

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

**COMMUNICATIONS SKILLS  
RESTATEMENT AND PARAPHRASING**

**AN ACADEMIC SKILLS MANUAL  
for  
The Construction Trades: Mechanical Systems**

This trade group includes the following trades:  
Electrician, Network Cabling, Painter & Decorator,  
Plumber, Steamfitter, Sprinkler & Fire Protection, and  
Refrigeration/Air Conditioning

*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.

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

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# COMMUNICATIONS SKILLS

## IDENTIFICATION OF MAIN IDEA

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*An academic skill required for the study of the  
Construction Trades: Mechanical Systems*

### **INTRODUCTION**

**Restatement or paraphrasing**, means saying something in your own words. We do this to be sure that we get the correct meaning from information. This important skill allows you to read and interpret blueprints, building codes, regulations and standards. If you can restate information clearly, you can communicate ideas about projects, materials and procedures to co-workers, other tradespersons and customers. Technical writing activities related to *paraphrasing or restatement* include note taking, writing brief reports, submitting job proposals and estimates, reporting on potential worksite hazards, and completing work-related documentation.

In this skills manual, we will look at some examples of restatement. We will do this to:

- ◆ Understand and explain technical information,
- ◆ Restate information in graphic and written material, and,
- ◆ Recognize signals that indicate restatement.

### **PART I**

#### **UNDERSTANDING TECHNICAL INFORMATION**

Try to explain an idea – *in your own words* and *out loud*. You will discover what you know and what you don't know. When you use your own words, you find out where you can repeat ideas clearly and where you stumble because you can't find the right words.

#### **Let me get this right**

When you paraphrase an idea or written instructions, you are forced to be clear about what you have read or heard. If you have difficulty expressing an idea out loud, you know something is unclear. Stop. Reread the sections that stumped you and then try again. This can be a slow process, but once you can restate the idea, you probably understand it.

We will use information from your trade to show you what we mean. When trying to make sense of trade material, read methodically and with attention. Try the following suggestions:

- read slowly,
- read out loud,
- ask questions,
- look up unfamiliar words or terms, and,
- take notes, *using your own words*.

When you have finished, test your understanding. Could you explain this to someone who knows nothing about the idea? Would they understand it?

**Read Passage 1 and answer the questions. Answers are at the end of the skills manual.**

**Passage 1**  
**Installing Fibre Optic Cable**

Fibre optic cables must be installed according to the manufacturer's specification. However, there are standard guidelines that should be adhered to.

Cable runs without splices are preferable. If, however, a splice is required, it should exhibit an insertion loss no greater than 0.5 dB. The integrity of the cable must be maintained for all splices. Length markers should be imprinted on the cable jacket at reasonable intervals and the maximum pull force on cable installation should not exceed the manufacturer's specifications. Pull force should be monitored during installation by means of a strain gauge or dynamometer-type device. As well, the minimum bend radius of the cable should not exceed the manufacturer's specifications.

Other details to pay attention to are as follows: cable ties or protective devices should be used to prevent chafing; sharp bends and corners should be avoided; additional crush/mechanical protection should be provided in high-risk environments; and the cable jacket must not be deformed, specifically when using cable fasteners or ties. Make sure you observe all governing building and fire codes.

**Answer the following questions: Answers are at the end of the skill manual.**

1. What does "*the integrity of the cable must be maintained for all splices*", mean? Look up any words you don't know the meaning of.
2. In the sentence, "Pull force should be monitored during installation by means of a strain gauge or dynamometer-type device," what word is a restatement of pull force?
  - a) gauge
  - b) strain
  - c) device
3. You can prevent damage to a cable jacket by making use of protective devices as well as avoiding high-risk environments.

**T F**

4. Which of the following is the best restatement of "should not exceed?"
  - a) must not be larger than
  - b) should not over power
  - c) should be less than

***Paraphrasing Step-By-Step***

As you read and figure out what each step of **Passage 1** means, mentally check it off; or use a pencil to do so. If you don't understand any part of the directions or don't see how it fits with the others, reread, and try again. As you recognize how each piece fits into the job, you begin to develop a sense of the whole picture.

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### Paragraph one

In paragraph one, you may have had a question about the second sentence.

- What does “*adhered to*” mean? If you aren’t sure or have forgotten, look it up.
- The dictionary gives *faithfully observing a rule* as the definition.

This definition gives you the meaning of the word, but more importantly, when you put this meaning back in the sentence, you can understand more clearly what is being said about the importance of standard guidelines when installing fibre optic cable.

