Problem Solving Skills for Health Care Providers
Lesson 4 of 5
Diagnose a Problem and Its Causes

Learning Objectives

In this lesson, you will learn the problem solving skill of diagnosing a problem and its causes. You will learn how to:

1. Decide which facts about the problem are important.
2. Separate symptoms from causes of problems.
3. Identify possible causes.

Vocabulary and Key Terms

- **additional** - extra; more
- **appointment** - an arrangement to meet with someone at a certain time and place
- **attended** - was present at; went to
- **checkpoints** - places in a piece of equipment that should be checked in order to find the cause of a problem
- **chief** - having the highest position
- **community college** - a college that offers two year academic and technical programs
- **confused** - mixed up in the mind; bewildered
- **considerate** - thoughtful of other people
- **continuously** - all the time; constantly
- **data entry** - the entering of information on a computer
- **depress** - to push down; to lower
- **device** - something made for a special use; a tool, machine, or other piece of equipment
- **diagnosing** - identifying; naming
- **diagram** - a drawing that helps to explain something
- **draftsman** - a person who draws plans of structures or machines
- **effect** - something that is caused by some other thing; a result
- **electricians** - people whose work is setting up or fixing electrical equipment
- **eliminate** - to get rid of; take or leave out
- **emergencies** - situations that develop suddenly and call for action or attention right away
- **engineers** - people who are trained in the work of using science for practical things, such as planning and building bridges, roads, or machines
- **expected** - depended upon; looked for as proper or necessary
- **expert** - having great knowledge or skill in a special area
- **faulty** - having something that causes failure; imperfect
- **flowchart** - a drawing that shows a step-by-step way to make or do something
- **fuse** - a strip of metal in an electric circuit which can melt and break the circuit if the current becomes too strong
- **graduated** - finished a course of study at a school or college
installs - puts into place for use or service
irrelevant - not having to do with what is being discussed or considered; not related
local - having to do with a particular place
manager - one who directs or has control over a business
manual - involving work that is done with the hands
manuals - small books that give instructions or information about something
Marines - members of a branch of the U.S. armed forces that are trained to fight on land, at sea, or in the air
mechanic - a person who is skilled in repairing and operating machines
perform - to carry out; do
personnel - relating to the department in a business that takes care of hiring, benefits, and employee training for the business
previous - coming before; earlier
probing - thorough; investigative
process - a series of actions that are done in making or doing something
promoted - advanced to a higher rank or position
puzzled - mixed up in the mind; bewildered
recently - not long ago
recommended - spoke of someone or something as being good for a certain use, job, or purpose
relevant - having to do with what is being discussed or considered; related
root - related to a part where something begins, or a source
senses - the special powers of the body and mind that allow people and animals see, hear, feel, taste, or smell
shortcut - a way of saving time, money, or some other thing
similar - almost but not exactly the same; alike
solution - an answer to a problem
specific - special; characteristic of something
supervisor - one who watches over and directs the work of others
surgery - an operation
suspected - thought to be possible or true
symptoms - signs of something
technician - a person who is trained in the techniques of a certain job or science
troubleshooting - locating problems and fixing them
Prescription for Understanding

This lesson includes skills you use to compare and evaluate problem solutions.

In your personal life, and at work, you are expected to handle all kinds of problems. Some problems you can solve right away. Others may take longer. Some problems may need to be solved by someone else. How you handle a problem at work can make a big difference in your success in your job. How you handle problem situations in life can make the difference between being happy or sad, losing or making money, and feeling sick or well.

Everyone gets dragged down by problems once in a while. We don't think about the facts of a situation in the right way. Or we don't think soon enough to stop a problem from happening or getting worse.

You can see that Bill is in a lot of trouble. Before he can straighten things out, he needs to take a close look at his situation. He needs to diagnose the possible problems and their causes.

All successful problem solvers learn the skills for problem diagnosis. A person can be a doctor, a TV repairman, or a mother discussing her child's failing grade with the teacher. The skills are the same.

Skilled manual workers call diagnosing problems troubleshooting. To find the cause of the problem is to troubleshoot. Here are three of the skills needed to troubleshoot:

1. Decide which facts about the problem are important. This means, determine which facts are relevant (important) and which are irrelevant (not important) to the problem. You used this skill in Unit One when you practiced asking questions to get missing information.
2. Separate symptoms from causes of problems. A good example of this is the fever that you have with an illness. The fever is the symptom, or result of the illness. You can reduce the fever with aspirin. But you still need to find and treat the cause of the problem.

