EVALUATING
ACADEMIC READINESS
FOR APPRENTICESHIP TRAINING
Revised for
ACCESS TO APPRENTICESHIP

COMMUNICATIONS SKILLS
UNDERSTANDING SEQUENCE

AN ACADEMIC SKILLS MANUAL
for
The Motive Power Trades

This trade group includes the following trades:
Automotive Service Technician, Heavy Duty Equipment Mechanic,
Motive Power Parts Person, Transmission Mechanic,
Truck & Coach Technician, and Truck & Trailer Service Technician

Workplace Support Services Branch
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In preparing these Academic Skill 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
UNDERSTANDING SEQUENCE

An academic skill required for the study of the Motive Power Trades

INTRODUCTION

In the motive power trades, it's necessary to follow directions in the right order to successfully complete a job. The skills that enable you to read technical material, and then follow the steps of a procedure, are essential. Most trade material is written in a step-by-step order, or sequence, so that you acquire information in a logical manner. This is especially important when you are learning the steps in a procedure.

Sequence *refers to an ordered arrangement in which one step is followed by another.* A sequence can be the step-by-step description of how to complete a complicated repair; or it can be a description of the parts and use of a power tool. Each piece of information (or step) is part of the whole thing. The steps work together but you also need to understand and follow each step on its own.

Sequencing skills are essential to follow the correct procedure from service manuals to assemble and disassemble engine components, to perform system inspections, to diagnose and explain required repairs to customers, and to read installation and programming directions for electronic equipment.

In this skill sheet, we will look at trade material to:

- Examine the order of information,
- Identify and follow steps in a sequence, and,
- Identify and follow sequence in diagrams.

PART I
EXAMINING THE ORDER

When we are learning something, we usually ask many questions.

> **Example:** Someone in your trade is talking about *aspect ratio*. If you've never heard the term, you probably ask, "What's that? What is it used for? How do I figure it out? Can you show me?"

Whatever the reasons for our questions, they tend to follow a logical sequence or order. We usually start with basic questions and then ask questions that demand more detailed or difficult

answers. The questions should cover most of what we need to know: What is it? How does it work? How do I use it? How do I do this?

Technical material
Technical reading material is set up in a logical order. In many cases, the reason why you need the information comes first. In other words, technical writing often starts by answering the question: Why do I need this? The answer gives you the purpose, function, or use of the information as it relates to your trade. It is characteristically the first information you see.

Look for information to appear in this or a similar sequence:

- Why do I need this? (purpose)
- What is it? (definition and description)
- How does it work? (underlying principles)
- What is the correct procedure?

The correct procedure or information about "how to do something" often comes last. You get description, explanation and underlying principles so the procedure will make sense as you follow it.

Read it through first
When you read information that contains instructions about how to do a job, read it through to the end *before* starting the job. When you are aware of the order of each step, you can understand how each fits into the whole procedure. Reading through all of the instructions first should become a part of assessing and preparing for any job.

Some passages don't set up the steps so that you can clearly see the sequence. In this case, look for clues. Notice if there are letters and indicators such as commas to separate the points. Look for words such as ***first, then, next.***

Passage 1, *Bleeding the Hydraulic System*, illustrates how this works. Notice the way sequence is used and how the information helps you answer the three questions listed above (why, what and how). In a sense, there are two different kinds of sequence illustrated in this passage:

- the sequence in which the information is presented and
- the sequence of steps used in a specific procedure.

Passage 1

Bleeding the Hydraulic System
When a hydraulic brake system is serviced you must bleed all entrapped air from the fluid system. If this is not done, trapped air will create a spongy pedal, resulting in poor braking.

Two workers are needed to manually bleed a system. One person is required to operate the brake pedal and the other to physically open and close the individual bleeder screws. The following are steps to bleed a hydraulic brake wheel cylinder manually.

