the
text. Rewrite these sentences and underline the relative clauses then
identify which word is modified by each relative clause in the
sentence.

Task 6Fill in the blanks with appropriate words.

1. In <u>offset printing</u>, is a generic term for the presence of ink on nonimage areas of the printing plate, which can be caused by a variety of press conditions.

2. In particular, occurs when particles of ink <u>pigment</u> bleed into the fountain solution, and are transferred to the non-image areas of the plate, printing as a colored tint.

3. when the force of an ink film exceeds the paper's *pick* resistance, or surface strength.

4. is used during <u>paper</u> manufacture to reduce the paper's tendency when dry to absorb liquid, with the goal of allowing inks and paints to remain on the surface of the paper and to dry there, rather than be absorbed into the paper. 5. is a defect in printing characterized by improperly-dried ink being easily rubbed off the paper.

6. Is a printing defect in which successive passes of a printed sheet through a press do not print an image in the spot they were intended to, typically a problem in multi-color printing.

7. An overabundance of <u>fountain solution</u> can contribute to the of paper that contribute to misregister.

8. Differences in structure between sides of a paper cause each side to expand and contract in different ways when moisture is gained and lost, producing a

9. is frequently necessary when the printing pressure is too light to produce a good image, either on the blanket or on the <u>substrate</u>, or when the printing length needs to be adjusted.

Task 7Find in the text sentences with similar meaning as these:

- 1. If the printer must regularly clean plates and blankets, his printing productivity is badly affected.
- 2. In multicolor printing, the sheet RH must be controlled more carefully.
- 3. Sheet papers must have these fundamental properties to work well on press machines.
- 4. Changes in size across the grain are much greater than those along the grain, plate and blanket packing is used to overcome these changes.
- 5. The printer should not try to use distorted sheets for printing since they cannot be bound into books in postpress processing.

UNIT 7

PRINTING INK

Task 1 Read the text and then answer the questions.

- 1. How many kinds of printing ink that you know?
- 2. Find out all complex sentences which contain relative clauses in the text.
- 3. Rewrite these sentences and underline the relative clauses then identify which word is modified by each relative clause in the sentence.
- 4. Tell the reasons why printing inks must be varied in property depending on the printing process.
- 5. What are the main components of printing inks?
- 6. What's the function of additives in printing ink?

Inks supplied to lithographers vary widely in formulation and properties. The variation is needed because of the wide range of surfaces being printed, the characteristics of different presses, and the various end-use requirements of printed jobs. There are inks for general commercial work that can be adjusted by the lithographer to suit a variety of papers. There are also inks designed especially for label printing posters, magazine covers, greeting cards, decals, foils, plastics, metal decorating, or other purposes; these inks are usually press-ready and require little or no adjustment by the lithographer. Regardless of the surface to be printed, inks can be varied in transparency, finish, rub-, scuff- and heat-resistance, lightfastness, chemicals, and solvents.

Consequently, there are thousands of different ink formulations, each formulated for a specific paper or substrate or for a range of substrates, and for a specific set of printing conditions and end-use requirements. There is no ink that is best for all conditions. An ink that is suited for a wide range of papers and end-uses will not be best for any use. The printer must work with the inkmaker to obtain the best inks.

Printing ink is a dispersion of pigment in a fluid vehicle. The pigment provides the color and determines whether the printed ink film will be transparent or opaque. The vehicle gives the ink fluidity so it can be distributed by the press inking rollers and applied evenly to the form. In the printed ink film, the vehicle must change or be changed to a solid in order to bind the pigment to the printed surface.

Inks dry by different methods. Conventional inks contain drying oils that dry by a combination of absorption and chemical action, namely, oxidation and polymerization. Quickset inks contain drying oils and resins, plus solvents that speed up setting by a process of selective absorption. Their final drying is also by oxidation and polymerization. They are most useful on coated papers and boards. Heatset inks that dry by evaporation of a solvent are seldom used on sheetfed presses.

The two major causes of drying problems are using an ink that is improper for the job or using too much water and too much acid (RH too high, pH too low).

All lithographic inks must work with moisture. Dampening water always mixes with the ink to some extent during printing, but the ink must not become waterlogged and pasty or break down and mix with the water. Ink that emulsifies readily gets into the fountain and tints the entire sheet. The inkmaker selects the proper pigments and vehicles and adjusts the ink's body to meet these requirements.

The variable in inkmaking and lithography are almost infinite. Offset press operators face ink problems that require knowledge, experience, and good judgment to solve.

It is recommended that the ink be press-ready in the can, so time-consuming changes are avoided. To get the right ink every time requires close cooperation between printer and inkmaker. Therefore, always consult the inkmaker who is more familiar with the formulation of printing inks and the use of additives to cure problems

Task 2Analyze the following sentences.

(What kinds of sentences they are.)

(Identify the main clause(s) and other kind(s) of clause in each sentence)

- 1. The variation is needed because of the wide range of surfaces being printed, the characteristics of different presses, and the various end-use requirements of printed jobs.
- 2. These inks are usually press-ready and require little or no adjustment by the lithographer.
- 3. Regardless of the surface to be printed, inks can be varied in transparency, finish, rub-, scuff- and heat-resistance, lightfastness, chemicals, and solvents.
- 4. Consequently, there are thousands of different ink formulations, each formulated for a specific paper or substrate or for a range of substrates, and for a specific set of printing conditions and end-use requirements.
- 5. The pigment provides the color and determines whether the printed ink film will be transparent or opaque.
- 6. The vehicle gives the ink fluidity so it can be distributed by the press inking rollers and applied evenly to the form.
- 7. Dampening water always mixes with the ink to some extent during printing, but the ink must not become waterlogged and pasty or break down and mix with the water.
- 8. Ink that emulsifies readily gets into the fountain and tints the entire sheet.

- 9. The inkmaker selects the proper pigments and vehicles and adjusts the ink's body to meet these requirements.
- 10. To get the right ink every time requires close cooperation between printer and inkmaker.

Task 3Rewrite the following sentences by changing adjective clauses to
adjective phrases.

- 1. An ink that is suited for a wide range of papers and end-uses will not be best for any use.
- 2. Quickset inks contain drying oils and resins, plus solvents that speed up setting by a process of selective absorption.
- 3. Heatset inks that dry by evaporation of a solvent are seldom used on sheetfed presses.
- 4. The two major causes of drying problems are using an ink that is improper for the job or using too much water and too much acid.
- 5. Offset press operators face ink problems that require knowledge, experience, and good judgment to solve.
- 6. Therefore, always consult the inkmaker who is more familiar with the formulation of printing inks and the use of additives to cure problems.
- Task 4Find out all compound adjectives in Unit 1 to Unit 8. List them in the
four categories.
- Task 5Explain the meanings in printing of: absorption, oxidation,polymerization and evaporation.
- Task 6What's the general meaning of fountain (n) and what are the
meanings of fountain pen, ink fountain, dampening fountain.
- Task 7Find out all the words in the text of Unit 6&7 that:
 - a) contain types of suffix changing verbs into nouns.
 - b) contain types of suffix changing nouns into adjectives.
 - c) contain types of suffix changing verbs into adjectives.
 - d) contain types of suffix changing adjectives into adverbs.
 - e) contain types of suffix changing adjectives into nouns.

UNIT 8

OFFSET BLANKETS

Task 1Read the text and then answer the questions.

- 1. How many kinds of blankets are there in offset printing?
- 2. What is the function of a micrometer? A torque wrench?
- 3. How do you say 0.30 mm and 0.75 mm?
- 4. What's the difference between natural rubber and synthetic rubber?
- 5. What are the meanings of the noun Impression?

Most offset blankets consist of four plies of long-fiber cotton fabric calendered together with a special rubber cement and then coated with a rubber compound on one side. The thickness of this rubber skim-coat varies from 0.012 to 0.020 in. (0.30 to 0.50 mm), but the overall thickness is about 0.060 in. (1.50 mm) on different blankets. Blankets must have uniform thickness. For quality work, the thickness variation must be no more than 0.0005 in. (\pm 0.0 1 mm). There are also two-, three-, and five-ply offset blankets for special purposes.

On sheetfed presses that were sold in North America, it is standard to use one thickness of a four-ply blanket plus enough packing sheets to raise its surface to the proper level in relation to the cylinder bearers. This level is determined by the press manufacturer's specifications and the image length requirement. Some deviation from the specifications is needed to maintain register when paper stretches between printings in multi color work, but if the excess packing is greater than around 0.005 in., the resulting slur and dot gain becomes unacceptable. Some European sheetfed presses use two layers of offset blanket. These give a greater cushion effect in the impression and offer a greater degree of cylinder impression.

Compressible blankets incorporate air in the formulation so that they compress upon contacting the plate instead of bulging on either side of contact as conventional blankets do. Rubber can be displaced but cannot be compressed; therefore, conventional blankets are not compressible. The construction of compressible blankets makes them more resistant to battering and smashing. Although compressible blankets are more forgiving than conventional blankets, excessive squeeze or packing results in more dot gain.

An offset blanket is wrapped around its cylinder and held under sufficient tension to prevent its slipping on the cylinder under the rolling pressure of the printing impression. This tension varies considerably since it is applied manually, but the proper tension varies from 30 to 50 ft.- lb.depending on the blanket and the press. Using a

torque wrench to apply correct and uniform tension is important, especially on multicolor presses. Some presses require a specially modified torque wrench.

When a new blanket is first installed, this tension plus the rolling-out effect of the impression may cause some stretching and make it necessary to tighten the blanket at intervals to take up the slack. The combined tension and rolling impression reduces the thickness of a new blanket during the first few thousand impressions. If the blanket thickness is measured with an accurate bench micrometer and the calculated thickness of packing is added to give 0. 004 in.(0. 10 mm) of impression, it may be found that after a few hundred sheets the impression is no longer good. Checking with a packing gauge may show that the blanket has subsided 0.002 in. (0.05 mm.) or more and needs additional packing to receive a good impression from the plate.