3. Identify possible causes. Once you separate the parts of the problem, you can get closer to figuring out the reasons, or root causes. Bill's fever (symptom) is gone, but he still feels sick (symptom). A doctor might diagnose an illness (cause of problem). The "illness" might also disappear when the bills are paid and the ceiling stops leaking. Bill may feel ill because he is worried (possible root cause).

In this unit, you will read about problems you may have in life and on the job. As you diagnose the problem, you will be building your skills in finding possible reasons for the problems. You will be separating the symptoms from the root causes.

Learn more and test your skills on the following pages.
**Skill Area #1: Decide Which Facts About the Problem are Important**

Have you ever said, "That is beside the point"? If you have, you probably said it because someone said something you thought was irrelevant to a point you were making. Life is full of times when we have to sort out what is relevant from what is irrelevant. At these times, we depend on our own knowledge and experience to sort out the facts.

First, you must think of as many facts about a problem as you can. Do not worry at first about which ones are relevant or irrelevant.

**Example Exercise 1**

One of a policeman's jobs is to ticket speeding drivers. It is not relevant to his job that the driver just got his license. To write up the report, the policeman will need to know the make and year of the car, and the age and sex of the driver.

A. Imagine that you are the policeman in the example. Which of the facts in the list below would not be relevant to the policeman?
   a. The car is new.
   b. The driver is a teenager--probably just got his license.
   c. The driver was speeding.
   d. The driver is male.

   If you selected “b,” great. To write up the report, the policeman will need to know the make and year of the car, and the age and sex of the driver.

B. What is the most relevant fact from the policeman's point of view?
   a. The driver cannot find his driver's license.
   b. The car is a Ford convertible.
   c. The driver is 17 years old.
   d. The driver was going 45 mph in a 25 mph zone.

   The correct answer is “d.” To write up the report, the policeman will need to know the speed the car was going.
Example Exercise 2

Let's review the idea of important and unimportant problem facts. Choose the word that will complete the sentence correctly.

A. If a fact about a problem is important, we say it is __________ information.
   a. knowledge
   b. information
   c. experience
   d. unimportant
   e. relevant
   f. definite

   The correct answer is “e.” If we say a problem is important, we say it is relevant.

B. We depend on our experience and __________ to sort out facts.
   a. information
   b. knowledge
   c. education
   d. list
   e. friends
   f. age

   If you chose “b,” you are correct. We depend on our experience and knowledge to sort out facts.

C. A good way to begin sorting out facts is to make a list of important and unimportant __________.
   a. experience
   b. knowledge
   c. places
   d. information
   e. problems
   f. ideas

   The correct answer is “d.” A good way to begin sorting out facts is to make a list of important and unimportant information.
D. Irrelevant is a word we use to mean __________ when we sort information.
   a. relevant
   b. important
   c. list
   d. experience
   e. knowledge
   f. unimportant

If you chose “f,” great. Irrelevant is a word we use to mean unimportant when we sort information.

Example Exercise 3

The following exercise will help you practice what you have been reading.

Study the facts in Miss Darcy’s problem situation.
   1. Miss Darcy’s toaster toasts four slices of bread at once.
   2. The toaster was a present from her mother.
   3. The toaster continues to pop up.
   4. The toaster always burns the toast, no matter what setting it is on.
   5. The temperature setting controls the amount of heat that gets to the toast.

A. Which of the facts do you think is relevant?
   a. Miss Darcy’s toaster toasts four slices of bread at once.
   b. The toaster was a present from her mother.
   c. The toaster continues to pop up.
   d. The toaster always burns the toast, no matter what setting it is on.
   e. The toaster has a warranty.

If you chose “c,” you are correct. The choice “toaster continues to pop up” is the relevant fact because it deals with how the toaster is functioning.

The relevant fact should be connected to the fact that the toast pops up burned. Now use your common sense about toasters. If the bread is burned, it is getting too much heat. If it is getting too much heat, what must be involved? Either the spring that pops the bread up or the device that controls the amount of heat must be involved.

B. Which of the facts do you think is irrelevant?
   a. The toaster always burns the toast, no matter what setting it is on.
   b. The temperature setting controls the amount of heat that gets to the toast.
   c. The toaster continues to pop up.
   d. The toaster is two months old.

The correct answer is “d.” The irrelevant fact is that the toaster is new. Brand new toasters may have defective parts; that doesn't help explain the burned bread.
Skill Check
Skill Area #1: Decide Which Facts About the Problem are Important
Exercise A

Read about Dr. Bones' problem. Read the whole story. Then decide which problem facts are relevant and which are not relevant.

