

**EVALUATING
ACADEMIC READINESS
FOR APPRENTICESHIP TRAINING**
Revised for
ACCESS TO APPRENTICESHIP

**COMMUNICATIONS SKILLS
DETAIL EXTRACTION**

**AN ACADEMIC SKILLS MANUAL
for
The Horticulture Trades**

This trade group includes the following trades:
Arborist and
Horticulturist

*Workplace Support Services Branch
Ontario Ministry of Training, Colleges and Universities*

Revised 2011

In preparing these Academic Skills Manuals we have used passages, diagrams and questions similar to those an apprentice might find in a text, guide or trade manual.

The information in them is not intended to instruct you in your trade. Trade related material is used only to demonstrate how understanding an academic skill will help you find and use the information you need.

COMMUNICATIONS SKILLS: DETAIL EXTRACTION

*An academic skill required for the study of the
Horticulture Trades*

INTRODUCTION

Reading for details is similar to shopping through aisles of items and then finding and taking something you need. **Detail extraction** refers to finding information you need and then carefully reading it to pull out and use the specific points you need.

In your work, you extract details from descriptions of procedures, policies, and a variety of codes, data sheets, on line databases, diagrams and schematics. You also extract details when you make notes from texts and class material, and when you study and review information for tests.

Detail extraction is the skill you need when you scan specification tables to determine operating capacities and specifications for a variety of tools and products and to read manuals for precise information about the expected operation of equipment. When you select the right details from your trade materials and textbooks, you can use the information to get the results you want.

In this unit, we will look at the following methods to successfully extract details from technical reading material:

- ◆ Know your purpose.
- ◆ Use a method to find details.
- ◆ Understand the nature of details.
- ◆ Build on your experience.

PART I

KNOW YOUR PURPOSE

Details

Details are the small parts of something. They are the individual points, parts, components, or the bits. When you find a detail by itself, you may not recognize what it's used for or whether it's important. When you see a detail in its correct place – as part of a whole – you are more likely to recognize its use and its importance. When details are combined, each contributes to the whole idea, process or principle.

Extraction

Extraction means pulling something out. A geologist extracts gold from rock, a dentist extracts a tooth from your jaw. Extraction may be difficult and it may take some effort. You have a good reason for making this effort.

Your purpose

When you understand *why* you are reading, you can focus on the parts of the text that provide the information you need. When you know what you are looking for, you recognize the information when you find it. Then you can select the parts that answer “what should I do” and “what should I know.” This is detail extraction. If you know what you *don't* need, you can skim through unnecessary details and get to the purpose for reading.

Think about your reasons for reading before you begin:

- ◆ What am I looking for?
- ◆ What have I been asked to do?
- ◆ What am I expected to know ?

Getting all the facts

The skill of extracting details requires you to identify your purpose and, then, *carefully read to extract the details*.

Often you need all the details provided, especially when you are told to follow a procedure. If you skim through them, you will miss something essential. When you are *directed* what to do, you will need to extract all the details.

Examples:

Follow steps 1 through 4 for correct hammering technique.

Read these directions before you start preparation.

Statements like these tell you where to find the details and what you need the details for. They give you a purpose for finding and using details. You will need to find and use the details they point you to, especially if you need to learn correct hammering procedures or to understand how to do a job.

Statements that send you for information provide you with a purpose for reading. Among other things, they might tell you:

- ◆ to get help with a procedure,
- ◆ to compare details, or
- ◆ to make the correct adjustments (in products, measurements, etc.).

You may have two or three purposes for reading selected material, such as to memorize a new procedure or to learn more about fabricating or to take an exam. An added, but common, purpose for reading technical material is *to answer questions* to show that you have grasped the information, or details, in the material you have read.

Passage 1 below describes how to calibrate hand held or backpack sprayers. Think about your purpose in reading this. It may be to do any or all of the following:

- understand a measuring device,
- accurately follow directions,
- identify parts on a diagram,

- understand the sequence of events, or
- answer questions.

Read Passage 1 and answer the questions that follow. Answers are at the end of this manual.

Passage 1 Calibrating Hand Held or Backpack Sprayers

Always test your equipment to be sure of your output for the speed, pressure, and nozzle or gauge setting you are using. With portable sprayers, calibration is used to check the spray pattern and sprayer output.