The skim-coat, or printing surface of blankets, was originally made from natural rubber. Now, it is usually synthetic rubber, which is less oil-absorbent and therefore less susceptible to swelling, embossing, and developing tackiness and glaze. Blanket tackiness has almost ceased to be a problem. Poor release is usually a chemical problem or may be caused by the surface of the blanket. Glazing occurs when gum, drying oils, and metallic driers are absorbed during printing. These promote surface oxidation, which hardens the rubber and reduces its elasticity and ink receptivity. Strong solvents can also remove plasticizer from the rubber and harden the blanket surface. A glazed blanket fails to transfer ink properly. Removing the glaze by scrubbing with an abrasive pad and solvent restores its printing quality. The blanket surface should have a soft, velvety feel when it is in good condition. A good blanket wash eliminates many blanket problems. If the solvent is too strong, it swells the blanket. If the solvent is too weak, it will not remove the ink or clean the blanket thoroughly. Lithographic chemical suppliers sell specially formulated blanket washes that will remove ink effectively without swelling the blanket or ink rollers.

Task 2List 03 compound sentences, 03 complex sentences and 03 mixed
sentences in the text.

Task 3Analyze the following sentences(What kind of sentences are they? What kind of clauses are there in each
complex & mixed sentence?)

1. Most offset blankets consist of four plies of long-fiber cotton fabric calendered together with a special rubber cement and then coated with a rubber compound on one side.

2. These give a greater cushion effect in the impression and offer a greater degree of cylinder impression.

3. Compressible blankets incorporate air in the formulation so that they compress upon contacting the plate instead of bulging on either side of contact as conventional blankets do.

4. An offset blanket is wrapped around its cylinder and held under sufficient tension to prevent its slipping on the cylinder under the rolling pressure of the printing impression.

5. This tension varies considerably since it is applied manually, but the proper tension varies from 30 to 50 ft.- lb. depending on the blanket and the press.

6. If the blanket thickness is measured with an accurate bench micrometer and the calculated thickness of packing is added to give 0.004 in. (0.10 mm) of impression, it may be found that after a few hundred sheets the impression is no longer good.

7. Checking with a packing gauge may show that the blanket has subsided 0.002 in. (0.05 mm.) or more and needs additional packing to receive a good impression from the plate.

8. Now, it is usually synthetic rubber, which is less oil-absorbent and therefore less susceptible to swelling, embossing, and developing tackiness and glaze.

9. Poor release is usually a chemical problem or may be caused by the surface of the blanket.

10. Glazing occurs when gum, drying oils, and metallic driers are absorbed during printing.

11. These promote surface oxidation, which hardens the rubber and reduces its elasticity and ink receptivity.

12. Lithographic chemical suppliers sell specially formulated blanket washes that will remove ink effectively without swelling the blanket or ink rollers.

Task 4Identify which paragraph deals with the following:

- a. How to install a blanket in an offset press.
- b. The affect of tension and the way to maintain proper tension during printing.
- c. Differences between normal blankets and compressible ones.
- d. Fundamental concepts about offset blankets.
- e. The skim-coat material of blankets, types of blanket problems and how to maintain and restore good working conditions of blankets.

f. Some details about blankets often used in North America and Europe.

Task 5Fill in the blanks with appropriate words.

Misregister – tackiness – packing – dot gain – slurring – embossing – release - impression nip – skim-coat - swelling

- 1. The higher degree of in printing inks requires more force to split an ink film.
- 2. One basic characteristics of an offset blanket is its It shows how easily the blanket will let go of the press sheet as it leaves the <u>impression nip</u>.
- The process of inserting paper, plastic, or other material underneath an offset press plate or <u>blanket</u> while on the press so as to raise the printing surface is also referred to as
- 4. typically occurs due to changes in a paper's dimensions, either from moisture gain or loss, or from mechanical stretching.
- 5. is a printing defect characterized by the smearing of the trailing edges of a printed impression, which is typically caused by slippage of the paper, resulting from increased pressure between the plate and the <u>blanket</u> or between the blanket and the paper.
- 6. A phenomenon that causes printed material to look darker than intended is called
- 7. Impressing an image in relief to achieve a raised surface; either over printing or on a blank paper is referred to as
- 8. Expanding (as in size, volume, or numbers) gradually beyond a normal or original limit is
- 9. The line between the <u>blanket cylinder</u> and the <u>impression cylinder</u> on an offset press or, in other words, the space in which a press sheet is passed to be printed is called
- 10....., which is a thin layer of joint compound on the printing surface of a blanket, was originally made from natural rubber.

Task 6Find out all the words in the text of Unit 6&7&8 that:

- a) contain a prefix meaning one or consisting of one.
- b) contain a prefix meaning many.
- c) contain types of prefix meaning not, wrong or opposite action...
- d) contain a prefix meaning small scale.

As the name suggests, noun modifiers are the modifiers that modify noun entities. These noun entities can be a one-word noun or a noun phrase. Since noun modifiers modify noun entities, they must be placed as close to the entity that they modify as possible to keep the meaning of the sentence logical and clear.

Following are the kinds of noun modifiers:

1. Adjectives

We can use one adjective or several adjectives to modify a noun.

The fat cat is drinking a big bowl of fresh milk in the dark kitchen. The black, fat cat is drinking a big bowl of fresh milk. That's a beautiful wooden table.

- Two or three descriptive adjectives are often used together before a noun, though note that placing more than three adjectives before a noun would start to sound unnatural, e.g. **a beautiful large round carved wooden** *table*
- If three colour adjectives occur, a comma is placed after the first and the last two are linked with *and*, e.g. *The table was covered by a* **large red**, white and blue *flag*.
- As a general rule, the adjective which is closest to the noun is the most closely linked to the meaning of the noun, describing a feature which is the most permanent about it, compared to adjectives which express a variable characteristic, such as an opinion. For instance, if we consider: *an* **expensive**, **cheap**, **beautiful**, **black leather** *bag*
- If two adjectives with similar meanings are used, the shorter one often comes first, e.g. *a* **soft comfortable** *pillow*
- The conjunction *but* is sometimes placed between two adjectives which describe contrasting qualities, e.g. *a* **difficult but rewarding** *job*
- Some adjectives cannot be placed before a noun to modify the noun (content, glad, ready, sure, sorry, upset, afraid, asleep, alive, alone, ashamed, aware...)

I like being alone. but not, I like being an alone person. The baby's asleep. but not, the asleep baby.

• The position of an adjective in relation to the noun has an effect on their meaning.

the present situation (= the situation which exists now) *the people present* (= the people who are here/there).

2. Present participle of the verbs

Present participle of the verbs can be used as a modifier of the noun placed behind it, expressing the active or progressive meaning.

a tiring job, an interesting book, an exciting game, boiling water, , an airconditioning system, freezing point, breaking news, burning houses, operating systems, a smiling girl

3. Past participle of the verbs

Past participle of the verbs can be used as a modifier of the noun placed behind it, expressing the passive meaning.

a tired worker, an interested spectator, excited fans, boiled water, , an airconditioned classroom, frozen food, a broken leg, burnt (burned) houses, a leased line, compressed air

- 4. Compound adjectives (See Compound adjectives)
- 5. Nouns (See Compound nouns)

6. Adjective phrases or adjective clauses

Since 1981, over seventy million PCs made by IBM and other manufacturers have been sold.

Novell, the leaders in PC networking, now own Digital Research. The microchip technology which made the PC possible has put chips not only into computers, but also into washing machines and cars. When IBM were looking for an operating system, they went initially to Digital Research, who were market leaders in command-based operating systems.

Notes:

• In grammar view, an adjective or a noun both can be used as modifiers of a noun but they are different in meanings.

A History book (a book about History) A historic book (a book famous or important in history) A compound noun is a noun that is made up of two or more words. Sometimes the two words are joined together (toothpaste, bedroom), sometimes they are joined by a hyphen (check-in, ice-cream), most often they appear as two separate words (assembly line, fire alarm).

Compound nouns can also be formed using the following combinations of words:

- **Noun + noun**: toothpaste, bedroom, classroom, cellphone, headphones, earphone, handset, football, block diagram, assembly line, burglar alarm, smoke detector, silicon chip, battery charger, car race, ice-cream,
 - keyboard, light source, address bus, monitor screen, computer programmer, computer operator, application program, service provider, chat room, assembly language, data bank, database, troubleshooter, taskbar, software package, card reader, network, recycle bin, mailbox, desktop, laptop, notebook, motherboard, newsgroup.
 - bar code, heat-resistance, , rub-resistance, scuff-resistance, lightfastness, film-edge, color separation, page layout, color variation, color composition, color temperature, light source, light box, contrast effect, drum scanner, bitmap, intensity level, photo multiplier.
- Noun + verb or verb + noun: haircut, rainfall, inkmaking, postpress processing, offset printing, keystroke, password, scroll bar, search engine, shareware.
- Noun + preposition: check-in, check-out, hanger on, son-in-law, father-in-law, passer-by, turnaround, washup, backup.
- **Preposition + noun**: underground, outer space, bystander, onlooker, upper class, post-treatment, download, upload.
- **Preposition + verb or verb + preposition**: input, output, outlook, overthrow, inlet, outlet, drawback, breakthrough.
- **Adjective + noun**: software, hardware, blackboard, highlight, mainframe, real-time, sheetfed printer, graphic production.
- **Prefix + noun**: multimeter, multisystem, multimedia, multicolor, television, telephone, telescope, telecommunication, telegraph, photograph, photocell, photocopy, microcomputer, microphone, microscope, interaction, internet.
- **Noun + suffix**: booklet, droplet, pamphlet, leaflet, tablet, friendship, censorship, citizenship, scholarship, membership, ownership, childhood, girlhood, brotherhood.
- Noun phrase with more than two words: cathode ray tube (CRT), liquid crystal display (LCD), light emitting diode (LED), compact disk player (CD player). charge-coupled device (CCD), random access memory (RAM), read only memory (ROM).
- Word with meter: multimeter, ammeter, voltmeter, ohmmeter, wattmeter, densitometer, speedometer, parking meter.