**Example:** You can restate a confusing sentence:

*However, there are standard guidelines that should be adhered to.*

It means:

*But, there are standard guidelines we must follow.*

### Paragraph two

Experiment with different words to restate what you are reading. You could break paragraph two into points with slightly different wording. You might come up with something like this:

If you have cable runs with splices, it is important to check:

- the insertion loss, and
- the cable’s integrity.

Make sure installation goes according to the manufacturer’s specifications:

- by using a strain gauge or dynamiter to monitor pull force, and
- by making sure the minimum bend radius is correct.

**Note:** *You will learn the definitions of trade term, as you move through your training. Knowing those terms will help you restate ideas clearly.*

### Paragraph three

Paraphrase paragraph three one step at a time. Make sure you understand, and can *explain in your own words*, exactly what this information means. Think of how would you explain paragraph three to a new employee? You would have to know and describe:

- Where do I put ties?
- What kinds of protective devices do I use?
- What *exactly* happens if chafing occurs?
- What kind of mechanical protection is available?
- How do I install it?
- What is a high-risk environment?
- What would happen if I did deform the jacket cable?
- What are the governing building and fire codes?
- How would I explain paragraph three to a new employee?

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### **I still don't get it**

When you read something and say, "I don't get it", you need to solve a problem. What *exactly* don't you get? It is critical to move beyond feeling that you do not understand the material. Usually there's something that you do understand, so, which parts do you get?

Separate what you know from what you don't know, then find explanations for the confusing parts. It's important to *ask yourself questions and find answers* to all aspects of the information. When you change written ideas into your own words, it will help you to develop a mental picture of the ideas and an understanding of the meaning.

When you can restate what you've read – in your own words – and can write it out, you know that you have understood the material. Using your own words will help you remember information. If you can explain it clearly to someone else, you have got it.

### **Examples of Restatement**

You will find two samples of restatement below, in **Passage 2** and **Passage 3**. The two passages were written by different people to explain the concept of magnetism. Read them to compare the details.

First, read each passage following these directions:

- ◆ read slowly,
- ◆ ask yourself questions,
- ◆ look up unfamiliar words or terms, and,
- ◆ take notes, or explain to yourself what the passage says *using your own words*.

Second, **compare** the information in the two passages. Look for similarities and differences.

#### **Passage 2**

Every material is composed of minute particles called *molecules*. In any magnetic material, each molecule is a magnet with a north and south pole.

#### **Passage 3**

The molecular theory of magnetism states basically that all substances are made up of an infinite number of molecular magnets.

When you read **Passage 3** to compare it with **Passage 2**, did you see that each covers the theory of magnetism? Each uses different expression, different types of sentences, and different vocabulary. But, *the information is essentially the same*. Below you can see some examples from the passages where the same ideas are expressed differently:

<b>Passage 2</b>		<b>Passage 3</b>
every material	=	all substances
is composed of	=	are made up of
each molecule is a magnet with a north and south pole	=	molecular magnets

You may find that one passage or one group of words is clearer or easier than the other passage. The important point is that they each express the same theory.

### Didn't I just read this?

If information sometimes seems familiar to you, it may be because you've read it before. But, what you've read before didn't use the exact wording of what you're reading now. Continue to read and compare **Passages 2 and 3** for examples of restatement.

#### Passage 2

In non-magnetized material, molecules lie in a haphazard manner. When a material has been magnetized, the molecules lie in an orderly fashion.

#### Passage 3

Molecular magnets can be arranged in two ways: *organized* or *disorganized*. If the molecular magnets are *disorganized*, the material is considered to be unmagnetized. When the molecular magnets are *organized*, the material is considered to be magnetized.

How do they compare? Look at examples of vocabulary from these passages which restate the same information:

Passage 2		Passage 3
nonmagnetized	=	unmagnetized
haphazard manner	=	disorganized
orderly fashion	=	organized

These two passages are restatements of each other. Each passage gives you accurate information but in a different way. In your reading, you might prefer one textbook or manual to another because the way it expresses ideas is easier for you to understand.

## **PART II** **GRAPHICS AND TEXT**

In Part II, we will look at how *graphics* and *text* are used together as examples of restatement.

### **Graphics**

When we use the term **graphics**, we mean the types of illustrations that you find in manuals and textbooks: diagrams, graphs, photographs and charts. They present a restatement in a visual way.

### **Using graphics**

Graphics relay information you need for your trade. To use graphics effectively, you need to convert the information into actions – either the mental action of understanding information or the physical action of following directions. To do either, restate the information so that you understand it. If you find terms or symbols that are not clear, stop and find out what they mean.

### Text

When we use the term *text*, we mean everything that is in print form. This includes writing that goes with a diagram, graph, photograph or chart. The text uses words to describe or explain something while a graphic uses a picture.