Dr. Bones is Ticked at His Clock

- Dr. Bones sometimes sleeps at the hospital.
- He shares a room with other doctors.
- He has a windup clock that runs for 36 hours.
- It has a black face and numbers that glow in the dark.
- Two windup keys are on the back—one for the clock and one for the alarm.
- When it rings, it won't stop until the alarm spring is unwound.
- Dr. Bones always jumps right out of bed when the alarm rings. That way he doesn't awaken the other doctors.
- This morning he has to perform surgery with the chief surgeon.
- He woke up with a start. He checked his clock. It said 3:00 a.m.
- Dr. Bones was puzzled. He saw that the other doctors were sleeping peacefully.

Read the following statements and decide if the fact is relevant or irrelevant.

1. Dr. Bones sometimes sleeps at the hospital to deal with emergencies.
   a. Relevant
   b. Irrelevant

2. He shares a room with other doctors.
   a. Relevant
   b. Irrelevant

3. He has a windup alarm clock that runs for 36 hours.
   a. Relevant
   b. Irrelevant

4. The regular time and alarm time are set by different knobs.
   a. Relevant
   b. Irrelevant

5. The clock numbers glow in the dark, and the face is black.
   a. Relevant
   b. Irrelevant

6. The clock and the alarm are wound with different keys.
   a. Relevant
   b. Irrelevant
7. The alarm rings as long as it takes the spring to unwind.
   a. Relevant
   b. Irrelevant

8. Dr. Bones always wakes up with the alarm and shuts it off.
   a. Relevant
   b. Irrelevant

9. He is considerate of other sleeping people in the room.
   a. Relevant
   b. Irrelevant

10. Dr. Bones slept one half hour past the time when the alarm should have gone off.
    a. Relevant
    b. Irrelevant

11. The other doctors in the room were still asleep when Dr. Bones woke up.
    a. Relevant
    b. Irrelevant

12. Dr. Bones was angry.
    a. Relevant
    b. Irrelevant

13. Dr. Bones was puzzled.
    a. Relevant
    b. Irrelevant

14. Dr. Bones remembers setting the alarm for 2:30 a.m.
    a. Relevant
    b. Irrelevant
Skill Check  
Skill Area #1: Decide Which Facts About the Problem are Important  
Exercise B

Read about Sarah's problem. Read the whole story. Then decide which problem facts are relevant. Decide which are not relevant.

Sarah Gets Promoted

- Sarah graduated from high school one year ago. She has been working at a fast food restaurant for six months.
- She has brown eyes and dark hair.
- Sarah's boss told her she would soon be promoted to store manager. Her boss was going on vacation to Mexico.
- Sarah is worried.
- Then Sarah started making a lot of mistakes. She had trouble keeping her customers' orders straight.
- Driving home one day after work, she became upset as she thought about the promotion.
- She stopped at the store and bought wheat bread and a gallon of milk.
- Still upset, Sarah got back in her car and drove away.
- She didn't notice a red light and almost hit a red Porsche coming the other way.

Read the following statements and decide if the fact is relevant or irrelevant.

15. Sarah graduated from high school one year ago.  
   a. Relevant  
   b. Irrelevant

16. Sarah has worked at the restaurant for six months.  
   a. Relevant  
   b. Irrelevant

17. Sarah has brown hair and dark eyes.  
   a. Relevant  
   b. Irrelevant

18. Sarah was told she will be promoted to manager.  
   a. Relevant  
   b. Irrelevant

19. Sarah was thinking about additional duties.  
   a. Relevant  
   b. Irrelevant
20. The boss is going on vacation to Mexico.
   a. Relevant
   b. Irrelevant

21. Sarah became upset and nervous.
   a. Relevant
   b. Irrelevant

22. Sarah started making mistakes with her customers' orders.
   a. Relevant
   b. Irrelevant

23. Sarah stopped for bread and milk.
   a. Relevant
   b. Irrelevant

24. Sarah drove through a red light.
   a. Relevant
   b. Irrelevant

25. Sarah almost hit another car.
   a. Relevant
   b. Irrelevant

26. Sarah noticed the car was a red Porsche.
   a. Relevant
   b. Irrelevant

27. Sarah was still upset after buying her groceries.
   a. Relevant
   b. Irrelevant

28. Sarah bought one gallon of milk and a loaf of wheat bread.
   a. Relevant
   b. Irrelevant
Skill Check
Skill Area #1: Decide Which Facts About the Problem are Important
Exercise C

Read the following facts about Pat's work situation. Then decide which problem facts are relevant or are not relevant to his work performance.