ADVERB CLAUSES

Adverb Clause of Time

An adverb clause of time shows when something happens. It is usually introduced by time adverbs. Examples are: **before**, **after**, **as**, **when**, **while**, **until**, **as soon as**, **since**, **no sooner than**, **as long as** etc.

- I always take a bath before I go to bed.
- Will you wait here until I am ready?
- I was not at home when he came to see me.
- Do not disturb me when I am busy with my work.
- As soon as she finished that project, she started working on the next.
- After I have finished my work, I will accompany you to the park.

An adverb clause of time can come before or after the main clause. When it comes before the main clause, we usually separate it with a comma. Commas are not necessary when the adverb clause goes after the main clause.

- Whenever I think of her, my eyes get misty.
- My eyes get misty whenever I think of her.

If you are talking about something that is yet to happen in the future, use a **present tense** in the adverb clause and a future tense in the main clause.

- I will start when I am ready. (NOT I will start when I will be ready.)
- I will not go until I get my money back. (NOT I will not go until I will get my money back.)

Adverb Clause of Place

An adverb clause of place indicates the place about which the verb talks. The adverb clause of place starts with **where, wherever, whereas** etc...

- I have put it where I can find it again.
- They can stay where they are
- Wherever you live, I will come to that place to live.
- Let us go to where they asked us to wait.

Adverb Clause of Condition (Conditional Sentence)

We use conditional sentences to express that the action in the main clause can only take place if a certain condition is fulfilled.

They are introduced by **if**, **unless** (**if not**) and **as long as** (provided/providing).

- If you like entertainment, you will love the latest multimedia video games.
- You'll get there earlier *if you go by train*.
- They can't get a job unless they've got the experience.

Unreal conditional sentences are conditional sentences where the 'if' clauses refer to a situation that is imaginary, not real, or unlikely to occur.

- If I were you, I wouldn't buy this car. (this car was already bought)
- If he had been careful, he wouldn't have had that terrible accident.(he wasn't careful so he had an accident)

Adverb Clause of Contrast / Concession

These clauses are used to make two statements, one of which contrast with the other or make it seem surprising. They are introduced by the subordinating conjunctions like **although, though, even though, despite, in spite of, whereas, while, even if** and **however.**

- Though/ although he has plenty of money, he doesn't spend much.
- We enjoyed our camping holiday though/although it rained every day.
- You keep making that stupid noise even though I've asked you to stop three times.
- Even though the exam was easy, I failed.
- **Despite I met all the necessary qualifications**, they didn't offer me the job.
- I like traveling by plane, while/ whereas my husband doesn't.
- While there was no conclusive evidence, most people thought he was guilty.
- I would not tell you even if I knew.
- Even if she survives, she'll never fully recover.

Adverb Clause of Result

An adverb clause of result or consequence is used to say what happens or what may happen as a result of the action mentioned in the main clause. The chief conjunction used to introduce adverb clauses of result are: **so that**, **in order that**, **so...that** and **such...that**.

- Please speak clearly so that we can all hear you.
- He spoke loudly in order that everybody would hear him.
- It was so hot that we didn't go out.
- She was so weak that she couldn't walk.
- She spoke in such a low voice that nobody could hear her.
- It was such a hot afternoon that we stopped playing.
- His rudeness was such that his parents were shocked.

Adverb Clause of Comparision

Adverb clauses of comparison are of two kinds:

- 1. Adverb clauses of comparison of degree
- 2. Adverb clauses of comparison of manner

Adverb clauses of comparison of degree

Adverb clauses of comparison of degree are introduced by the subordinating conjunction **than**, or by the relative adverb **as**.

- She is older than her husband (is).
- He works harder than I do.
- It is later than I thought.
- She earns more than her brother.
- She is not so stupid as you think.
- He is as stupid **as he is lazy.**
- She is as beautiful **as she is intelligent**.

In adverb clauses of comparison of degree, the verb is usually understood and not expressed.

- Nobody loves you more than I (do).
- Nobody knows it better **than he (does)**.

In an informal style, it is more common to use object pronouns after **as** and **than**. This is particularly common when the verb is not expressed.

Adverb clauses of comparison of manner

These are introduced by the relative adverb as.

- You may do as you please.
- It ended as I expected.
- As you have made your bed so you must lie on it.

Adverb Clause of Cause or Reason

Adverb clauses of cause or reason are introduced by the subordinating conjunctions because, as, since and that.

- I sing because I like singing.
- *He thinks he can get anything because he is rich.*
- Since he has apologized we will take no further action against him.
- As he was not there I left a message with his mother.
- I am glad that you have come.
- My parents were disappointed that I didn't get the scholarship.
- He was furious that his book was panned by most reviewers.

The conjunction **that** is often omitted.

- I am glad you like it. OR I am glad that you like it.
- They were disappointed you weren't in. OR They were disappointed that you weren't in.

As and since are used when the reason is already known to the listener.

• As it is raining again we will have to cancel the match.

As and since-clauses are relatively formal. In an informal style, the same idea can be expressed with so.

• It is raining again, so we will have to cancel the match.

Because-clauses are used to give information which isn't already known to the reader or listener.

• Because he had not paid the bill, his electricity was cut off.

Note that a **because-clause** can stand alone. **As** and **since-clauses** cannot be used like this.

• 'Why are you looking at her like that?' '**Because she smiled at me.'** (NOT As she smiled at me.) (NOT Since she smiled at me.)

COLLOCATIONS

1/ Verbs and nouns often go together in English to make set phrases, for example **access the Internet**. These word combinations are called collocations, and they are very common. Learning collocations instead of individual words can help you remember which verb to use with which noun. Here are some examples:

N Produce images, edit images, scan images. Correct colors, separate colors. Complete processes. Convert images into CMYK.

N Store information. Send texts. Perform operations. Do research. Display data.

2/ A collocation can be a pair or group of words that are often used together in some areas of meanings. For example:

Ñ **Adverb – Adjective**: *Highly sensitive* (information). *Freely available* (on the Web). *Commonly employed* (printing units). *Relatively significant. Totally different* (colours)

N Adjective – Noun: Mathematical (formulas). Up-to-date (information). Graphic (Arts). Digital (printing), digital (image). Tonal (difference). Logic (bomb). Optical (fibre). Optical (media). Virtual (reality). Analogue (signal). Artificial (intelligence).

Note: The word online often collates with other words and can function as adjective or adverb.

Adjective: They post opinions on online journals.

Adverb: A podcast is an audio recording posted online.

ABBREVIATION

Abbreviation involves shortening a word. We do this in four ways: clipping, acronyms, initials and blends.

We use **clipping** when we shorten or 'clip' one or more syllables from a word. We also commonly clip proper names for people:

ad or advert for advertisement lab for laboratory math for mathematics Matt for Matthew

Acronyms are a type of abbreviation formed when the initial letters of two or more words are combined in a way that produces consonant and vowel sequences found in words. Acronyms are normally pronounced as words:

RAM: random access memory (RAM is a term used to describe a computer's memory.) WHO: World Health Organisation LED: light emitting diode MODEM: modulator and demodulator

Note that acronyms are written in capital letters without period. **Initials** are similar to acronyms but are pronounced as sets of letters, not as words:

CD: Compact Disc, pronounced C–D DVD: Digital Video Disk, pronounced D-V-D CPU: Central Processing Unit, pronounced C-P-U FAQ: Frequently Asked Questions, pronounced F-A-Q

Form the plural of an acronym or initial by adding a lowercase s: CDs, DVDs, LEDs....

We form **blends** when we combine parts of existing words to form a new word:

blog: blend of *web* and **log** *motel*: blend of **mo***tor* and *ho***tel** *smog*: blend of **sm***oke* and *f***og** *bit:* blend of **bi**nary digit *pixel*: blend of **pic**ture **el**ement

Abbreviations of units of measure are identical in the singular and plural: 1 cm (centimeter) and 15 cm not (15 cms).

WORD FORMATION

Noun – y -----→ Adjective

NOUN	ADJECTIVE	NOUN	ADJECTIVE
wind	windy (weather)	cloud	cloudy (day)
rain	rainy (season)	sun	sunny (morning)
star	starry (night/eyes)	fun	funny (story)
sand	sandy (sandy road)	smoke	smoky (atmosphere)
silk	silky (silky voice)	paste	pasty (ink)
wave	wavy (edge)		

COUNT AND MASS NOUN

Count nouns refer to things that can be counted (*tables, pencils, projects, employees*). *Mass nouns* (also called *noncount nouns*) identify things that cannot be counted (*electricity, air, loyalty, information*). This distinction can be confusing with words like *electricity* and *water*. Although we can count kilowatt-hours of electricity and bottles of water, counting becomes inappropriate when we use the words *electricity* and *water* in a general sense, as in "*Water* is an essential resource." Following is a list of typical mass **nouns**.

Anger	education	money	technology
Biology	equipment	news	transportation
Business	furniture	oil	waste
Clothing	health	precision	weather
Coffee	honesty	research	work

The distinction between whether something can or cannot be counted determines the form of the noun to use (singular or plural), the kind of **article** that precedes it (*a*, *an*, *the*, or no article), and the kind of limiting **adjective** it requires (such as *fewer* or *less* and *much* or *many*). (See also **fewer / less**.) Notice that count and mass nouns are always common nouns, not proper nouns, such as the names of people.