### What am I looking at?

If you know the purpose of a diagram, it may change the way you look at it. You may study each part of the diagram and mentally convert the items pictured in the diagram to descriptions in the text. Going back and forth between the diagram and the text increases your ability to picture the whole process or concept.

You should move between the text and graphic:

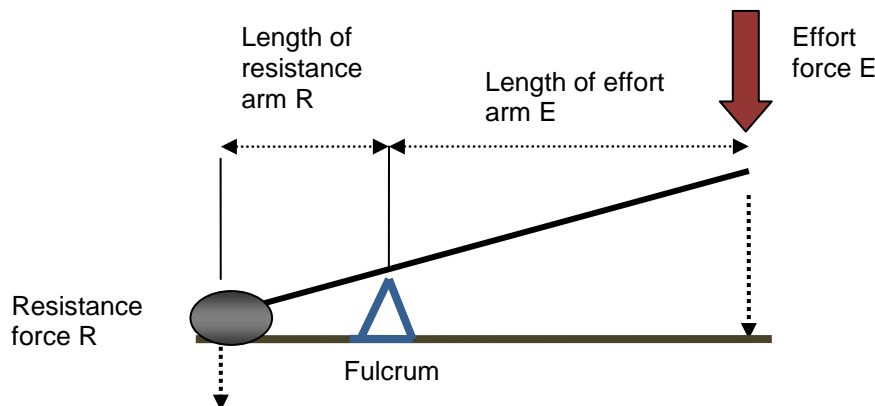
- to understand each on its own,
- to understand them together,
- to remember the information, and/or
- to get answers for things you are not sure about.

We will use the text and figure below (**Figure 1**) to look at restatement.

### Passage 4 Levers

A simple machine magnifies the effects of an applied force. Using one makes work easier and more efficient. When the machine does this, we say that a *mechanical advantage* (MA) has been gained. And, when the work is done with little loss of energy, we say that the machine's *efficiency* is high.

Levers are the simplest of the basic machines. Figure 1 shows the use of a lever to move a large object.



**FIGURE 1: Using a Lever**

The point at which the lever (bar or rod) pivots is called the *fulcrum* of the lever. The length of the effort arm and the resistance arm of the lever are measured from the *fulcrum* (pivot point).

The effort arm is measured from the point where the *effort* (applied force) is applied to the fulcrum; the resistance arm is measured from the *resistance* (or load) to the fulcrum.

The calculations for all levers are derived from mathematical ratios as follows:

$$M_A = R \div E$$

$$EA \div RA = R \div E$$

$$E \times EA = R \times RA$$

Where:

$M_A$  = mechanical advantage

EA = length of the effort arm

RA = length of the resistance arm

R = resistance force

E = effort force

**The text** provides definitions of terms: *simple machines* and *levers*. It then focuses on what a lever is, the name of its parts and the formula for making calculations of a lever's mechanical advantage. The text also tells us to look at the diagram.

**The diagram** lets us see what has been described in the text. It shows and labels the parts of the lever. Because we see the arrow where the effort force is applied, we understand what applied force means. We understand resistance force when we see the rock. The diagram restates what is in the text so that we understand how a lever works.

The text and diagram give you important information in different formats. **Together**, they provide a more complete picture than each would alone.

### What am I looking at?

If you know the purpose of a diagram, it may change the way you look at it. You may glance over a diagram to get a general idea of what it illustrates.

**Example:** Figure 1 shows us what each part of a lever is, and how it works.

You can study each part of the diagram and mentally convert the items pictured in the diagram to the stages described in the text. Going back and forth between the diagram and the text increases your ability to picture the whole process or concept. You move between the text and graphic:

- to understand each on its own,
- to understand them together,
- to remember the information, and/or
- to get answers to questions that you may have.

### Examine everything

1. The text will direct you to a graphic: the number of the graphic may be in parentheses like this (*Figure 2-10*). When the text directs you to look at the graphic, it may also tell you what it will show you.