First, disconnect the forward brake pipe connection at the master cylinder or open the bleeder screw. Allow the brake fluid to flow from the connector port into a container. Now, connect, but don't tighten, the brake pipe. If using a bleeder screw and hose (figure 2-4), or the loose pipe method (figure 2-5), slowly depress the brake pedal. This will allow the air to bleed from the loose fitting, or the aerated fluid to flow from the hose into the container. Next, tighten the brake pipe or close the bleeder screw *before* letting the pedal come up. After fifteen seconds, repeat the same procedure. Do this until all signs of air have been vented.

Why do I need this information?
Paragraph one explains the purpose of bleeding the system – *trapped air will create a spongy pedal resulting in poor braking.* Reread the first paragraph. You learn, in sequence, the following about hydraulic brake systems:

- servicing them requires that all entrapped air must be bled from the system,
- trapped air will result in spongy pedal, and
- this will result in poor or no braking.

This information is placed in the introduction to let you know why you should pay attention to the details that follow. It answers the question "Why should I learn this?" and it gives you a purpose for your reading.

What is it?
Paragraph two is short. It sets up the answer to "What is it?" and gets you prepared to follow "how to" directions. Reread it to see how this works. You find out:

- that two workers are required to manually bleed a system;
- what their jobs are: **to operate the brake pedal** and **to physically open and close the bleeder screws**;
- what you will be receiving instructions for - **a hydraulic brake wheel cylinder**; and
- that these instructions will be given in the next paragraph.

You now know where this passage is going. It is leading in a logical way to answer, "How do I do it?" This is the next step in understanding

How do I do it?
Once you know what something is, you get to the "hands on" stage. Look at paragraph three to see how it guides you in precise steps. It tells you to:

1. Disconnect forward brake pipe connection or open bleeder screw.
2. Allow brake fluid to flow form port to a container.
3. Connect, but not tighten, the brake pipe.
4. See the diagrams (omitted in this unit)) as a reference for two different methods: bleeder screw or loose pipe.
5. Depress brake pedal and allow air to bleed or aerated fluid to flow.
6. Tighten brake pipe or close screw before allowing pedal to come up.
7. Wait 15 minutes.
8. Repeat procedure until all air is vented.

Sequence of learning
As you read **Passage 1**, you should start to see the general order. It is organized so the learning moves from general information to more specific details. You also see how the practical steps are laid out in a sequence so that the first step comes before the second and so on. As you become aware of the order, you see how all the steps fit together. This leads to an understanding of the whole process.

As you read, think of other questions that may arise. Look for the answers as you go. Observe how information is organized to answer your questions. If it is organized in sequence, you will find the material easier to understand and act on. Use this system to your advantage. Give yourself enough time to carefully read technical material, noticing how it moves from step to step.

The first information you learn in your trade will become a base that you can later build on. *Because learning expands on what you have previously learned, you need to make sure you understand what you have read before you go on to new material.* You also need to recognize when information is related to something you learned earlier. The best way to understand how individual parts are related to the whole is to first learn the material one step at a time and then think about how all the parts fit together in the correct order.

PART II
IDENTIFYING AND FOLLOWING STEPS IN A SEQUENCE

In this section, we will look at identifying and following the steps in a process or procedure. An awareness of the correct sequence of steps used in completing a project is necessary to achieve a satisfactory result.

Getting it right
At first, you may not see the reason for the sequence in a set of directions. Always follow the directions exactly as stated. The steps serve a purpose even if you don't know what it is. When you become expert with a process, you can decide if it is appropriate to make adjustments. Even after you become skilled, new products will come on the market with new procedures. You'll need to keep reading and learning to keep current.

> **Example:** Imagine using any order that strikes your fancy to complete a job. What results would you expect if a repairperson painted a fender and then primed it or you drilled six holes, and then read "*no more than four are recommended"*?

Read **Passage 2** for a straightforward sample of sequence. You can clearly identify and follow the sequence, acting on each step.

Passage 2
Battery Charger

A battery charger converts 120 volts AC into 13 to 15 volts DC for recharging drained batteries.

Connect as below:

Connect red to positive and black to negative. The red lead on the charger goes to the positive terminal of the battery. The black lead goes to ground or the negative battery terminal.