Articles and Modifiers

The general rule is that every count noun must be preceded by an article (*a*, *an*, *the*), a demonstrative adjective (*this*, *that*, *these*, *those*), a possessive adjective (*my*, *your*, *her*, *his*, *its*, *their*), or some expression of quantity (such as *one*, *two*, *several*, *many*, *a few*, *a lot of*, *some*, *no*). The article, adjective, or expression of quantity appears either directly in front of the noun or in front of the whole noun phrase.

- Beth read a report last week. [article]
- Those reports Beth read were long. [demonstrative adjective]
- Their report was long. [possessive adjective]
- Some reports Beth read were long. [indefinite adjective]
- of the whole class of like items.
- Matthew has a pen. [Matthew could have any pen.]

The article the is used with nouns that refer to a specific item that both the reader and the writer can identify.

Matthew has the pen. [Matthew has a specific pen that is known to both the reader and the writer.]

When making generalizations with count nouns, writers can either use *a* or *an* with a singular count noun or use no article with a plural count noun. Consider the following generalization using an article.

An egg is a good source of protein. [any egg, all eggs, eggs in general]

However, the following generalization uses a plural count noun with no article.

Eggs are good sources of protein. [any egg, all eggs, eggs in general]

When you are making a generalization with a mass noun, do not use an article in front of the mass noun.

Sugar is bad for your teeth.

Note:

 $\tilde{\mathbb{N}}$ The meaning of mass nouns in singular form is different from that of mass nouns in plural form.

Iron is a commonly used metal in industry. Irons are used to press or smooth our clothes, linens......

There are many people in the room. In Vietnam there are 54 peoples living together.

Clean water is essential to life. It was a miracle that he was able to navigate the icy waters to be back home.

Dictionaries are usually printed on thin paper. The border guards stopped me and asked to see my papers.

RELATIVE CLAUSES (ADJECTIVE CLAUSES)

We use the relative pronoun **who** or **that** to refer to a person and the relative pronoun **which** or **that** to refer to a thing. Relative pronouns can be left out when they are objects of the relative clause.

- A blogger is a person who/that keeps a web blog or publishes an online diary.
- Young people **who/that have grown up with PCs and mobile phones** are often called the digital generation.
- Hardware is any electronic or mechanical part (which/that) you can see or touch.
- The color (which/that) you see is the result of the reflected wavelengths of light.

Restrictive Relative Clause

A restrictive clause restricts or defines the meaning of a noun or noun phrase and provides necessary information about the noun in the sentence. It is not separated from the rest of the sentence by commas. Restrictive clauses are more common in writing than nonrestrictive clauses. A restrictive clause is also sometimes referred to as an essential clause.

- Scanners are electronic devices which read the original image and convert it into a digital image.
- The student who sits in the back of the room asks a lot of questions.
- The results **that I obtained** may invoke positive social change.
- The journalist whose story I read yesterday has won prizes for her work.

Nonrestrictive Relative Clause

A nonrestrictive clause adds additional information to a sentence. It is usually a proper noun or a common noun that refers to a unique person, thing, or event. It uses commas to show that the information is additional. The commas almost act like parentheses within the sentence. If the information between the commas is omitted, readers will still understand the overall meaning of the sentence. A nonrestrictive clause is also known as a nonessential clause.

- I want to thank my father, Mark Smith, for all of his love and support.
- The hypothesis, which I tested throughout the research, was rejected.
- I have found the article, which I have been looking for.

That is sometimes used in restrictive clauses, but it is not allowed in nonrestrictive clauses.

• CORRECT: *Minneapolis,* which has a population of about 400,000, is the largest city in Minnesota.

INCORRECT: *Minneapolis, that has a population of about 400,000*, is the largest city in Minnesota.

• CORRECT: I had to fix my printer, which I bought less than a year ago.

INCORRECT: I had to fix my printer, that I bought less than a year ago.

COMPOUND ADJECTIVES

A compound adjective is a single adjective made up of more than one word (e.g., twoseater aircraft, free-range eggs). The words in a compound adjective are often linked together with a hyphen (or hyphens) to show they are part of the same adjective. Compound adjectives are commonly used to make sentences shorter and more comprehensive. It is useful to learn their formations so as to remember them easily and use them correctly.

Noun or Adjective or Adverb – Present participle or Past participle of verbs

- Noun Present participle: money-saving plan, heart-breaking story, air-conditioning system, English-speaking country, decision-making process, time-consuming change, UV-varnishing machine.
- Noun Past participle: wind-powered generator, air-conditioned classroom, hand-made device, hand-written letter, glue-bound cover, sheet-fed printer, object-oriented programming, pen-based computer, computer-aided design.
- Adjective Present participle: good-looking boy, bad-smelling flower, long-lasting snow, negative-working plate, positive working plate.
- Adjective Past participle: ill-conceived plan,
- Adverb Present participle: ever-changing magnetic field
- Adverb Past participle: well-known singer, well-planned project, densely-populated city, brightly-lit room, well-paid officer, so-called machine

Ordinal number or Cardinal number – Singular noun

- **Cardinal number Singular noun**: one-way street, three-week vacation, two-year-old dog, four-ton truck, two-bedroom apartment, 100-dollar bill, 300-page book, four-crease technique, 90-degree angle
- Ordinal number Singular noun: first-class ticket, second-hand motorbike, third-rank student,

Numeric number or Adjective - Noun+ed

One-eyed boy, 20-toothed gear, long-haired girl, cold-blooded criminal, open-minded director, narrow-minded director, kind-hearted lady, sharp-pointed knife, near-sighted pupil, middle-aged persons, bad-tempered man, right-handed person, left-handed person, right-angled folding, three-sided trimmer.

Miscellaneous forms

High-quality scanner, high-end camera, handy-type densitometer, duty-free shop, smokefree airplane, last-minute decision, part-time worker, full-time lecturer, brand-new car, everlasting snow, evergreen tree, world-famous singer, short-term course, high-fidelity amplifier, heavier-than-air machine, by-the-hour room rentals, up-to-date info, state-of-theart technology, touch-and-go situation, dark-blue shirt, ink-jet printer, built-in interface, end-use requirements, press-ready ink, long-fiber cotton, rolling-out effect, oil-absorbent rubber, non-image area, ink-receptive area, water-receptive area, worn-out plate, low-level language, pull-down menu, drop-down menu, standalone device, dot-matrix printer.

REDUCED CLAUSES

When speaking or writing, we can change clause to phrase and vice versa. We can reduce clauses to phrases when a phrase can do the work of a phrase.

Reduced time clauses:

Study these complex sentences, using time clause:

- When you choose a course in electronics, you think carefully about your future.
- When the TV receives signals from the remote control, it follows your instructions.

Because the subject of both actions is the same, there is a shorter method we can use to link the actions.

• When choosing a course in electronics, you think carefully about your future.

When + -ing shows that Action 2 happens during the same period as Action 1.

• **On receiving signals from the remote control**, the TV follows your instructions.

On + -ing shows that Action 2 follows immediately after Action 2.

Reduced relative clauses:

One way of adding extra information to an explanation, or any other text, is to use relative clauses.

- The thermal head is a mechanism which contains a line of dots.
- The microprocessor converts the information into signals, which are called analogue tones, which are suitable for telephone transmission.

We can make the sentences shorter by omitting **which** and using relative phrases.

- The thermal head is a mechanism **containing a line of dots**.
- The microprocessor converts the information into signals, called analogue tones, suitable for telephone transmission.

Examples

1/ Adverb phrase: I usually get up early every morning to have more time for breakfast **before going to school.**

Adverb clause: I usually get up early every morning to have more time for breakfast before I go to school.

2/ Adjective phrase: Laser printers, ink-jet printers are a few of the types of peripheral printing units **commonly employed in this phase**.

Adjective clause: Laser printers, ink-jet printers are a few of the types of peripheral printing units **which are commonly employed in this phase**.

3/ Adverb phrase: Computers help students **to perform mathematical operations and** *improve their math skills.*

Adverb clause: Computers help students so that they can perform mathematical operations and improve their math skills.

4/ Adjective phrase: *Peripherals are the physical units* **attached to the computer. Adjective clause**: *Peripherals are the physical units* **that are attached to the computer**.

5/ Adjective phrase: The nerve center of a desktop computer is the processor, also called the CPU (Central Processing Unit).

Adjective clause: The nerve center of a desktop computer is the processor, which is also called the CPU (Central Processing Unit).

6/ Noun clause: The size of a bus, called bus width, determines **how much data can be** *transmitted*.

Noun phrase: *The size of a bus, called bus width, determines the amount of data transmission.*

7/ Adjective clause: Young people who have grown up with PCs and mobile phones are often called the digital generation.

Adjective phrase: Young people **having grown up with PCs and mobile phones** are often called the digital generation.

8/ Adjective clause: The program and data **which pass through the processor** must be loaded into the main memory in order to be processed.

Adjective phrase: The program and data **passing through the processor** must be loaded into the main memory in order to be processed.

9/ Adverb clause: The hard disk is a storage medium **where information, such as files or programs, is saved.**

Adverb phrase: The hard disk is a storage medium to save information, such as files or programs.

10/ Adverb phrase: If you are using the glue binding technique when binding your printed product, the thicker and lighter the paper the more durable the binding will be.
Adverb clause: If you are using the glue binding technique when you bind your printed product, the thicker and lighter the paper the more durable the binding will be.

11/ Adverb clause: The pages must be placed on the paper in such a way that preserves their correct relationship to one another when they are folded and cut.
Adverb phrase: The pages must be placed on the paper in the correct way to preserve their correct relationship to one another when they are folded and cut.

12/ Adjective clause: When you want to move an image, you must position the pointer on the object **you want to move**.