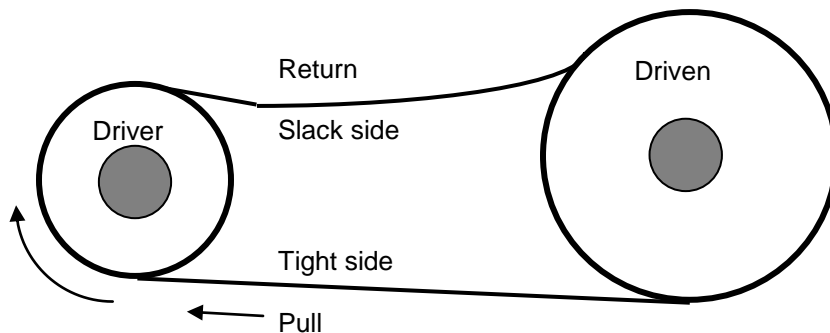
**Example:** *Figure 2 shows the part before and after damage.*

2. When you come to a diagram, stop. Read the title or heading and the description at the bottom. *The title and description tell you what the diagram contains.* Some diagrams contain directions or details not found in the text.
3. Next, see how it restates the text. Then look for information that is not in the text.

**Passage 5**, below, is about *effective tension in belt drives*. Read the text and study the diagram to understand how they work together to explain the concept. Think of each as a restatement of the other. Notice how they complement each other. Think of how each could help you explain or describe something to someone else – your boss or a client.

**Passage 5**  
**Effective tension**

Effective tension is the tension needed on the belt to transmit power without slipping. When the drive is running, the pull on the belt increases the tension and stretch on the tight side as it overcomes the resistance of the load. See Figure 2. The slack side has no tension increase because it simply returns the belt to the driven pulley.



**FIGURE 2: Belt drive**  
Drive assembly in operation showing tight and slack sides of the belt.

**What does it say?**

**The text** explains the concept in a clear, detailed way and prepares you to apply it on the job.

**The graphic** relays the same information in a picture form. It clearly labels the slack and tight sides of the pulley belt. The figure shows you the direction of movement (with the arrows) so you understand *which side is doing the pulling*. The figure also shows you the pull transmitted **from** the driver **to** the driven. The diagram explains the words.

You can see more by using the graphic with the text. This can help you put the concepts of *elastic deformation* and *work hardening* into your own words. You can also draw a simple diagram. You can explain to a customer, “*This is what effective tension is, and I’ll show you how it works.*”

**Graphics restate the text**

We’ve looked at the text and the diagram to see what each adds to the whole picture, and how each restates the other. Graphics and text combine to complete the information required.

**Graphics** can peel back the layers so you can see it all. They are related directly to the writing.

- They are labelled clearly and usually placed beside the text.
  - The text and **Figures 1 and 2** are typical examples of this.
- It is important that you understand what you read and see as you proceed through the trade material.
  - Be sure to match the text with the graphic and read the information that goes with it.

The text tells you when to go to the diagram and what to look for. Find the information and understand what it is saying. *The diagram and text work with each other to make information clearer or to explain a procedure or a principle.*

Remember to test your understanding by restating the information to someone who hasn't read the text or seen the graphics. You may need to try an explanation more than once to get the right words in the right order. If you understand what you have read and what you have seen, though, you'll get it right.

## Tables

You will use tables for a variety of purposes.

### Example:

**TABLE 1: DECIMAL AND METRIC EQUIVALENTS OF FRACTIONS**

Fractions	Decimal (in.)	Metric (mm)
1/64	.015625	.397
1/32	.03125	.794
3/64	.046875	1.191
1/16	.0625	1.588
etc.		

Tables like this one will show you such things as measurements, maximum spans, and depths of holes. Like other examples of restatement, tables convert information so that you get the right understanding and results.

## **PART III** **SIGNALS OF RESTATEMENT**

In Part III, we will show you some examples of words and symbols that act as signals to restatement or paraphrasing. Successful readers pay attention to these signals.

*Note: The words and symbols in this section are not always or only used for this purpose. Make sure you know what they are signalling.*

### **Signals indicating restatements**

Technical and trade materials contain new vocabulary, new concepts and complicated ideas. Explanations that restate information are built right into the text, often as examples and definitions.

There are many written clues that signal that a similar word or a definition is going to follow. Here are a few to watch for.

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## Some word and phrase signals

1. **That is**, is a word combination that can be used in several ways to let you know that something will be rephrased. These include:

- a) a colon followed by *that is*, (... : that is, ...)

This molecular movement is an energy form called thermal energy: that is, *internal* energy.

A potential problem in twisted-pair systems is crosstalk: that is, the carrying over of a signal in one wire to another wire near it.

- b) a pair of commas around *that is* (... , that is, ...).

Start with one or two “soft” turns, that is, with the fingers of your free hand on the screw. Engage one or two threads making sure the screw...

2. **In other words** is a signal that what you have just read will be explained in another way. Compare the two ways of saying the same thing; make sure you understand both.

*Permeability* is the number of times that the flux density is increased by adding the material. In other words, it is a measure of the willingness of the material to become magnetized.