**Pat's Work Situation**

- Pat learned data entry at the local community college.
- Data entry is a process of entering information on a computer.
- He lived at home while he attended classes.
- Pat works well in a quiet place.
- Pat's teacher recommended him for the job at Sutter's Industries.
- Pat is good at data entry.
- Pat enjoys his work.
- The company got new machines.
- Pat learned to use the new machines.
- His supervisor was pleased.
- Then he was asked to move to a larger office.
- The larger office was full of operators and noisy machines.
- Pat started getting headaches at work.
- Gradually, mistakes began creeping into his work.
- The supervisor was puzzled.

Read the following statements and decide if the fact is relevant or irrelevant.

29. Pat learned data entry at the local community college.
   a. Relevant
   b. Irrelevant

30. Pat lived at home while attending class.
   a. Relevant
   b. Irrelevant

31. Life at home was quiet.
   a. Relevant
   b. Irrelevant

32. The teacher recommended Pat for the job.
   a. Relevant
   b. Irrelevant

33. The job is at Sutter's Industries.
   a. Relevant
   b. Irrelevant
34. Pat is good at data entry.
   a. Relevant
   b. Irrelevant

35. Pat enjoys his work.
   a. Relevant
   b. Irrelevant

36. Pat learned to use the new machines.
   a. Relevant
   b. Irrelevant

37. Pat's supervisor was pleased with his work.
   a. Relevant
   b. Irrelevant

38. The size of the new office was larger.
   a. Relevant
   b. Irrelevant

39. The new office was noisy.
   a. Relevant
   b. Irrelevant

40. Pat started getting headaches at work.
   a. Relevant
   b. Irrelevant

41. Pat started making mistakes for the first time.
   a. Relevant
   b. Irrelevant

42. Pat's supervisor was confused.
   a. Relevant
   b. Irrelevant
Skill Area #2: Separate Symptoms from Causes of Problems

A symptom is a sign of a problem. A symptom is caused by something. If we can find the cause, then maybe we can fix it. (The symptom should then go away and the problem may be solved.) Miss Darcy's burned toast is a symptom of a problem in the toaster. The effect of the problem is that the toast is burned. The problem is probably caused by a broken heat-setting device.

Here is a story that shows how important it is to separate symptoms from causes.

Jane's dad bought her a used car when she started her new job. The next day she hit a pothole in the road. The tire went flat. Jane bought another tire and had it put on the car. One week later she found the car in the parking lot with the same tire flat. Jane was pretty upset that she was having such bad luck with tires. She explained the problem to her friend, a mechanic. Jane drove her car over to her friend's garage. The tire was flat by the time she arrived. The friend found the problem. A bad wheel rim was causing leaks in Jane's tires.

It's not always easy to separate symptoms from causes. Jane's tire problem was caused by the wheel rim—the flat tire turned out to be a symptom. Jane might have saved some money if she had gotten more information at first. She needed to find the root cause of the problem.

Jane, like most of us, is not an expert mechanic. When we are puzzled, that's the time to start asking questions.

Sometimes one problem leads to another problem so they seem to run together. Then a fact in the situation can be both a symptom and a cause. Here is an example.

Example Exercise 4

Suppose you saw smoke pouring out of the windows of a house. At the same time, you saw a person fall out of the door and collapse on the lawn.

Try sorting out the symptoms and causes of this problem. Which word do you think fits in the sentence?

A. Smoke is usually a symptom or __________ of a fire.
   a. effect   b. cause   c. danger   d. affect   e. reason   f. problem

If you chose “a,” you are right. Smoke is usually a symptom or effect of a fire.
B. When you see smoke, fire is suspected as a(n) __________.
   a. effect
   b. symptom
   c. affect
   d. result
   e. cause
   f. answer

   The correct answer is “e.” When you see smoke, fire is suspected as a cause.

C. If someone is choking as he comes out of a burning house, this is usually caused by __________.
   a. symptom
   b. smoke
   c. air
   d. effect
   e. fire
   f. food

   If you chose “b,” you are correct. If someone is choking as he comes out of a burning house, this is usually caused by smoke.