Measure out an area that is 100 square metres (10m x 10m, or 25m x 4 m etc...) Fill the spray tank with water. Mark the level on a measuring stick (Figure 2-11). Pump to the pressure which will be used during the pesticide application. Walking at a steady pace, spray the water over the area. Be sure to apply the spray as evenly as possible, just as you would when applying the pesticide. Once finished, measure the amount of water needed to refill the spray tank to the mark on the measuring stick. This will be the sprayer output per 100m².

If the spray tank is not large enough to cover an area of 100m², follow this procedure: Measure the amount of water needed to fill the sprayer. Pump to the pressure you will use during the pesticide application. Proceed as above but once the tank is empty, measure the number of m² covered. Use the recommended amount of pesticide for the number of square metres each time you fill the tank. Convert the application rate of any pesticide to the amount required for a small area. See note.

The note and diagram are omitted from this passage.

Questions: Find details which answer these questions. **Answers are at the end of this skills manual.**

1. Which of the following is the correct way to apply the water during calibration:
 - a) spray steadily and evenly
 - b) make certain you cover the entire area or use the entire tank
 - c) use the same pressure as you would for the pesticide
 - d) all of the above
2. The information you need in order to determine the output for a small tank is covered in this passage.

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3. What is the difference in calibration procedures between the two different sized sprayers discussed in the passage?
4. You would be able to calibrate a hand held or backpack sprayer large enough to cover 100 square meters after reading this passage.

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What I want . . .

As you read, you will often find that your purpose changes or expands in some way. Think about the passage above.

As you read the passage, you may have stuck to your original purpose, to learn more about more about sprayers and calibration. But, you may have wanted to see the (omitted) diagrams or to find others so you understand more about measuring procedures. You may also wonder what the sprayers look like or how you can tell one from another, and so on. These new purposes will send you to another text, manual or an expert to find the details you want.

Your expanded purpose leads you to find more details. *Searching to find those details and reading them carefully is important to the understanding of your trade.*

Your purpose tells you *why* you are looking for details. You will use the details in an appropriate way based on your purpose, whether you memorize them, record them or act on them.

Purposes for reading

For *detail extraction*, you read to locate facts, data or information for *any of the purposes* below. You will find other reasons of your own to add to this list.

- to understand a new code,
- to compare products or equipment,
- to prepare for a test on a chapter,
- to learn a math formula,
- to understand a procedure,
- to explain a procedure to a supervisor or customer.

PART II

USE A METHOD TO FIND DETAILS

Purpose directs your search for details as you ask: *What do I need or want? What am I going to do? What is expected of me?* Your search for details should be guided by a method. The method below will help you search for the right details. In this method, we use four steps to locate and extract the right information.

Four steps

1. *Define your purpose.* Your purpose might be to understand a process and/or to answer questions.
2. *Preview the reading.* Look over the whole piece. Pause to read or notice items: bold or *italic* print, diagrams, headings.
3. *Read carefully* to understand the whole piece.
4. *Locate details that answer the questions.* Reread with attention to select (and understand) the right details.

Passage 2 below describes a process – handling power tools. Your purposes are to understand this process because it relates to working safely, *and* to answer the questions.

Use the four steps as you read Passage 2. Then answer the questions that follow. Answers are at the end of this skill manual.

Passage 2 Electrical Tool Safety

Electrical tools must meet CSA standards and comply with WSIB regulations. When using electrically powered tools, make sure the terminal in the electrical outlet and the ground pin or terminal on the power cord are in place and in good repair (see WSIB regulation 22.32).

Some hand-held electric tools are referred to as “double insulated.” In these tools, the power cords have no ground pin in the plug, but the plug may be polarized to fit into the socket one way only. You must correctly identify these tools before using them.

When using electrical tools, prevent electric shock by making sure the insulation on the power or extension cord is not cut or frayed. Do not operate them in wet locations. Do not lift or move them by their power cords. Always remove a plug by grasping the plug and pulling it straight out of the receptacle, not by jerking on the cord. Always disconnect, unplug or lock out any electrical equipment before making any kind of adjustment or performing maintenance.

Questions

1. Electrically powered tools should not be used on wet sites.

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1. Which of a) or b) correctly lists details for making sure electrical tools are being used properly?

a) Make sure the ground pin or terminal is in good repair, do not use a frayed cord in a wet area, and disconnect the cord before performing maintenance.

b) Check to make sure the cord is not cut or frayed, lift the tool by its handle, and remove the plug by taking hold of the plug, not the cord

2. If a power or extension cord was cut or frayed, what could you expect?

4. Explain what is meant by “*polarized*.”

3. If you need to change a saw blade in a power saw, you should disconnect the power source before proceeding.

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Types of details

Notice that the questions ask for different types of detail or information.