After connecting the charger, adjust its settings as needed (12-volt battery, fast or slow charge, etc.). If a battery is low, it is best to slow charge the battery for several hours. A fast charge for a few minutes will not restore the battery charge properly.

The first paragraph answers *what is it,* and *what it is used for* kinds of questions. Though the steps are not numbered, paragraphs two and three give you the "how to" steps:

- connect red to . . . black to . . .
- red lead on charger goes to . . .
- black lead goes to . . .
- after connecting charger, adjust . . .
- if battery is low, it is best to . . .

By reading carefully and following these steps, you should be able to change a battery correctly. The last sentence adds to your knowledge by explaining why a fast charge does not work as well as a slow charge

Did I miss something?
Passage 3 below is an example of what we mean by building on what has already been taught, or your foundation. An earlier chapter or section has provided answers to these questions:

- What is this?
- Why do I do this?

The passage assumes you have read the previous material. For this reason, you may not understand all the information perfectly. You will be able to recognize the sequence of steps used for installing bearings but some details about the technique and tools may not be clear.

Read the passage and answer the questions that follow. Each question asks about sequence (order). Start at the beginning and read methodically to the end. **Answers to questions are at the end of this skills manual.**

Passage 3

Installing Anti-Friction Bearings
Before placing a bearing onto a shaft, both the bearing and the shaft must be lightly oiled to reduce friction. Once that is complete, place the bearing on the shaft – making sure that it is square to the shaft.

Next, place a clean pipe or mounting tube, slightly larger than the shaft diameter, on the inner ring of the bearing (see Table 2.1). By hand, apply pressure to start the bearing moving into position. Make sure that the bearing is still squarely on the shaft and then press it into the final position.

As the bearing moves down the shaft, rotate the outer ring by hand. This will check for drag and loss of clearance. If the bearing clearance is lost partway down the shaft, do not press the bearing the rest of the way.

Questions:

1. Which is the correct sequence of activities for pressing a bearing onto a shaft?

   a) oil bearing and shaft, place clean pipe on bearing, place bearing on shaft
   b) place clean pipe on bearing, check that bearing is on squarely, press into final position
   c) place bearing squarely on shaft, oil bearing, place clean pipe on bearing

2. When would you apply pressure by hand?
   a) after the bearing is in the final position
   b) after you have lightly oiled the bearing and shaft
   c) after the mounting tube has been placed on the shaft

3. After you've pressed the bearing into its final position, check to make sure it is squarely on the shaft.

   T F

4. A coating of oil is applied to the bearing before it is placed on the shaft.

   T F

Look back to question 1 above. You are asked to choose the correct sequence of activities. Notice that looking for the correct sequence refers to what comes first, second, third or fourth *in that group* of activities. It doesn't necessarily mean first, second, or third step in the whole project. You know that installing a bearing is a task that does not come first in the sequence of repairing and replacing a shaft.

You may be asked to follow a procedure which comes *in the middle* or *towards the end* of a task. You still follow activities in sequence, but you may pick up the job halfway through the project

You may also need to identify slightly different kinds of sequencing.

Numbered Steps
It is usually easier to follow a sequence when the steps are numbered. Numbering steps also helps you identify areas that seemed clear when you read the sequence, but aren't so clear when you come to do the job. You can figure out where you are getting lost.

If the sequence isn't numbered, as in **Passage 2 and 3**, you can break the information into steps to see the order and note any steps that you don't understand. Or, when a procedure is long and only the general steps are numbered, you may want to break the numbered instructions into smaller units to separate each step.

Example: You could number the steps in Passage 3 as follows:
1. oil bearing and shaft,
2. place bearing squarely on shaft,
3. place correct size mounting tube or pipe on bearing,
4. apply pressure by hand,
5. etc...

The third paragraph in Passage 3 tells you to check for drag and loss of clearance; however, there is no instruction on the steps or technique for this. There is no "*how to"* guide on this. I*f you did not know how to perform this step, you would have to search for and find "how to" information.*

You may not need to press a bearing into a shaft accurately at this stage. You do need to know how to accurately read and follow a sequence of information and identify when you need more, detailed instruction. With this knowledge, you are on the way to learning how to perform a job accurately and how to identify when you need to ask for help.