D. In this case, smoke is both a(n) __________ or effect of a fire and the cause of a person choking.
   a. effect
   b. danger
   c. reason
   d. problem
   e. result
   f. symptom

   The correct answer is “f.” In this case, smoke is both a symptom and effect of a fire and the cause of a person choking.
Example Exercise 5

The following exercise will help you practice selecting the causes and effects of problems. Study the facts in the problem below. Which of the following facts is a cause? Which is a symptom? Which is both a cause and a symptom?

Peter arrived at work forty minutes late today. He also took a coffee break that lasted longer than usual. Peter felt upset when he realized how far behind he was in his work. Then he got a headache.

A. Being late for work
   a. Cause
   b. Symptom
   c. Both cause and symptom
   d. Neither cause nor symptom

   If you chose “a,” you are correct. Being late for work is a cause, not a symptom. Being late causes Peter to get behind, feel upset and get a headache.

B. Taking a long coffee break
   a. Cause
   b. Symptom
   c. Both cause and symptom
   d. Neither cause nor symptom

   The correct answer is “a,” since taking a long coffee break is a cause, not a symptom. Taking a long break causes Peter to get behind, feel upset and get a headache.

C. Realizing he was behind in his work
   a. Cause
   b. Symptom
   c. Both cause and symptom
   d. Neither cause nor symptom

   If you chose “c,” great. Realizing he was behind in his work is both a symptom and a cause. It caused him to get a headache. It is a symptom because it is a result of his late start and long coffee break.
D. Feeling upset
   a. Cause
   b. Symptom
   c. Both cause and symptom
   d. Neither cause nor symptom

   The correct answer is “c.” Feeling upset is both a cause and symptom. It caused him to get a headache. It is a symptom because it is a result of his late start and long coffee break.

E. Getting a headache
   a. Cause
   b. Symptom
   c. Both cause and symptom
   d. Neither cause nor symptom

   If you chose “b,” you are correct. Getting a headache is a symptom of being late, getting behind, and feeling upset.
Skill Check  
Skill Area #2: Separate Symptoms from Causes of Problems  
Exercise A

In the next three exercises, you will identify symptoms and causes of problems. Read the problem situation before you begin each exercise.

Study the following problem and facts. All the information is relevant to Dr. Bones' problem. Decide if the fact is a cause, a symptom or effect, or neither one.

**Dr. Bones is Ticked at His Clock**

- Dr. Bones sometimes sleeps at the hospital.
- He shares a room with other doctors.
- He has a windup clock that runs for 36 hours.
- It has a black face and numbers that glow in the dark.
- Two windup keys are on the back—one for the clock and one for the alarm.
- When it rings, it won't stop until the alarm spring is unwound.
- Dr. Bones always jumps right out of bed when the alarm rings. That way he doesn't awaken the other doctors.
- This morning he has to perform surgery with the chief surgeon.
- He woke up with a start. He checked his clock. It said 3:00 a.m.
- Dr. Bones was puzzled. He saw that the other doctors were sleeping peacefully.

Problem 1: The alarm did not awaken Dr. Bones at the intended time.
Problem 2: When the alarm did not awaken Dr. Bones at the intended time, the chief surgeon had to begin surgery without Dr. Bones' help.

1. Dr. Bones slept one half hour too long.
   a. Cause  
   b. Effect  
   c. Neither

2. The other doctors in the room were still asleep.
   a. Cause  
   b. Effect  
   c. Neither

3. Dr. Bones was angry.
   a. Cause  
   b. Effect  
   c. Neither

4. The clock was showing the correct time.
   a. Cause  
   b. Effect  
   c. Neither
5. The alarm dial was pointing to the correct wake-up time.
   a. Cause
   b. Effect
   c. Neither

6. Dr. Bones was late for his appointment.
   a. Cause
   b. Effect
   c. Neither

7. The spring on the alarm was wound tightly.
   a. Cause
   b. Effect
   c. Neither

8. The chief surgeon had to begin the surgery without Dr. Bones.
   a. Cause
   b. Effect
   c. Neither

9. Which of the following facts are causes of the second problem, the chief surgeon had to begin surgery without Dr. Bones' help?
   a. The other doctors in the room were still asleep.
   b. Dr. Bones slept one half hour too long.
   c. The clock was showing the correct time.
   d. Dr. Bones was angry.

10. Which of the following facts are causes of the second problem, the chief surgeon had to begin surgery without Dr. Bones' help?
    a. The spring on the alarm was wound tightly.
    b. Dr. Bones was angry.
    c. The clock showed the correct time.
    d. Dr. Bones was late for his appointment.
Skill Check
Skill Area #2: Separate Symptoms from Causes of Problems
Exercise B

Study the problem and facts below. All the information is relevant to Sarah's problem. Decide if the fact is a cause, a symptom or effect or neither.