Adjective phrase: When you want to move an image, you must position the pointer on the object **to be moved**.

13/ Adjective clause: Visual alerts are indications **that alert the deaf users** when they receive new mail or when there is a system error.

Adjective phrase: Visual alerts are indications **to alert the deaf users** when they receive new mail or when there is a system error.

14/ Adjective clause: Formatting erases any existing files on a disk, so do not format disks on which data **that you don't want to lose** is stored.

Adjective phrase: Formatting erases any existing files on a disk, so do not format disks on which your needed data is stored.

15/ Adjective clause: One of the features of a computer virus **that separates it from other kinds of computer program** is that it replicates itself, so that it can spread to other computers.

Adjective phrase: One of the features of a computer virus separating it from other kinds of computer program is that it replicates itself, so that it can spread to other computers.

16/ Adverb clause: *When the ink is absorbed into the paper, it not only sweeps down into the paper but it spreads out as well.*

Adverb phrase: When absorbed into the paper, the ink not only sweeps down into the paper but it spreads out as well.

17/ Adverb clause: The roller will develop more heat when it runs at press speeds. Adverb phrase: The roller will develop more heat when running at press speeds. **18/ Adjective clause:** The ink, **that contains resins, binders, varnish, pigment and dryer**, is delivered to the plate surface.

Adjective phrase: The ink containing resins, binders, varnish, pigment and dryer is delivered to the plate surface.

19/ Adjective clause: Folding is a technique **that is used to create smaller individual pages** *from the large printed sheets.*

Adjective phrase: Folding is a technique used to create smaller individual pages from the large printed sheets.

20/ Adverb clause: *When glue binding is done with a thick cover,* you will get the best result with a "four-crease" technique.

Adverb phrase: *When glue binding with a thick cover, you will get the best result with a "four-crease" technique.*

WORD FORMATION: PREFIXES & SUFFIXES

When you are reading, you will come across unfamiliar words. It is often possible to guess the meanings of these words if you understand the way words in English are generally formed:

Prefix – Stem – Suffix

An English word can be divided into three parts: a prefix, a stem, and a suffix. Pre- means 'before'. A prefix, therefore, is what comes before the stem. A suffix is what is attached to the end of the stem.

Prefixes, which do not change the part of speech of a word, usually change the meaning of the word.

Suffixes, on the other hand, change the word from one part of speech to another but keep the basic meaning of the word.

Negative & positive	Meaning	Examples
prefixes:		
un-	not	unhappy, unhappiness, unkind, undo, unable.
in-	not	incomplete, inactive, inexpensive, inaccurate.
im-	not	impolite, impossible, immobile, improper
il-	not	illegal, illogical, illegible, illiterate.
ir-	not	irregular, irrelevant, irresponsible, irresistible.
non-	not connected with	non-programmable, non-image, nonsense,
		nonfiction
mis-	bad, wrong	misunderstand, misprint, misregistration, mistake
dis-	opposite feeling,	disagree, dislike, discomfort.
	opposite action	discover, disappear, disconnect, discharge.
anti-	against	antifriction, anti-clockwise, antiglare, anti-virus.
de-	reduce, reverse	demagnetize, decode, debug, decompress.
under-	too little, below	underestimate, underground, underwear.
re-	do again	redo, reorganize, reusable, resize, reformat,
		reboot.
over-	too much	overload, overheating, overtime, overrated.
Prefixes of size	Meaning	Examples
semi-	half, partly	semiconductor, semicircle, semi-final
mini-	small	minicomputer, miniskirt, minibus.
micro-	very small	microcomputer, microprocessor, microphone.
mega-	large, great	megabyte, megawatt, megabit, megahertz,

Prefixes

		megohm.
Prefixes of location	Meaning	Examples
inter-	between, among	interface, interactive, internet, international
super-	over	supersound, superman, superconductor,
		supercomputer
trans-	across	transmit, transfer, transport
ex-	out	exclude, external, exhale, exception.
extra-	beyond	extraordinary, extracurriculum, extravascular.
sub-	under	subway, submarine, subfolder, subscript, submer
infra-	below	Infra-red, infrastructure
Prefixes of time and	Meaning	Examples
order		
pre-	before	prepress, preamplication, preheat
prime-	first	primary, primitive
post-	after	postpress, post-treatment, postgraduate.
Prefixes of numbers	Meaning	Examples
mono-	one	Monochrome, monosyllable, monorail.
bi-	two	binary, bicycle, bilingual, bimetal, biannual
tri-	three	triangle, tricycle, trilingual
quad-	four	quadruple
penta-	five	pentagon
hex-	six	Hexadecimal, hexagon
dec-	ten	decimal
multi-	many	multisystem, multicolor, multimedia,
Other prefixes	Meaning	Examples
auto-	self	automatic, automobile, automation
со-	together	co-ordinate, co-processor, co-chairman
e-	meaning electronic	e-commerce, e-learning, ebook, e-signature, ema
i-	meaning information	ipad, iphone,
cyber-	related to compute	cyberspace, cybercrime, cyberculture, cybercafé,
	network	cybernetics.
Suffixes

Noun-forming	Meaning	Examples		
suffixes				
-ance	state	performance, resistance, maintenance.		
-ence	quality of	Independence, difference, transparence.		
-er, -or	a person who	programmer, operator, employer, advisor,		
	a thing which	manager		
		computer, processor, printer, scanner, plotter.		
-ist, -yst	a person who	dentist, scientist, artist, analyst.		
-ian	pertaining to	electrician, technician, vegetarian, politician.		
-tion, -ation, -ion	the act of	action, distribution, production, edition,		
		resolution.		
		translation, modulation, multiplication, applicatio		
		conversion, division, decision, compression.		
-ness	condition of	happiness, weakness, readiness, flatness		
-ment	state, action	measurement, movement, development, shipm		
-ing	activity (gerund)	programming, processing, coding, spooling		
-ity	state, quality	electricity, quantity, reality, possibility, capacity.		
-ism	condition/state	magnetism, organism, capitalism, communism		
-dom	domain/condition	kingdom, freedom, boredom.		
-ship	condition/state	partnership, relationship, friendship		
-al	condition/state	Ideal, approval, arrival, terminal, denial, proposa		
Verb-forming	Meaning	Examples		
suffixes				
-ize/-ise	To make	computerize, standardize, maximize, optimize.		
-ate	To make	automate, activate, calculate, incorporate.		
-ify	To make	simplify, amplify, notify, classify,		
-en	To make	harden, widen, shorten, strengthen, (enlarge,		
		enrich,		
		ensure)		
Adverb-forming	Meaning	Examples		
suffixes				
-ly	In the manner of	electronically, logically, rapidly.		
Adjective-forming	Meaning	Examples		
suffixes				
-al	having the quality	logical, computational, global, peripheral, interna		

[Type

	of	digital, professional, conditional, natural, optical.		
-ar	having the quality	circular, particular, singular, cellular,		
	of			
-ic	having the quality	magnetic, electronic, economic, electric, static,		
	of			
-ical	having the quality	electrical, economical, mechanical.		
	of			
-able	capable of being	comparable, preferable, programmable, reusable		
-ible	capable of being	divisible, visible, compatible		
-ous	like, full of	dangerous, various, continuous, famous		
-ful	characterized by	helpful, useful, hopeful, careful,		
-less	without	careless, hopeless, homeless, jobless, paperless,		
		wireless,		
-ish	like	yellowish, reddish, bluish, childish, selfish		
-ed	past participle	computed, printed, exposed, programmed.		
-ive	having the quality	interactive, active, expensive, creative, innovativ		
	of	exclusive,		
-у	relating to	cloudy, sandy, windy, sunny, funny,		

PLATE AND PRESS PROBLEMS

Task 1Read the text and then answer the questions.

- 1. Identify the main idea, major & minor details of paragraph 1 in the text?
- 2. What is the function of a light-sensitive coating on a plate?
- 3. Use a flowchart to show the main steps in offset plate making?
- 4. What's the main difference between wipe-on plates and presensitized plates?
- 5. Explain the reason why press operators are no longer required to be a plate export?

The lithographic press plate differs from other mechanical printing plates in that it is planographic. Its image and non-image areas are essentially on the same level. The image areas are not raised as in letterpress and flexography, nor depressed as in gravure printing. Image areas are ink- receptive and surrounded by nonimage, water-receptive areas. When the plate is moistened and inked, the water- receptive areas refuse to take ink while the image areas repel the water and accept the ink.

Great improvements have been made in offset plates since the 1950s. The press operator is no longer required to be a plate expert. Plates are expected to work when they are delivered to the press, and they usually do. Plate problems (blinding, scumming, and premature image wear) have been greatly diminished by major, technical advances.

Lithographic plates are coated with a light-sensitive coating. (Presensitized plates are coated by the manufacturer; wipe- on plates are coated by the printer.) When exposed to light, the coating is changed so that the plate processor removes the coating in the nonimage area.

Most plates are made of paper or aluminum, although some bimetal plates are used for long runs and jobs that are repeated (e.g., greeting cards or books).

Negative-working plates must be treated with a coating that hardens or becomes insoluble when exposed to light. After exposing the plates under a negative film, the processor removes the unexposed coating, and this area becomes the nonimage area.

Positive-working plates are treated with a coating that becomes soluble upon exposure to light. When developed, the unexposed area becomes the image area.

Overexposing negative-working plates causes halftone dot gain, while overexposing positive- working plates causes halftone dots to sharpen or shrink.

Most plates used in the United States and Canada are negative-working. Using negatives is easy and may save film. Negative-working plates are often faster to process and permit easier multiple exposures. They also do not require cleanup of film-edge and tape marks. Positive-working plates can be treated to give longer runs, permit easier register control, and provide more flexibility of midtone and highlight control. Positive-working plates are commonly used in most European and Asian countries.