Questions and relationships
Information is organized in a specific order for a reason. As you read, think about questions related to sequence. Stating the questions and then looking for answers can be a useful way to test your understanding when you are studying for homework or doing a job. The questions below relate to **Passages 1, 2 and 3**. They will also apply when you study other technical material.

1. Which activity or step is first, second, third?
2. Which step starts the process; which concludes the process?
3. What happens **before** or **after** a certain step?
4. What happens if I skip a step?
5. Where do I turn if I can't ...?

Look at and understand the order in which things happen in a project, or task. If you can see the relationship of one step to another you will understand the whole picture and you can apply the information appropriately.

Remember, read it through first
When you read instructions completely *before* starting a job, you will be prepared in several ways. You have a clear idea of the steps involved. You can plan for which ones will be easy and which will need more help. You can plan for the amount of time the job will take.

> **Example:** Passage 3 tells you to make sure the bearing is square to start and to recheck that it is square several more times during the procedure. This task cannot be hurried; you will have to give yourself enough time to do the job properly.

Each of passages 1, 2, and 3 gives you a sequence of activities. Each passage prepares you to work in sequence when you are on the job site.

1. It first prepares you for the task.
2. Next it tells you what you will do:
    - how to prepare,
    - the sequence of tasks, and
    - how to watch for and fix problems.

By reading the entire set of instructions before you start, you can assess the job and prepare for each step.

Before we go - a word about numbering
You will see many directions with numbered steps. Usually numbering indicates the steps in a sequence and their order. Number one (1.) indicates the first step; number two (2.) indicates the second step and so on. In some cases, numbering does not indicate a sequence.

Example:
1. Maintain fire extinguishers to safety standards and place where they will be used.
2. Follow Construction Safety Association of Ontario guidelines.
3. Follow safety guides when working with flammable materials.

As you can see, these numbers do not indicate order. Here they act as a checklist. The tasks on the checklist must all be done, but they are not sequential.

Make it easy for yourself
You know how to number steps in a procedure to make the correct sequence clear. You can also divide information into individual points. This will help you see where the pieces of information belong.

Example: You are reading about how to do a procedure where the information is presented in a long paragraph, you might break it into the points:

To use a vernier caliper to take a measurement:
- first, slide the assembly until the jaws almost contact the part being measured;
- next, lock the clamping screw
- then, adjust the fine adjusting nut;
- after, lock the slide on the beam,
- next, remove the caliper, and
- finally, make your reading.

Example:
To align the telescoping ends across the true diameter of the cylinder:
1. Hold the handle gently with the thumb and forefinger.
2. Slide the gauge up and down the cylinder walls.
3. etc...

You can also mentally separate information into a sequence or point form. You will find this useful when you are figuring out how to organize the steps of a project. By taking the time to put things in order before you start working, you will have a clear picture of where you are going and how to get there.

A different order
Earlier we suggested that you start reading new material at the beginning and move forward in a logical sequence to the end. However, once you've carefully read through once from start to finish, you may want to look at the information in a different order. When you understand how steps are connected, you can move backwards or forwards in a diagram or passage without getting confused. This is particularly true when you are looking for exact details or when you need to find the causes of or solutions to a problem.

Example: You want to know why the bearing was not squarely on the shaft. To answer this, you need to find out what caused the problem. You may have to start in the middle of the passage and work backwards to find the cause. You may search through another manual to find answers. You are still aware of sequence of steps, but you are jumping around to find precise information about a missed or poorly performed step.

And, so it goes

Example: To diagnose valve trouble, you need to determine the problem. If the complaint is a sticking valve, check for deposits on the valve stem. If this isn't the case, see if the valve guide is worn. If so, replace it, but if not, move on and check the valve stem for warp. If the valve itself seems fine, the problem could be insufficient oil, requiring service of the lubrication system.

And, so it goes. In order to do the job properly, you need to perform each step in the correct order. You also may have to stop and start again – after you check the valve you may have to replace it before you move on in the sequence.