**Sarah Gets Promoted**

- Sarah graduated from high school one year ago.
- She has been working at a fast food restaurant for six months.
- She has brown eyes and dark hair.
- Sarah's boss told her she would soon be promoted to store manager.
- Her boss was going on vacation to Mexico.
- Sarah is worried.
- Then Sarah started making a lot of mistakes.
- She had trouble keeping her customers' orders straight.
- Driving home one day after work, she became upset as she thought about the promotion.
- She stopped at the store and bought wheat bread and a gallon of milk.
- Still upset, Sarah got back in her car and drove away.
- She didn't notice a red light and almost hit a red Porsche coming the other way.

**Problem 1: Sarah is nervous and upset.**

11. Being told she will be promoted
   a. Cause
   b. Symptom or Effect
   c. Neither

12. Thinking about additional duties
   a. Cause
   b. Symptom or Effect
   c. Neither

13. Becoming angry with customers
   a. Cause
   b. Symptom or Effect
   c. Neither

14. Making mistakes with customers
   a. Cause
   b. Symptom or Effect
   c. Neither
15. Driving through a red light
   a. Cause
   b. Symptom or Effect
   c. Neither

16. Almost hitting another car
   a. Cause
   b. Symptom or Effect
   c. Neither

17. Which of the following facts are possible causes of Sarah almost hitting another car?
   a. Thinking about additional duties
   b. Being told she will be promoted
   c. Making mistakes with customers
   d. Becoming angry with customers
Skill Check
Skill Area #2: Separate Symptoms from Causes of Problems
Exercise C

Study the problem and facts below. All the information is relevant to Pat's problem. Decide if the fact is a cause, or a symptom or effect.

Pat's Headache

- Pat learned data entry at the local community college.
- Data entry is a process of entering information on a computer.
- He lived at home while he attended classes.
- Pat works well in a quiet place.
- Pat's teacher recommended him for the job at Sutter's Industries.
- Pat is good at data entry.
- Pat enjoys his work.
- The company got new machines.
- Pat learned to use the new machines. His supervisor was pleased.
- Then he was asked to move to a larger office that was full of operators and noisy machines.
- Pat started getting headaches at work.
- Gradually, mistakes began creeping into his work. The supervisor was puzzled.

Problem: Pat is making many mistakes for the first time.

18. The number of operators in the new office
   a. Cause
   b. Effect

19. The size of the new office
   a. Cause
   b. Effect

20. The noise level of the new office
   a. Cause
   b. Effect

21. Pat's headaches
   a. Cause
   b. Effect

22. The company's new machines
   a. Cause
   b. Effect
23. If Pat’s headaches were the main problem, which fact might be the cause?
   a. Pat's headaches
   b. The number of operators in the new office
   c. Making many mistakes
   d. The company's new machines

24. If Pat’s headaches were the main problem, which fact might be the cause?
   a. The size of the new office
   b. Pat's headaches
   c. Making many mistakes
   d. The company's new machines

25. If Pat’s headaches were the main problem, which fact might be the cause?
   a. Making many mistakes
   b. Pat's headaches
   c. The company's new machines
   d. The noise level of the office
Skill Area #3: Identify Possible Causes

In the first skill area you learned to separate symptoms from causes. The following picture shows how those activities connect or relate to each other.

You'll have to wait for dinner, pooh. I have more important things to do. I have to fix the leak.

In this section, you will learn how to diagnose a problem and its causes. This is also called troubleshooting problems. Here are the steps:

1. Identify possible causes using only relevant facts.
2. Ask probing questions to eliminate some of the possible causes.

Follow Kurt's story to see what he did about his problem in the workplace. This is a situation that you might find in your job someday.

Kurt is a young draftsman. Mr. Chief, the boss, has been standing over him a lot lately, watching him work. Kurt has worked here two years. This is the first time Mr. Chief has acted this way. Kurt is getting nervous. Kurt discusses the problem with one of his friends. The friend suggests that Kurt talk to the secretary who likes Kurt and knows a lot about Mr. Chief.