Presensitized plates may be "additive" or "subtractive." *Additive* plates have an image- reinforcing material which is added during processing. The image-reinforcing material on *subtractive* plates is applied during manufacture, and the unexposed coating, including the image-reinforcing material, is removed from the nonimage area during processing.

New technology has created many excellent plate choices for the printer. It is imperative, however, that the printer use only procedures and chemicals recommended by the plate manufacturer:

• A plate that can be used with positive or negative film is available. The developer removes the exposed coating from the plates exposed to the positive film, or it removes the unexposed coating from the plates exposed to the negative film. The printer can stock only one kind of plate for both processes.

• Life of positive- or negative-working plates can be extended by post-treatment. Positiveworking plates that are baked (in excess of 480'F or 2491 C) are suitable for runs in excess of one million copies. Some negative plates can also be baked.

Some negative-working plates can be post-exposed (after developing) to extend the plate life as much as four-fold.

• Some special plates are heat-treated prior to development, which increases the run length.

• Most plants use plate processors on plates for all presses- from the duplicator to the largest commercial press.

• Anodized plates are produced by giving aluminum plates a special surface that, under a scanning electron microscope, looks like a honeycomb. Gum and coating material adhere better to the anodized surface, and the plate is more resistant to abrasion, wear, and chemical attack.

There are many different plates, and the printer has many choices. Choosing the right plate is important. The run length and quality requirements usually determine which plate is selected. For example, little is gained by selecting an expensive plate rated at one million impressions for a shorten house specializing in fast turnaround.

Common plate problems on press include: plate sensitivity, scum, image wear, and image blinding. The description "blind" is applied- when the image has been covered up with gum or other water-receptive chemicals. It is important, however, to distinguish between a blind plate and a worn-out plate. If a plate fails to transfer ink but the image is clearly seen, the plate is blind. If the image area is worn or is missing, the plate is worn out.

The major causes of plate problems on press are abrasion of the plate on the press, improper use or application of the chemicals, faulty ink, faulty paper, improper plate processing, and faulty plate manufacturing.

Task 2List 03 compound sentences, 03 complex sentences in the text.

Task 3Analyze the following sentences

(What kind of sentences are they? What kind of clauses are there in each complex & mixed sentence?)

1. When the plate is moistened and inked, the water- receptive areas refuse to take ink while the image areas repel the water and accept the ink.

2. Plates are expected to work when they are delivered to the press, and they usually do.

3. When exposed to light, the coating is changed so that the plate processor removes the coating in the nonimage area.

4. Most plates are made of paper or aluminum, although some bimetal plates are used for long runs and jobs that are repeated (e.g., greeting cards or books).

5. After exposing the plates under a negative film, the processor removes the unexposed coating, and this area becomes the nonimage area.

6. When developed, the unexposed area becomes the image area.

7. The image-reinforcing material on *subtractive* plates is applied during manufacture, and the unexposed coating, including the image-reinforcing material, is removed from the nonimage area during processing.

8. Positive- working plates that are baked (in excess of 480'F or 2491 C) are suitable for runs in excess of one million copies.

9. Anodized plates are produced by giving aluminum plates a special surface that, under a scanning electron microscope, looks like a honeycomb.

10. The run length and quality requirements usually determine which plate is selected.

11. For example, little is gained by selecting an expensive plate rated at one million impressions for a shorten house specializing in fast turnaround.

12. The major causes of plate problems on press are abrasion of the plate on the press, improper use or application of the chemicals, faulty ink, faulty paper, improper plate processing, and faulty plate manufacturing.

Task 4 Topic sets – Write these words in the correct column.

Poster – blinding – lithography – flexography – quickset ink – presensitized plate - image wear – compressible blanket – coated paper – magazine – scumming – swelling - processor – greeting card – letterpress – gravure printing – positive- film – duplicator – post-treatment – printer – developing – light exposing – abrasion - overexposing – cotton fabric – plate packing – rubber compound – cylinder - smashing – excessive packing - slipping – torque wrench – micrometer – multicolor press – sheet paper – glazing – metallic dryer – roller – ink fountain – densitometer – misregistering - brochure - paperboard – prepress processing – image editing – decal – aluminum foil – periodical – color pigment - plastic – plastic bag – label – book cover – retouch - bimetal

Equipment	Process	Product	Material	Problem

Task 5Transitive & Intransitive verbs – Make sentences to show differences
between these verbs.

To do – to make – to work & To raise – to rise & To lay – to lie & To sing – to leave – to write – to depress – to diminish - to extend

Task 6Cause & Effect – Match each action (1-10) with its consequence (a-j)
about plates.

- 1. Dampening and inking a plate
- 2. Light exposing a plate under negative films
- 3. Upon light exposure a plate with positive films
- 4. Overexposing positive-working plates
- 5. Using negative-working plates
- 6. Using positive-working plates
- 7. Applying post-treatment method
- 8. Heat-treating a plate before development
- 9. Using anodized plates
- 10. Purchasing a kind of plate that can be exposed under negative and positive films
- a. The coating becomes soluble
- b. Longer life span, easier register control
- c. Image areas repel water & accept ink
- d. Halftone dots to shrink or sharpen
- e. The coating hardens or becomes insoluble
- f. Extending life span of plates
- g. Non-image areas refuse to take ink
- h. Faster processing and film saving
- i. More resistant to abrasion, wear and chemical attack
- j. Stock only one kind of plate
- k. Increasing run length

Task 7Make full sentences to link these causes and effects.

ROLLER AND BLANKET MAINTENANCE

Task 1Read the text and then answer the questions.

- 1. How many types of rollers are there in the ink roller train or inking system?
- 2. What's the meaning of the verb to meter used in the text?
- 3. What are plasticizers?
- 4. Why must we try to reduce stock waste?
- 5. What is halftone? Midtone?

The essential reason for the lithographic process is to reproduce copies of an original, with the specified quality at speeds which make the process profitable. In other words, you are in business to satisfy your customer's needs at a profit - and the press is your tool.

The first step in the lithographic process is to bring ink to the plate. This distribution takes place in the ink roller train, but begins in the ink fountain. Here, the ink is initially metered to the distributor rollers and here is where the maintenance system begins. If the blade is nicked, the roller surface scored or pitted, or the ends of the ink fountain clogged, the ink will not be distributed evenly. The ink keys should be routinely cleaned so they will properly set the ink blade. Routine cleaning with a quality wash and a little oil will keep these moving parts working freely.

The roller train now takes this metered ink and, by passing it between alternate steel and rubber rollers, mills and distributes a thin layer to the plate. Many factors contribute to a properly working roller train; primary of which are rubber rollers of the proper durometer (hardness). This durometer must be maintained if the press is to print the expected quality.

If roller durometer becomes too hard, you will experience great difficulty in maintaining a consistent film of ink and suffer shorter plate life due to wear. In the case of form rollers, they will not maintain the proper "stripe" or contact with the plate. This poor ink delivery will be evident with screens or halftones

Other than mechanical defects or bearing wear, the most frequent cause of trouble in the ink roller train can be traced to improperly maintained rubber rollers. Rollers become clogged with glaze and no longer accept and split the finer film of ink needed for quality lithography. On close inspection, these rollers will usually exhibit fine cracking or pitting on the surface. The ends of the rollers will appear swollen, actually, the center portion of the roller will have shrunk due to the loss of plasticisers in their composition. If the pressman increases roller pressure to compensate for the narrow stripe, the roller will develop more heat when running at press speeds. This heat will affect ink transfer and shorten the roller life. Glazed rollers can also "bleed" old ink into lighter colours.

Proper press maintenance begins with the washup

A good washup must do more than remove wet ink - it must cut through and remove glaze, and condition the rollers for maximum ink receptivity. Proper washup is not expensive. In fact, modem washup chemicals account for less than 3% of the cost of downtime for washup. Modem chemistry, used in a maintenance washup system, pays for itself many times over by reducing stock waste. Proper washup produces more saleable sheets in a production day and visibly improves the overall quality of the job.

It makes no sense at all to invest in expensive printing equipment, purchase good ink and stock, staff experienced pressmen and then buy cheap, ineffective solvents to wash up the rollers. "Cheap" or harsh solvents such as ketones and acetones, can attack the complex structure of today's rollers and drastically shorten their life.

Modem press chemistry are laboratory designed and press proven to remove glaze and maintain rollers in top print quality. The proper wash is not always the most costly, if it is the "right" product for your exact need.

The second requirement of the inking system of the offset press is to transfer the fine film of ink from the plate to the offset blanket. Despite all the "high tech" of offset presses, the newest technology in inks, fountain solution, plates, etc., the entire process of offset printing comes down to this simple fact:

The offset printing blanket is the only part of the press that actually touches the sheet to deliver ink. Therefore, if the image is not right on the blanket, it can never be right on the sheet or web.

Most blankets consist of a carcass composed of multiple layers of fabric laminated with thin layers of rubber and treated for strength and dimensional stability. The face or printing surface of the blanket is manufactured to maintain a specified hardness and resiliency. Blankets are available with either a conventional" or "compressible" surface. Proper maintenance procedures are the same for both types.

By design, the offset blanket must accept ink from the plate and transfer it cleanly and uniformly to the sheet so as to duplicate the image on the plate. In order to accomplish this simple act of physics, the blanket must be clean and resilient. There are a number of reasons that a blanket will not perform its job.

Mechanically, the blanket may be too loose or too tight. This condition will produce a distorted image and rapidly wear the blanket. Usually, blanket problems can be traced back to that old pressroom villain - poor maintenance.