Question 1 asks you whether a statement is correct (true or false). To answer the question, find the place where you read the information, reread it, examine the details and decide if the statement is accurate.

Question 2 asks about the accuracy of details in a list. Find where the items in two lists are described. Compare the details carefully, noting the correctness of each item. When you do this, you are using details to make comparisons and draw conclusions. You do this to understand when and why you would use different products, steps or techniques to complete a job.

Question 3 asks you to find a result. This involves the relationship of one or more details to what might happen. You look for cause and effect to avoid mistakes, to find the cause of a problem (diagnosis) or to come to a conclusion.

Question 4 asks you to explain what something means. This is a vocabulary detail about a word commonly used in your trade. Assume you don't know what *polarized* means. Look up the word in a dictionary or glossary. Use your own words or a simple sketch to make sure you understand it. A good test of your understanding is to explain it to someone else.

Question 5 asks you to evaluate information. You need to see how a detail fits into a larger category to come to a safe decision about what to do when changing a saw blade. You have to consider what might happen if you don't first disconnect the power source.

Preview your reading material

We have suggested you use the four steps to guide your ability to extract details. In technical reading, it is a good practice to browse the entire reading before you start (Step 2). When you preview a textbook or manual, *you get an overview of the whole.*

This *preview* gives you a sense of the whole before you focus on the details. It can help you find the passages, chapters or sections that answer your questions. Previewing also gives you a sense of the range of information available.

A reminder about questions

We suggested earlier that you ask questions to help you extract the right details. Asking questions helps you understand each detail as you go.

Example: You might ask, "Do I understand?"

<i>polarized</i>	Yes or No?
<i>insulated</i>	Yes or No?
<i>ground pin</i>	Yes or No?"

If the answer to your question is no, you need to continue your search for answers that give you an understanding of the words and details of your trade.

PART III ***THE NATURE OF DETAILS***

Details cover a great range of information – anything from the history of agriculture in Canada to the procedures for a fertilizer application. Some details are general in nature; some are very specific.

Details: General To Specific

The passage below is organized in a way that is common to technical material. It starts with general information and description then examines specific details. The general information often introduces the "*how to*" details that you would find in a procedure.

Read **Passage 3**. Pay attention to the way information is organized in the passage.

Passage 3 **Cell Walls**

The **protoplasm** of each cell is surrounded by a rigid cell wall. This protects the living contents. Between adjacent cell walls, the substance **pectin** forms a thin layer called the **middle lamella** (see figure 3-1). This binds the cells together.

Together, cell walls provide structural support to a plant. The light-weight, delicate structure of a leaf, for example, indicates that it is composed of thin-walled cells. In woody stems supporting heavy loads, however, cells with extra thick walls are developed.

When a cell is first formed, its wall is thin and largely composed of the substance **cellulose**. This is the cell's **primary wall**. As the cell ages, the wall may thicken by the addition of more cellulose and, ultimately, by the introduction of a hardening substance called **lignin**. Hardwoods, such as oak or ash, are made up of cells with heavily lignified walls. These extra layers make up the cell's **secondary wall**. See figure 3-2.

Note: We have omitted the figures. We will look at figures later, in Part III.

General details

Look again at paragraph one. It gives you general information about cell walls:

- they surround protoplasm,
- the middle lamella, which is made of pectin, is between adjacent cells, and
- this binds the cells together.

Specific details

Look at how the second paragraph provides more precise detail. It tells you about the role of cell walls in a plant:

- they provide structural support,
- thin-walled cells are found in leaves, and
- woody stems develop extra-thick walls.

Paragraph three continues with a more detailed description of cell wall formation and a direction to look at a figure. These details build your understanding step-by-step so you have exact knowledge about an aspect of plant structure.

From General to Specific

Technical material is usually organized in this way:

- ◆ Passages start with general information that gives a basic understanding of what something is or what it does; often you find out **why** you need to learn about it.
- ◆ You then read details that describe some aspect of the topic such as differences, similarities or the use of something.
- ◆ Further on you may find specific details that take you through a systematic procedure such how to apply something, repair it or trim it.