Example: The following short passage describes three steps you should take to determine welding speed:

In most situations, welding speed is determined by the base metal panel thickness and/or the voltage of the welding machine. Consult Table 1-1 for welding speed.

And so it goes. Before you decide on the welding speed, you have to measure the panel thickness, find the voltage of the welding machine. Then, you can check the table for the appropriate speed. You must do this all in order to prepare to do the task you have been given.

What does this have to do with sequence? When you are doing a job, each step depends on the step before it. If the first (second, third or any other) step is left out, performed too quickly or inaccurately, you will not get the desired results. The finished product depends on the successful outcome of each step.

Application: Taking over in the middle

Consider a situation where you take over from your instructor or co-worker to complete a job.

Example: You are asked to complete a cylinder service that someone else has started. You have to find out what was already done and what you are expected to do to finish it.

You go to the instructions. Look them over carefully to check that you understand what you have to do. Examine what has already been done so you know where in the sequence you are starting, and pick it up from there. When you understand the sequence of steps that must be carried out, you can begin at any point in a project. You know where you must start, where you are going, and what you need to do.

Looking over the whole process and reading through the steps gives you the ability to accomplish your task.

When you have to step into the middle of project, ask yourself the following questions:

What am I expected to do?
How do I do this?
What is already done?
Where do I start?

Evaluating to make the right choice
To follow a sequence, you must read and follow the directions as they are written. But sometimes, you also need to evaluate the steps and make decisions as you proceed. Look for words that suggest a choice: **if**, **when**, **or.**

Example: As you are installing a bearing you have to check and recheck that the bearing is squarely on the shaft. If you find it is not you will have to evaluate the situation.

You may have to interrupt the sequence to follow through on another series of important details:

1. Do you need to start over?
2. Can you just go back a step or two and readjust?

You may be diverted from the original situation to find a solution to a problem or to look for more information, When this task is complete, you will need to pick up where you left off in the sequence and continue installing the bearing.

The results of the finished product depend on the results of each step.

Read **Passage 4** about adjusting valve clearance. **The questions that follow ask you to find the correct answers in a sequence: Answers are at the end of this skills manual.**

Passage 4

Adjusting Valve Clearance
Prior to checking the valve clearance, the piston must be positioned according to manufacturer's specifications. Do this by rotating the crankshaft until the piston reaches the specified position. When the piston position is achieved, the proper feeler gauge leaf must be placed between the rocker arm and the valve stem. See Figure 2. Check the engine specifications for the required clearance because clearances must be different for each valve.

Next, depending on what is required, turn the locking nut clockwise to reduce clearance or counterclockwise to increase the clearance. The feeler gauge will drag slightly when pulled out. Hold the adjusting nut with a wrench and tighten the locking screw slightly. Recheck clearance with the feeler gauge. If necessary, readjust until you obtain the correct clearance and then tighten the locking screw.

Note: Figure 2 is omitted here.

Questions:

1. The following is a list of steps taken from the passage.

    1. Rotate the crankshaft.
    2. Make sure the piston reaches specified clearance.
    3. Place the feeler gauge leaf between rocker arm and stem.
    4. Slightly tighten the locking screw.
    5. Turn the locking nut.

    Which of the above items would you switch in order to put the list in the correct sequence?

    a) switch #1 and #2
    b) switch #4 and #5

2. The engine specifications must be referred to before you can position the piston.

    T F

3. At what point in this sequence will you need to make an evaluation and decide whether to continue or go back to redo something?

Sequence in Trade Mathematics

Bedmas

You have to follow the required steps in the proper order to complete any project you are assigned. When you are doing math problems, you also have to work in the correct order. If you accurately complete each step in a problem but if the order is wrong, the answer will be wrong. The proper order of basic math operations is called ***bedmas***.

Bedmas (brackets, exponents, division, multiplication, addition, subtraction) prescribes the order in which you have to do these operations to get the right answer. whether it is determining welding speed or figuring out mathematically how much material is required for a project.