The blanket is called upon to receive all the chemical ingredients present in the lithographic process. The ink, containing resin, binders, varnish, pigment and dryer is delivered to the plate surface, where it joins the fountain solution mixture with its additional chemicals in the form of gum arabic, acid and surfactant. Add the minerals, chemicals and organics contained in tap water and the different coatings, alkalines, bleaches and lint from the paper and we have all the makings of potential problems. Once the blanket becomes contaminated, printing quality begins to suffer. Remember, if it's not right on the blanket - it will never be right on the sheet or web.

As a cardinal rule, ink should never be permitted to dry on a blanket. Special care should be taken when the ink carries driers, extenders or other special additives. These should always be washed up as soon as possible. Glaze clogged blankets can dramatically decrease the quality

of print during an average press run. Glaze is a time and production thief. Blanket glaze can be the "water soluble" type caused by gum, fountain solution, spray powders, paper coatings etc; and the "solvent soluble" type resulting from ink pigments, driers, varnishes etc. A water miscible wash is expressly designed to remove both types of glaze in a single washup.

Task 2 Analyze the following sentences

(What kind of sentences are they? What kind of clauses are there in each complex & mixed sentence?)

1. The essential reason for the lithographic process is to reproduce copies of an original, with the specified quality at speeds which make the process profitable.

2. In other words, you are in business to satisfy your customer's needs at a profit - and the press is your tool.

3. This distribution takes place in the ink roller train, but begins in the ink fountain.

4. Here, the ink is initially metered to the distributor rollers and here is where the maintenance system begins.

5. If the blade is nicked, the roller surface scored or pitted, or the ends of the ink fountain clogged, the ink will not be distributed evenly.

6. Routine cleaning with a quality wash and a little oil will keep these moving parts working freely.

7. The roller train now takes this metered ink and, by passing it between alternate steel and rubber rollers, mills and distributes a thin layer to the plate.

8. If roller durometer becomes too hard, you will experience great difficulty in maintaining a consistent film of ink and suffer shorter plate life due to wear.

9. Other than mechanical defects or bearing wear, the most frequent cause of trouble in the ink roller train can be traced to improperly maintained rubber rollers.

10. If the pressman increases roller pressure to compensate for the narrow stripe, the roller will develop more heat when running at press speeds.

11. A good washup must do more than remove wet ink - it must cut through and remove glaze, and condition the rollers for maximum ink receptivity.

12. It makes no sense at all to invest in expensive printing equipment, purchase good ink and stock, staff experienced pressmen and then buy cheap, ineffective solvents to wash up the rollers.

13. Most blankets consist of a carcass composed of multiple layers of fabric laminated with thin layers of rubber and treated for strength and dimensional stability.

14. By design, the offset blanket must accept ink from the plate and transfer it cleanly and uniformly to the sheet so as to duplicate the image on the plate.

15. The ink, containing resin, binders, varnish, pigment and dryer is delivered to the plate surface, where it joins the fountain solution mixture with its additional chemicals in the form of gum arabic, acid and surfactant.

Task 3 Explain the meanings of these terms.

Non-image area – water-receptive area – negative-working plate - imagereinforcing material – post-exposed treatment – worn-out plate.

Task 4Paraphrase these sentences.

- 1. The ink keys should be routinely cleaned so they will properly set the ink blade.
- 2. This durometer must be maintained if the press is to print the expected quality.
- 3. This poor ink delivery will be evident with screens or halftones.
- 4. Rollers become clogged with glaze and no longer accept and split the finer film of ink needed for quality lithography.
- 5. On close inspection, these rollers will usually exhibit fine cracking or pitting on the surface.
- 6. Glazed rollers can also "bleed" old ink into lighter colours.
- 7. In fact, modem washup chemicals account for less than 3% of the cost of downtime for washup.
- 8. Modem press chemistry are laboratory designed and press proven to remove glaze and maintain rollers in top print quality.
- 9. Usually, blanket problems can be traced back to that old pressroom villain poor maintenance.
- 10. The blanket is called upon to receive all the chemical ingredients present in the lithographic process.
- 11. Add the minerals, chemicals and organics contained in tap water and the different coatings, alkalines, bleaches and lint from the paper and we have all the makings of potential problems.
- 12. As a cardinal rule, ink should never be permitted to dry on a blanket.
- 13. Glaze is a time and production thief.
- 14. Blanket glaze can be the "water soluble" type caused by gum, fountain solution, spray powders, paper coatings etc; and the "solvent soluble" type resulting from ink pigments, driers, varnishes etc.

Task 5Phrasal verbs (two-word verbs) – Explain the meaning of these
phrasal verbs and make sentences with them.

To take place – to account for – to come down – to call upon – to take up – to carry out – to set off – to give up – to look up – to look out – to run out of

Task 6To be to + infinitive verb – What is the meaning implied in this
structure?

- 1. The essential reason for the lithographic process is to reproduce copies of an original, with the specified quality at speeds which make the process profitable.
- 2. The first step in the lithographic process is to bring ink to the plate.
- 3. This durometer must be maintained if the press is to print the expected quality.
- 4. The second requirement of the inking system of the offset press is to transfer the fine film of ink from the plate to the offset blanket.
- Task 7Find all the reduced clauses used in the main text. Change them to
complete clauses.

POSTPRESS PROCESSING 1

- Task 1Read these separate simple sentences then try to link them in the
best way to make more comprehensive sentences.
 - The printed product is processed. The printed product does not need to be bound. Parallel folding is used.
 - A four-crease is literally a total of four distinct creases in the cover. One crease is on either side of the spine. One crease is located a few millimeters from the spine on the front cover. Other crease is a corresponding distance from the spine on the back cover.
 - One main type of metal stitching is block stitching.
 In one case of block stitching, metal staples are placed along one edge.
 In another case of block stitching, metal staples are placed on one corner of the pages.
 It is much like the desktop stapling.
 - Cropping can be done manually with a special cutting machine. Cropping can also be done simultaneously with another step in the postpress processing cycle.
 - 5) Cropping simply means cutting the paper down to the desired size. This can be done with some kind of blade.
 - 6) There are two main folding techniques. They are parallel folding and right-angled folding.
 - 7) Varnishing is a post-press technique.It is used to add a glossy surface to a printed product.
 - UV-varnishing is another common method. In this method, varnish is applied to the print with a special UV-varnishing machine.
 - 9) This partial-varnishing method is used for aesthetic effect. This partial-varnishing method is also used to help prevent areas with dense ink coverage from smearing.
 - Lamination is the process of coating a printed page with a protective plastic foil. Lamination increases protection against dirt, humidity and wear. Lamination is also done for aesthetic reasons.

- 11) Generally, special drills are used to punch paper during off press processing. We may also be able to purchase pre-punched paper from paper manufacturers.
- 12) A punch die is created in the shape. The desired shape that you want for your product.
- 13) Paper is varnished and laminated. It can damage or blunt the blade.
- 14) You punch a dotted line in a page. You make it easy to tear off a particular section of that page.
- 15) A blade is damaged.It can create a striped appearance along the cropped surface of the printed product.
- Perforation is usually done in a letterpress with a special perforation blade. The blade is pressed into the paper. The blade creates a series of tiny slits.
- 17) Products with smaller formats are stapled together with a cover. Brochures, periodicals... are usually in smaller formats.
- 18) Binding is the joining of a number of individual printed sheets into a single entity.The single entity can be a book, a brochure.....
- 19) A printing form (a stamp) is heated and prints the material. People often use a foil as the material for this process.
- 20) As with other methods, in thread stitching the fact that the fiber direction runs parallel to the spine is important.
 The reason is to ensure a strong and aesthetically pleasing product.
- Task 2Based on these above sentences, identify the types of postpress
processing mentioned.
- Task 3 Fill in the blanks with appropriate words.
 - 1. Commonly after printing, is also performed to create brochures, magazine and newspaper inserts, maps, etc.
 - and are those activities performed on printed material after printing. involves the fastening of individual sheets together, while involves additional decorative actions, such as die-stamping, embossing, etc.

- 3. A involves making two or more folds in a sheet which are oriented in the same direction. Such folds are often made in leaflets, brochures, etc.
- is a means of affixing pages to a cover or spine by means of glue; an adhesive material is applied to the edges of the book block, and a cover stock is attached on top of it.
- 5. The use of a thin metal wire (i.e., staples) to bind pages together is known as
- 6. If you're using paper at 250gsm grammage or above for products such as folding cards, flyers, and brochure covers, we'd recommend that you the paper where it will be folded.
- 7. or thread sewing is the process in which printed sheets are stitched together by means of a needle and thread.
- 8. A modern method of printing metallic foil on a substrate in order to enhance the aesthetic of the final product is called
- 9. It is the process of applying a thin layer of plastic to paper or card sheets to enhance and protect the printed matter. is often used for packaging, book covers, brochures, business cards and other printed items.
- 10..... is a forming process that uses a press to force a tool, called a through the workpiece to create a hole via shearing. It is often the cheapest method for creating holes in sheet materials in medium to high production volumes.
- 11. The process of removing unwanted outer areas from a photographic or illustrated image is known as
- 12. The term also refers to an overcoating applied to a printed piece following printing, performed on or off the press.
- 13..... is commonly found on book covers, in which only portions of the cover are high in gloss, in contrast to the surrounding matte texture.
- 14. is the general process of using a die to shear webs of low-strength materials, such as rubber, fiber, foil, cloth, paper, corrugated fiberboard, paperboard, plastics, pressure-sensitive adhesive tapes, foam and sheet metal.
- 15. The process of creating small holes in a thin material or web is called, which involves puncturing the workpiece with a tool.
- Task 4 Match the process (1 10) with relating tools, devices or material (a j).
 - 1. Converting a picture or text into a digital image.
 - 2. Making holes on paper.
 - 3. Die cutting.