Each part of the material develops and builds from the general to the specific. These details continue to add to your knowledge of your trade.

Extracting details from graphics

Graphics refer to any type of diagram or picture used to provide a visual representation of information. Graphics extract specific details that focus on what you need to know. When you use graphics, in conjunction with text, you learn the important information.

It is generally easier to understand and remember steps in a procedure, differences in material or how one part relates to another, when it is illustrated in a diagram.

Example: You might understand terms such as *flathead*, *bowhead*, *thatching*, and *steel-tine* better if you see a diagram showing each type of rake.

Example: You may remember the steps and materials for transplanting certain plants if you see a diagram illustrating each stage.

Passage 4 and Figure 3 that follow show you how details in a passage and in a diagram work together. **Review the four steps and apply them to this exercise.**

Passage 4

Ignition Timing

In all ignition systems, a switching device triggers the spark (see Figure 1). Depending on its location (crankshaft, camshaft or idler), this switching device determines the frequency of spark (360 or 720 degrees). Usually, a means of adjusting ignition timing is provided, and the triggering device can be rotated in relation to the crankshaft, camshaft or idler.

Because combustion is a controlled burning process, it must begin at the proper moment – near the end of the compression stroke, before top dead centre (TDC). Combustion takes time for completion, and ignition must occur so that the maximum cylinder heat and pressure develops immediately after TDC (See Figure 2). In Figure 2A, the spark occurs with the piston travelling up on the compression stroke and then in Figure 2B, combustion has formed the maximum heat and pressure needed to force the piston down in the cylinder for the power stroke.

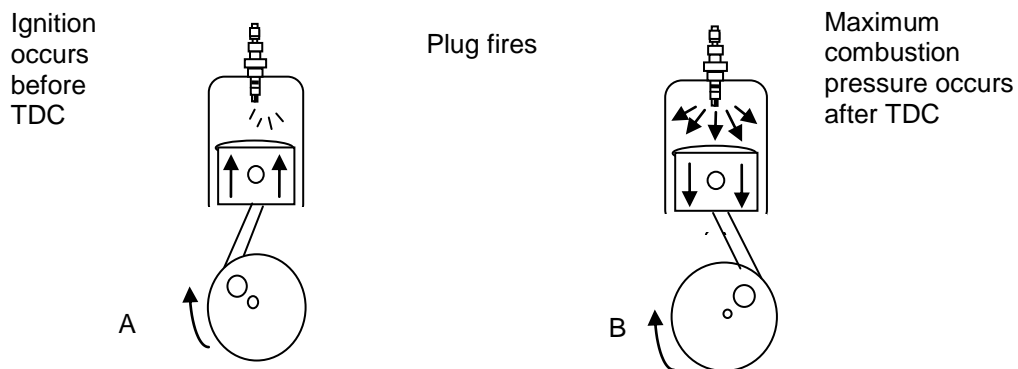


FIGURE 2: Combustion

Combustion must begin before TDG so that maximum heat and pressure develops just after TDC

As the engine speed increases, the piston will be moving faster and thus, ignition timing will occur earlier. There would be less time for the air fuel mixture to burn. (See Figure 3).

Note: Figure 1 and Figure 3 are omitted here.

Extract details in the text *and* in the Figure to get the complete details and understanding. Make certain that when the text directs you to “see” something in the diagram, you look at that detail. If you don’t understand each aspect of the diagram, find other information to help you

When you look at **Figure 1** above, use all the information available to:

- ◆ extract details
- ◆ improve your understanding
- ◆ remember a definition (or principle)

Look at the detail available in **Figure 3 and Passage 4**. You can see:

- the ignition occur,
- the plug fire,
- the combustion, and
- the direction of motion.

The passage and diagram give you a sense of what the process looks like. You gain more information from the text and diagrams than from either on its own.

Text and graphics

The text gives definitions and details about a procedure, process or practice.

The graphic lets you see the details explained in the text. As you study a graphic, extract each detail and compare it to details in the text. Each piece of information in it relates to something in the text. Text or notes below a figure will add important details. Examine all of the information.

By combining information in the text with information in the diagram you get a more detailed understanding of the concept than you would from using either the text or diagram on its own.

PART IV

BUILD ON EXPERIENCE

Experience will teach you to ask questions and to listen for the answers; this way you really understand what's expected of you. As you become familiar with your trade, you will figure out what kind of details you are expected to memorize and the kind you need to search for and extract only when you need them.