A high tip pressure causes a small spot weld and reduced mechanical bond of the weld. In other words, the high-pressure tip forces the tip into the softened area thinning and weakening the weld.

3. **Or ...** sometimes tells you that there are two ways of saying the same thing. The words on each side of the “or” mean the same thing:

The magnetic assembly pulls the armature to a closed position so that it is said to be “picked up” or “sealed in.”

Density is the compactness, or relative mass, of matter in a given volume.

4. **Visualization:** In some cases, a writer asks you to *visualize* or *imagine* something. This kind of restatement asks you to convert words into a picture to understand them.

The section shows a part of the structure as if cut by a vertical plane. Imagine that you are looking at the part after it has been sawed in half, and you are looking at the cut edge.

## Some punctuation signals

**Dashes** – A dash may be used to give you another name or a short explanation of something. This first example uses several devices as well as the dash: *italics* and “such as.”

Pliers are a common tool for almost every trade – gas pliers, cutting pliers, and nut pliers are a few. *Gas pliers* are good for general use, but should not be used where they might slip, such as when working on nuts or bolts.

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The *Bourbon Tube* – a flattened metal tube sealed at one end, curved, and soldered to the gauge fitting at the other end – the operating element used in gauges.

**Parentheses ( )** Words in parentheses restate or define terms and abbreviations specifically related to your trade.

The loaded spring tries to push the normally closed contacts up and open. However, the pawl (locking mechanism) is caught in the ratchet wheel and will not let the spring up.

The open-end wrench fits both square head (four-cornered) or hex head (six-cornered) nuts.

If the specifications are in metric megahertz (MHZ), the multiplying conversion factor is 1 for the previously used unit of megacycles per second.

**Colon (:)** The information that follows the colon (:) often explains a word or term.

Some liquids are said to be *volatile*: they are easily vaporized, readily changing from liquid to gas.

These examples provide you with a sampling of the kinds of signals and supports available to you to help you understand your trade material. There are many more. Restatement gives you a second chance to understand information, so watch for the clues.

## **CONCLUSION**

Restatement or paraphrasing is a method used to understand, explain and remember technical information. This is an essential technical reading and writing skill to develop and refine.

It will make information clear to you – and you can make it clear to others. When you identify information presented in a new or different form, you can move between written or graphic information understanding each, on its own, and together.

### **Summary**

1. **Use your own words to restate or paraphrase** technical information. *Talk* yourself through the material.
2. **Find out where** you get stuck. Go back over the difficult steps to master them.
3. **Paraphrase step-by-step** to master material. *Walk* your way through complex information by dividing the steps into smaller bits.
4. **Examine and understand each piece** like pieces in a jigsaw puzzle. As you make sense of each piece, you arrive at the big picture.
5. **Use graphics as restatement** of the text and vice versa. Read the text for understand what is in the graphic: read the graphic for interpretations of the text.

6. **Convert the words and ideas** into the mental action of understanding, or the physical action of performing a task.
7. **Watch for the signals:** use these built-in guides which restate, explain or define text or graphic material.

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## Answer Page

### PART I Passage 1, Installing Fibre Optic Cables

1. What does “*The integrity of the cable must be maintained for all splices.*” mean?

The words *integrity* and *maintained* might be examples of terms you have to look up. In this case, *integrity* means *unharmed by errors or uncorrupted condition* and *maintained* means *to keep up or preserve*. When we look at the entire sentence, we can reword it. Therefore, *the integrity of the cable must be maintained for all splices* means that **if there are any splices, the unharmed condition of the cable must be preserved**. More specifically, we can conclude that this sentence means that if any splices are performed, the cable should perform as it did prior to the splicing.

2. In the sentence, “Pull force should be monitored during installation by means of a strain gauge or dynamometer-type device,” what word is a restatement of pull force?

b) strain

Pull force may cause straining; therefore, the word strain is a restatement of pull.

3. You can prevent damage to a cable jacket by making use of protective devices as well as avoiding high risk environments.

**F** Although you may be able to prevent damage by avoiding high risk environments, the passage says you must use additional protection **under** these circumstances. You may not be able to avoid working in areas that may be considered high risk.

4. Which of the following is the best restatement of “should not exceed”?

a) must not be larger than

Initially, we can rule out **c**) as a potential answer. The word exceed implies more than, not less. In order to rule out **b**) though, we have to do more work. Find out where in the passage this phrase is located. It is in the last sentence of the second paragraph. Now, read it in context: *As well, the minimum bend radius of the cable should not exceed the manufacturer’s specifications.* By reading the entire sentence, we can see that a bend radius has to do with size, not power. Therefore, the bend radius *should not exceed the manufacturer’s specification*.