- 4. Foiling
- 5. Creating a tearing reference.
- 6. Lamination.
- 7. Adding a glossy surface to a printed product.
- 8. Method of making it easier for folding.
- 9. Fastening separate paper sheets together.
- 10. Cropping.
- a. Plastic foil.
- b. Varnish resin.
- c. Punch die.
- d. Blade.
- e. Perforation blade.
- f. Flatbed or drum scanner.
- g. Steel ruler.
- h. Thread, metal staple, or glue.
- i. Stamp.
- j. Drill.
- Task 5Try to form as many words as you can from book, cover and crease
using affixation (adding a prefix or suffix), conversion (turning a
noun into a verb and vice versa) and compounding (putting two or
more words together). Make sentences with each of them.

POSTPRESS PROCESSING 2

Task 1Read the text and then answer the questions below.

Cropping (cutting), glue binding, creasing, folding, hole punching, enveloping and perforating are examples of common off press processes. When printed sheets intended for books are off press processed, the sheets are bound or glued into blocks, cut to the correct format and then attached to a cover. Products with smaller formats such as brochures, periodicals, etc., are often stapled together with a cover. Printed products with more than two pages are generally folded. If the product has eight or more pages, it is usually also stapled or bound. Generally, all printed products need to be cropped during off press processing.

Folding

Folding is a technique used to create smaller individual pages from the large printed sheets. There are two main folding techniques: parallel folding and right-angled folding. Parallel folding, as the name indicates, means that all the folds run parallel to each other. Parallel folding is used when the printed product being processed does not need to be bound. Right-angled folding, on the other hand, means that each new fold is done at a 90-degree angle to the previous one, and is used for products that are going to be bound. There are also combinations of parallel and right-angled folding.

Creasing

When a paper's weight exceeds 80 lbs, it can be very difficult to fold. To avoid unattractive folds, heavy paper is usually creased before it's folded. Creasing creates a kind of "hinge" that facilitates a clean fold. Paper is often creased with the help of a thin steel "ruler" pressed along the fold lines. The paper's resistance to folding is reduced along the resultant crease. Creasing is frequently used for processing cardboard.

Covers used in glue binding, for example, are usually creased. When glue binding with a thick cover, you will get the best results with a "four-crease" techniques. A four-crease is literally a total of four distinct creases in the cover: one on either side of the spine, one a few millimeters from the spine on the front cover, and one a corresponding distance from the spine on the back cover. The creases in the covers prevent damage to the folds and allow the product to be opened with ease.

Binding

Binding is the joining of a number of individual printed sheets into a single entity, be it a book, brochure, etc. The most common binding methods are metal stitching, glue binding, thread stitching and spiral binding. In metal stitching and spiral binding, the cover is attached during the actual binding process. In thread stitching and glue binding there are two ways of attaching, or hanging, the cover. In the first version (for soft covers), the cover is glued to the spine of the bound material. In the second (for hard covers), the first and last pages of the material, called the endpapers, are glued to the insides of the covers. End papers are usually colored or patterned papers.

Metal stitching

Stapling papers together with a standard desk stapler is a kind of metal stitching that we've all done. In terms of professional binding, there are two main types of metal stitching. One is

block stitching, in which metal stitches (staples) are placed along one edge or on one corner of the pages, much like the desktop stapling we've used to. The second is known as saddle stitching, which places metal stitches in the spine of the material.

Thread stitching

Thread stitching is the traditional bookbinding method. Folded sheets are placed in sheet order, but instead of being glues the spine is sewn together. As with glue-bound soft cover books, the book block is glued to the cover. However, the spine is not ground - if it was, the thread sewing would disappear. Instead, after the cover is in place along the spine, the book is cropped along the three remaining sides. As with other methods, it is important that the fiber direction run parallel to the spine in order to ensure a strong and aesthetically pleasing product.

Cropping

Cropping simply means cutting the paper down to the desired size with some kind of blade. This can be done manually with a special cutting machine or simultaneously with another step in the off press processing cycle.

Most printed products are cropped. In sheet-fed print production, it can be necessary to crop a product up to three different times during the production cycle. First, the paper might require cropping in order to fit the format of the printing press. After they are printed, the sheets may have to be cropped again to fit the format of the off press processing machine(s). Finally, the product must be cropped after it is folded and bound to ensure that its edges are even and smooth.

In the most common binding methods, (metal stitching or glue binding). Cropping is usually the last step of the process. Generally, a three-sided trimmer crops the printed product on the head, tail and fore edge. This final cropping is necessary for several reasons. Multiple pages imposed on the same printing sheet are still attached to each other after they've been folded, either at the head or the tail (this applies if you have right-angled folded sheets with eight or more pages). In addition, the creep requires that the bundle be cut along the fore edge.

The blades used in the cropping machines are sensitive and must be sharpened often. Varnished and laminated paper can damage or blunt the blade. A damaged blade can create a striped appearance along the cropped surface of the printed product.

Lamination

Lamination is the process of coating a printed page with a protective plastic foil. Lamination increases protection against dirt, humidity and wear and tear, and is also done for aesthetic reasons. There are a variety of different types of laminates, including glossy, matte, embossed and textured. Laminates are commonly applied to the covers of printed products.

A special laminating machine is required for this process, and coated or glazed paper will give the best quality output. Laminated sheets can be creased and folded.

Varnishing

Varnishing is a technique used to add a glossy surface to a printed product. Unlike lamination, it does not provide noticeable protection against dirt and wear and tear, and is primarily an aesthetic procedure. Varnish is often applied to the print in the offset press via a regular inking unit or a special unit just for varnish. Coated paper grades will give the best results. UV-varnishing is another common method in which varnish is applied to the print with a special UV-varnishing machine. Because the varnish is cured with ultra-violet light, it

can be applied in a thicker layer, and thus provide a higher quality finish. Varnished sheets should be creased before they are folded to avoid the formation of cracks on the varnish-hard surface.

Varnish can be applied selectively to certain parts of the image - over images and logotypes, for example. This partial-varnishing method is used for aesthetic effect as well as to help prevent areas with dense ink coverage from smearing.

Punching

Paper is punched during off press processing so it can be put into binders. The international standard, known as ISO 838, is the standard outside of North America. Within North America, the hole spacing standards are $2\frac{3}{4}$ " cc for 2-hole and $4\frac{1}{4}$ " cc for 3-hole punching ("cc" stands for center-to-center, and means that the holes are spaced from the center of the hole regardless of its size). Generally, special drills are used to punch paper when this is done during off press processing, but you may also be able to purchase pre- punched paper from your paper manufacturer.

Die-cutting

If you want your printed product to have a shape other than a rectangle, you can have it die-cut.

A punch die is created in the shape you want for your product. The die is then pressed against the printed paper and cuts it to the desired shape. The cost for producing a unique punch die is relatively high for printed products in small editions, but it can be used for reprints.

Perforating

Perforations are basically used to create a tearing reference. By punching a dotted line in a page, you make it easier to tear off a particular section of that page - a reply card, for example. Perforation is usually done in a letterpress with a special perforation blade, which is pressed into the paper, creating a series of tiny slits. Perforation can also be done in a special punching machine.

Foiling

A printing form (a stamp) is heated and prints the material using a foil. The result is a depression in the material in the same color as the foil. The color is usually gold or silver although other colors are available.

- 1. List the products which are often folded with parallel lines before distributing.
- 2. What is spiral binding? What kind of printed products are usually bound with spirals or coils?
- 3. Explain the purpose of using different types of laminates: glossy, matte.
- 4. Tell the similarity and difference between lamination and varnishing.
- 5. What are the advantages and disadvantages of UV-varnishing?

Task 2Paraphrase these sentences.

- 1. Creasing creates a kind of "hinge" that facilitates a clean fold.
- 2. However, the spine is not ground if it was, the thread sewing would disappear. Instead, after the cover is in place along the spine, the book is cropped along the three remaining sides.
- 3. Generally, a three-sided trimmer crops the printed product on the head, tail and fore edge.
- 4. Multiple pages imposed on the same printing sheet are still attached to each other after they've been folded, either at the head or the tail (this applies if you have right-angled folded sheets with eight or more pages).
- 5. Unlike lamination, it does not provide noticeable protection against dirt and wear and tear, and is primarily an aesthetic procedure.
- Within North America, the hole spacing standards are 2 ³/₄ " cc for 2-hole and 4 ¹/₄ " cc for 3-hole punching ("cc" stands for center-to-center, and means that the holes are spaced from the center of the hole regardless of its size);
- Task 3Arrange the following sentences in correct order to form a good
paragraph.
 - 1. Foil can be used for a variety of finishes, including metallic, matte, glossy, pearlescent, holographic, and patterns such as marbling.
 - 2. Foil is an opaque medium.
 - 3. Metallic foils have a shiny, lustrous finish with a big visual impact.
 - 4. There are also semi-transparent tint foils, if you do want to allow the paper color to show through.
 - 5. As a result, the foil color does not change based on the color of paper on which you are printing.
 - 6. With thermography, lithography, and letterpress, metallics can fall flat and aren't very shiny.
 - 7. Unlike thermography, lithography and letterpress, foil stamping does not use any ink.
 - 8. This makes metallic or lighter color foil great for darker or colored papers.

Task 4 Identify the main idea, major & minor details of the paragraph.

Bookbinding is the process of physically assembling a book of codex format from an ordered stack of paper sheets that are folded together into sections or sometimes left as a stack of individual sheets. The stack is then bound together along one edge by either sewing with thread through the folds or by a layer of flexible adhesive. Alternative methods of binding that are cheaper but less permanent include loose-leaf rings, individual screw posts or binding posts, twin loop spine coils, plastic spiral coils, and plastic spine combs. For protection, the bound stack is either wrapped in a flexible cover or attached to stiff boards. Finally, an attractive cover is adhered to the boards, including identifying information and decoration. Book artists or specialists in book decoration can also greatly enhance a book's content by creating book-like objects with artistic merit of exceptional quality.