Example: You need to memorize hand symbols, the tools of your trade, general safety rules, and technical terms. You can't memorize every detail about procedure, measurement, or material. But you can learn to look up information and find the details you need

Organize your notes

When you take notes in class or on the job, you write down details that are related to the task. Developing the skill of extracting details will make note taking easier. As you organize your notes, you develop a note-taking system that is efficient and that makes the details quick and easy to find and to study. Creating your own lists and tables work well for this purpose.

Whether you use tables or lists to organize your notes and study materials, you can highlight, or mark (with checks or bullets) details that are important or related to each other. Developing a system to organize details will help you as you learn new information; a system will help you find details when it's time to review.

Tables

A simple table with clear headings lets you organize details and then find (extract) them again when needed. You will organize details better if you remind yourself about your purpose.

Example: Examine the table below to see how it organizes details and makes it easy to extract information.

TABLE 1: SOIL CONDUCTIVITY INTERPRETATION ¹

Conductivity mS/cm	Rating	Plant Response
0 - 0.25	Low	Suitable for most plants if recommended fertilizers are used
0.26- 0.45	Medium	Same as above
0.46 - 0.70	High	May reduce emergence and cause slight to severe damage to salt sensitive plants
0.71 - 1.0	Excessive	May prevent emergence and cause slight to severe damage to most plants

¹**Note:** This table provides an interpretation of soil conductivity readings in a 2:1 water : soil paste, the procedure recommended by the OMAFRA accredited soil testing program.

Details are easy to find in a table. The columns are labelled so you know what kind of detail each one has in it. This way you can look down a column to the information you want. And look across that row to the column where the information is.

Did you read the note below Table 1 above? The ⁽¹⁾ which follows the title of the table directs you to a *footnote*. A footnote adds important detail. Make sure you read any footnotes.

Getting it wrong

As you search for information, you may find that you missed key details because you skimmed over them, or you picked the wrong details. If this happens, stop and check:

- Did you preview and read all the material before picking out details?
- Did you highlight the bits you extracted?

If you answered no to either question, you have to go back and, carefully, find what you missed.

If you still are picking the wrong details, check your purpose again. Be sure you know what you should be learning from the material. Be sure you understand after rereading. If not, who can help you?

Each time you approach new material, ask questions to make certain that you are extracting the right details from the start. Always be prepared to ask for help. It is part of the process.

Read the passage below and answer the questions. Use the four steps to guide you. Answers are at the end of this skills sheet.

Passage 5
Cell Division

The two kinds of cell division that occurs in plant growth are *mitosis* and *meiosis*.

Mitosis is a cell replication process. It is the part of cell division that provides each new cell with a nucleus containing a complete set of genes. During mitosis, the nuclear DNA becomes organized into sets of thread-like structures referred to as *chromosomes*. The chromosomes (which bear the genes in a cell nucleus) go through a complicated sequence, that results in matched chromosome parts being divided into two newly developed cells. This is how new cells are formed in meristems during plant growth.

Meiosis is a different cellular process. It occurs when production of a new generation of spores is required. Like mitosis, meiosis is a divisional process occurring within cell nuclei, however, where mitosis duplicates and doubles the number of chromosomes, meiosis reduces each of the cell's chromosome number by exactly one half.

Questions:

1. List the types of cell division named in the first paragraph of the passage.
2. Highlight the definition of *mitosis*.
3. What is the difference between mitosis and meiosis during cell division?
4. What are chromosomes?
5. When does meiosis occur?

Building strong reading skills and strategies will keep you on top of your trade. Over your career, techniques and materials will change, but with a solid reading foundation, you will know how to continue finding and using relevant details. Mastery of extracting details and the associated note-taking and study skills are a useful preparation for your chosen trade.

CONCLUSION

Detail extraction means pulling out the details you need for a specific purpose. If you know your purpose before you start, then you will look for the right details, and you will know what to do with them. Taking notes, creating tables, interpreting diagrams and highlighting key information

are useful strategies for detail extraction. Being able to find relevant details efficiently can help you become a focussed reader, a better student, and a master of the information you need to be successful in your trade.