The secretary says Mr. Chief is upset about his son joining the Marines. She also said he had her recently pull Kurt's personnel folder that contains his work record. Kurt decides to check with his coworker, Sally. Kurt decides to check with Jill in the personnel office.
In Kurt's story, you can see how diagnosing a problem means you have to do a number of things:

- Decide on the possible cause(s)
- Ask probing questions
- Change the situation or solve the problem through new information

Kurt has solved part of his problem: He no longer feels too nervous to work. The boss may still stand over him. Kurt won't know why until he asks Mr. Chief himself. But Kurt has more information about possible causes. He has moved closer to a good diagnosis of his problem. Notice that he believes some information more than other information. He is probably right.

Electricians, engineers, mechanics, and other workers do a lot of troubleshooting in their jobs. These workers often use books of instructions or manuals that explain how to check for faults. They may also use their senses: hearing, seeing, even tasting to find symptoms and causes.

Sometimes troubleshooting procedures are found on a flowchart. A flowchart shows a step-by-step process for solving a problem.
Look at the picture above. It is part of a flowchart for finding a bad or faulty auto horn. A flowchart is a troubleshooting shortcut. You start reading at the top and follow the lines. The boxes in heavy print identify the problem. The words below them tell you what action to perform.

**Example Exercise 6**

To make sure you understand the idea of troubleshooting, try these exercises. For this exercise, you will need to look again at the flowchart in the example.

A. What should you do first if the horn does not sound?
   a. Turn lights on
   b. Test fuse
   c. Use test light at horn
   d. Use test light between horn relay sockets 1 & 2
   e. Service horn
   f. Unplug horn relay immediately

   If you chose “b,” you are correct. The first box under "Horn does not sound" instructs you to test the fuse.
B. What should you do if the horn sounds all the time or continuously?
   a. Turn lights off
   b. Test fuse
   c. Use test light at horn
   d. Immediately unplug horn relay and disconnect wires from horn
   e. Use test light between horn relay sockets 1 & 2
   f. Turn lights on

   If you chose “e,” you are right. The first box under "Horn sound continuously" instructs you to immediately unplug the horn relay and disconnect wires from horns.

C. Which of the boxes does not tell you an action to perform?
   a. Test fuse
   b. Use test light between horn relay sockets 1 & 2
   c. Immediately unplug horn relay and disconnect wires from horn
   d. Use test lights at horn
   e. Depress horn rim or button
   f. Horn circuit wiring shorted to ground.

   The correct answer is “f.” "Horn circuit wiring shorted to ground" describes why something happened after an action was performed.

D. What is one of two possible symptoms of a broken horn?
   a. Fuse OK
   b. Test fuse
   c. Horn does not sound
   d. Horn service diagnosis
   e. Light on
   f. Horn circuit wiring shorted to the ground

   The correct answer is “c.” A horn that does not sound is a symptom of a broken horn.

E. What is another possible symptom of a broken horn?
   a. Depress horn rim or button
   b. Fuse blown
   c. Fuse OK
   d. Light off
   e. Horn sounds continuously
   f. Light on

   If you chose “e,” great. A horn that sounds continuously is a symptom of a broken horn.
Skill Check  
Skill Area #2: Identify Possible Causes  
Exercise D

The next few problems give you a chance to practice the troubleshooting skills needed in different jobs. You do not have to be an expert in these jobs in order to do these exercises correctly. (Note: The information in the exercises is not the actual information you need for the job in real life, but is similar to it. For real-life troubleshooting, use the latest manuals and guides for your information source. Do not use these exercises.)

Study the above flowchart. The chart shows how to diagnose problems with a car horn. Read the chart by following the lines down the page.

The words in the boxes tell you three things step by step.

26. If you depress the horn button or rim, what is one possible effect?
   a. Horn does not sound
   b. Light goes off
   c. Fuse is blown
   d. Light goes on
27. If the horn does not sound, what do you try first?
   a. Test the fuse
   b. Immediately unplug the horn relay
   c. Depress the horn button again
   d. Use test light at horns while depressing horn button

28. If you test the fuse and find the fuse blown, what are the possible causes?
   a. Horn not grounded
   b. Faulty relay
   c. Horn circuit wiring shorted to ground
   d. Faulty horn

29. If the fuse is OK, but the test light stays off, what do you try next?
   a. Remove horn relay from socket.
   b. Depress horn button or rim and listen for audible click at horn relay.
   c. Use test light at horn.
   d. Replace the horn because it is faulty.