PART III
SEQUENCE IN DIAGRAMS

In technical manuals and texts, a diagram accompanies many passages. A diagram can illustrate the sequence of steps in a welding procedure. It can show something you can't see, such as the wiring in a space where ducting is to go. It can show the point when something happens.

Passages with diagrams

It is important to understand diagrams that accompany writing. The passage and the diagram are designed to be used together, but you may examine them separately at first to find out what each has to teach you.

When you “read” diagrams, your eyes will move between the writing and the diagram – like watching a hockey puck on the rink. Focus on one section until you understand it, and then move to another, repeating this process until you understand the whole.

Passage 5 and Figure 1 below are taken from instructions about squeeze-type resistance spot welding. Together they make the directions clear to the reader.

Passage 4
Squeeze-type Resistance Spot Welding

The force mechanism begins an electrical signal to the welder control. This switches on the flow of weld current for a preset time and then switches it off. The weld time is usually less than one second making the process very fast.

Consider the following important operational points when using a squeeze-type resistance spot welder:

Spotting sequence: Do not spot continuously in one direction only (See Figure 1). This method results in weak welding because of the shunt effect of the current. If the welding tips become too hot, the tips will change colour. If this occurs, stop welding and let them cool. Note: It is important memorize this welding sequence.

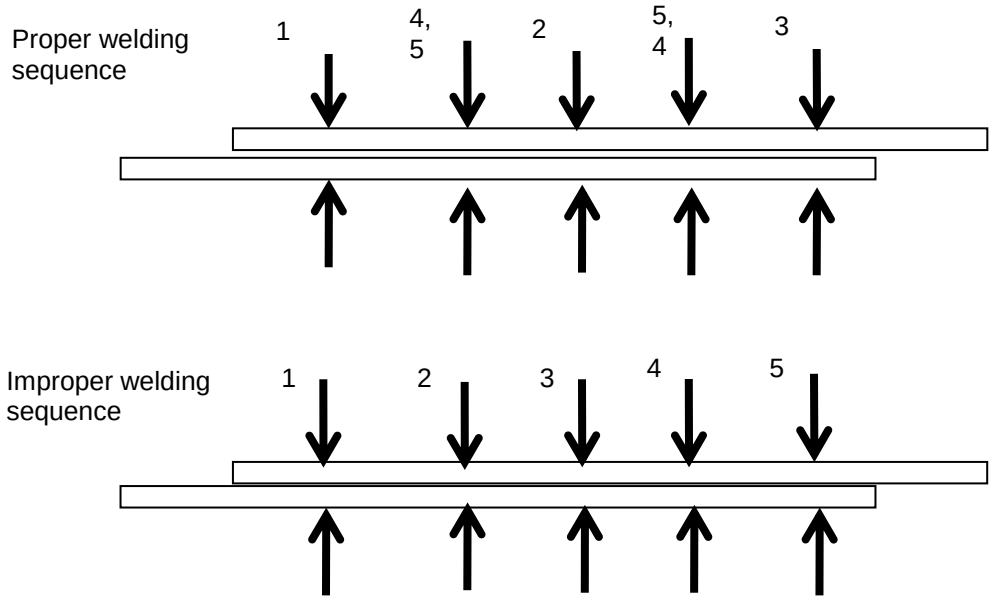

Figure 1: Proper and improper welding sequence

The diagram relates to the information about the correct sequence of spot welding. It clearly illustrates the pattern in which to do the spot welds. In this case, the correct sequence happens to be irregular. You don't weld from one spot to the next but instead, you jump around so the welding tip doesn't get too hot. The arrows indicate the correct direction while the numbers indicate the order in which to do the welds.

To be certain you've understood it, the diagram also shows an incorrect welding sequence. If you were unclear about the words in the passage, "Do not spot *continuously in one direction only"*, the diagram should clear it up for you. It gives a picture to go with the words. As you read, observe **when** to look at the diagram, and **what** to look for. Ask yourself, "What part of the diagram does the sentence or step refer to?"

Focusing on sequence helps you become aware of how a passage or diagram is organized. It helps you see the order of steps in a procedure. Apply the suggestions below when you are reading a passage that includes a diagram. This way, you get the most information from the passage.