Summary

1. **Know your purpose.** Think about what you need before and during the reading.
2. **Use a four step method to extract details:**
 - a) Define your purpose.
 - b) Preview the reading by examining the whole piece.
 - c) Read everything carefully to understand the whole piece.
 - d) Locate details that answer your questions. Read with attention to identify and understand the right details.
3. **Understand the nature of details:** they move from general and specific.
4. **Extract details from diagrams and illustrations** to understand procedures, various parts and their relationships. Combine this information with your text reading.
5. **Organize your own data** in a table or chart for study and retrieval purposes.
6. **Ask questions based on your experience;** use everything available to you.
7. **Be prepared to follow up if information is not clear.** Talk to an expert in the trade, a teacher or use a different text or manual. All are excellent resources.

ANSWER PAGE

PART I Passage 1, Calibrating Hand Held or Backpack Sprayers

1. Which of the following is the correct way to apply the water during calibration:
d) all of the above

This answer can be easily found by matching each detail from the answers, to each detail in the second paragraph of the passage.

5. The information you need in order to determine the output for a small tank is covered in this passage.

F This is **false** because of the very last sentence in the passage. It tells you to see a note in order to “convert the application rate of any pesticide to the amount required for a small area.” This means that the complete instructions are found somewhere else other than the passage.

6. What is the difference in calibration procedures between the two different sized sprayers discussed in the passage?

The difference in calibration involves a comparison of both the second and third paragraphs. The first difference occurs when filling the sprayer. For a large sprayer, you fill the tank and then mark the level on a measuring stick. For a smaller sprayer, you measure the amount of water needed to fill the entire tank - no measuring stick is required. The next steps are the same (the fourth sentence in the third paragraph states “*Proceed as above...*”). It then goes on to say “...*but once the tank is empty, measure the number of m² covered.*” This brings us to another difference. For larger tanks, you simply need to *measure the amount of water needed to refill the spray tank* to its original volume (as marked on the measuring stick).

7. You would be able to calibrate a hand held or backpack sprayer large enough to cover 100 square meters after reading this passage.

F The answer to this question is found in the first paragraph. The last sentence states that with portable sprayers *calibration is used to check the spray pattern and sprayer output.* The passage continues to explain how to check sprayer output, but gives you no specifics on checking spray pattern. You would need more information

PART II Passage 2, Electrical Tool Safety

1. Electrically powered tools should not be used on wet sites

T This question asks you to search through a passage to find details. Although this is the first question, the answer is in the third paragraph. Answers may not always be where you expect them.

2. Which of a) or b) correctly lists details for making sure electrical tools are being used properly?

b) check to make sure the cord is not cut or frayed, lift the tool by its handle, and remove the plug by taking hold of the plug, not the cord.

You are not looking for a sequence of events, but for steps to take and exact details. In answer a), one of the steps is not correct in all details. It says, "...do not use a frayed cord in a wet area." A frayed cord should not be used, whether the site is wet or not. Also note that electrical tools should not be used on wet sites, even if the cord is in good condition. Pay attention to *exact* wording.

3. If a power or extension cord was cut or frayed, what could you expect?

This question asks for a cause and effect detail. Using a frayed or cut cord could result in an electric shock.

4. Explain what is meant by *polarized*.

This is a vocabulary detail that is not explained in the passage. However, the passage does say "the plug may be polarized to fit into the socket one way only." You could guess that polarized means to be oriented in one direction. The dictionary definition of polarize is: *to give magnetic or electric polarity to (a substance or body)*. Thinking of the poles of a magnet or battery can also give you a general idea but you will need to follow up to understand what this means in relation to handling electric tools, in other words, the application to your trade.

5. If you needed to change a saw blade in a power saw, you should disconnect the power source before proceeding.

PART IV **Passage 5, Cell Division**

1. List the types of cell division named in the first paragraph of the passage.

In order, the types of division are *mitosis* and *meiosis*.

2. Highlight the definition of *mitosis*.

Highlight the first two sentences in the second paragraph "*Mitosis is a cell replication process. It is the part of cell division that provides each new cell with a nucleus. . . etc.*"

3. What is the difference between mitosis and meiosis during cell division?

Look to the last sentence in the last paragraph. You find that mitosis duplicates the number of chromosomes while meiosis reduces the number of chromosomes by half.

4. What are chromosomes?

The answer is found in paragraph 2. Chromosomes are *thread-like structures...that bear the genes in a cell nucleus.*

4. When does meiosis occur?

The answer can be found in the second sentence on the third paragraph. Meiosis *occurs when production of a new generation of spores is created.*