1. Read the whole passage.
2. Look at the diagram.
3. Look back and note how the passage and diagram are organized.
4. Match the diagram to information in the passage.
5. Go through any step-by-step directions, looking at both the passage and diagram to see how the steps described in each are related.

When answering questions about sequence, whether in written material or in diagrams, go back through the passage. Find the appropriate place and re-read each step. Re-examine the diagram carefully. You may have to trace the steps with your finger while your eyes move back and forth between diagram and passage. You might have to read the section several times to make sure you have the correct match. In some cases, there may be steps that are almost the same. But, as shown in **Figure 1**, "almost the same" usually won't yield correct results.

CONCLUSION

Sequence is an essential system for organizing information and procedures. When information is presented in a logical sequence, it is easier to understand. Make sure you read all the steps in a set of instructions before you act on them. You can then follow them in the correct sequence, completing a job correctly and safely.

Keep in mind:

- Information builds on what you have previously learned. Just as you would build a strong house foundation, *make sure your trade foundation is strong.*
- If a passage is building on past learning and you don't understand a definition, term or principle, you might have missed something that was already taught. *Find where this information is. Then go back and reread it.*
- You might read steps which clearly outline correct procedure but the precise measurements, techniques or length of time are not laid out. *Know when and where to find this information.*

When you understand the steps or pieces, you can understand the relationship to other steps or pieces; this leads to an understanding of the whole process.

Summary

1. **Ask questions** that guide you through understanding step-by-step instructions or descriptions.

2. **Technical material is organized so that you can understand it**. It will walk you through a process or principle step-by-step. Give yourself time. Read carefully.

3. **Information builds on what you have already learned**. Follow procedures and understand them to build a strong foundation.

4. **Understand how steps relate to each other**: what is first, second, third; what comes before or after, etc.

5. **Match the steps in a passage to the diagram** and vice versa. Then match everything to the job you are doing.

6. **A sequence of information can explain a principle** such as **why** steel expands and shrinks and can show you **how** this applies to your trade.

7. **Evaluate steps when necessary to make the right choice.** The result of the finished product depends on carrying out each step at the right time, **and in the right sequence**
.
8. **Follow steps accurately** to ensure error-free and safe work habits.

ANSWER PAGE

PART II **Passage 3, Installing Anti-Friction Bearings**

1. Which is the correct sequence of activities for the pressing a bearing onto a shaft?
   b) place clean pipe on bearing, check that the bearing is on squarely, press into final position

   This is a straightforward order of activity question. Although some steps may be omitted, b) is the correct sequence.

2. When would you apply pressure by hand?
   c) after the mounting tube has been placed on the shaft

   This is a *before /after* type of question. The passage clearly states when to apply pressure by hand.

3. After you've pressed the bearing into its final position, check to make sure it is squarely on the shaft.
   F You must make sure it is squarely on before you press it into its final position.

4. A coating of oil is applied to the bearing before it is placed on the shaft.
   T The passage clearly states this as the first step to take.

PART II **Passage 4, Adjusting Valve Clearance**

1. Which of the above items would you switch in order to put the list in the correct sequence?
   b) switch #4 and #5

   This is stated in the passage. Although there are some steps missing in between, turning the locking nut comes before tightening the locking screw.

2. The engine specifications must be referred to before you can position the piston.
   F The wording of the sentence is very important here. The passage states that "prior to checking the valve clearance, the piston must be positioned according to "*manufacturer's specifications*." We are supposed to refer to the manufacturers' specifications for the *piston position*. Once we have the piston in proper position and the feeler gauge in place, we can then check the *engine specifications* for the proper *valve clearance*.

3. At what point in this sequence will you need to make an evaluation and decide whether to continue or go back to redo something?

   You need to evaluate when you are nearly finished. After you have the bearing in position and have tightened the lock screw slightly. There may be an error in the clearance. You have to decide if the clearance is correct and whether to tighten the locking screw or readjust first, because the clearance is incorrect.