30. If the horn sounds continuously when you depress the horn button or rim, and you use a test light between relay sockets 1 and 2, what is one of the possible effects?
   a. Light on
   b. Fuse OK
   c. Fuse blown
   d. Horn circuit wiring shorted to ground

31. Which of the following is not a possible effect?
   a. Horn does not sound
   b. Fuse blown
   c. Horn sounds continuously
   d. Horn sounds only when button or rim is depressed
Skill Check
Skill Area #2: Identify Possible Causes
Exercise E

Jane works for a company that installs and repairs computers. One of the computers has stopped working. The company needs the machine in good working order right away.

Jane's boss sends her to troubleshoot the problem with the computer. The following exercises will show you how Jane does her job.

Look at the chart or diagram. This is a picture of the wires in the electrical system of the whole computer. The diagram shows the technician how the computer is supposed to work. Find the circled numbers on the diagram above. These are the checkpoints. Checkpoints are places in the wiring where there could be trouble. There are 14 checkpoints for this computer.

Jane has a diagram on a card for each checkpoint. Each diagram shows a working checkpoint. Next to that is a place for the technician to draw the actual checkpoint. If the two pictures are different, then Jane will know that the checkpoint is not working.
Look at the picture of computer checkpoint 1. See the difference between the working and the actual drawings of the checkpoint.

![Computer Checkpoint 1](image)

The correct answer is that this computer checkpoint is not working.

Now troubleshoot the rest of the computer checkpoints.

![Computer Checkpoint 2](image)

32. Look at the picture of computer checkpoint 2. Is the checkpoint working or not working?
   a. Working
   b. Not working
33. Look at the picture of computer checkpoint 3. Is the checkpoint working or not working?
   a. Working
   b. Not working

34. Look at the picture of computer checkpoint 4. Is the checkpoint working or not working?
   a. Working
   b. Not working
35. Look at the picture of computer checkpoint 5. Is the checkpoint working or not working?
   a. Working
   b. Not working

36. Look at the picture of computer checkpoint 6. Is the checkpoint working or not working?
   a. Working
   b. Not working
37. Look at the picture of computer checkpoint 7. Is the checkpoint working or not working?
   a. Working
   b. Not working

38. Look at the picture of computer checkpoint 8. Is the checkpoint working or not working?
   a. Working
   b. Not working
39. Look at the picture of computer checkpoint 9. Is the checkpoint working or not working?
   a. Working
   b. Not working

40. Look at the picture of computer checkpoint 10. Is the checkpoint working or not working?
   a. Working
   b. Not working
41. Look at the picture of computer checkpoint 11. Is the checkpoint working or not working?
   a. Working
   b. Not working

42. Look at the picture of computer checkpoint 12. Is the checkpoint working or not working?
   a. Working
   b. Not working
43. Look at the picture of computer checkpoint 13. Is the checkpoint working or not working?
   a. Working
   b. Not working

44. Look at the picture of computer checkpoint 14. Is the checkpoint working or not working?
   a. Working
   b. Not working
Skill Check
Skill Area #2: Identify Possible Causes
Exercise F

Read again about your three old friends: Dr. Bones, Sarah, and Pat. In previous exercises, you separated the relevant from the irrelevant facts of their problems, and identified the symptoms and causes. Read the relevant facts of each problem again. This time you will decide two things:

- What are the possible causes?
- What, if any, questions need to be asked?

Dr. Bones is Ticked at His Clock

Dr. Bone's windup clock has two springs, one for the alarm and one for the clock. He winds both every 36 hours. He was to perform surgery in the morning. He woke up a half-hour late, but his roommates were still asleep. The spring on the alarm was wound tightly. The clock was working.

45. Why didn't the alarm ring? Choose the possible cause from the list below.
   a. The clock spring and the alarm spring are broken.
   b. The alarm spring may be broken.
   c. He forgot to wind the clock.
   d. The chief surgeon may be angry with him.

46. What question should Dr. Bones ask to get additional important information?
   a. Did the chief surgeon find someone else to replace me?
   b. How can I face the chief surgeon when I have no time for a cup of coffee?
   c. Why didn't my alarm go off?
   d. Did you fellows hear the alarm and turn it off?

Sarah Gets Promoted

Sarah becomes increasingly upset about being promoted to manager. She makes mistakes with customers. She drives through a red light, almost hitting another car.

47. Choose the possible cause from the list below.
   a. Sarah is making mistakes at work because she is so upset.
   b. Sarah is a bad driver.
   c. Sarah almost hit another car.
   d. Sarah's supervisor has faith in her abilities.
48. Which question about Sarah's problem might give additional, important information that could lead to a solution?
   a. Would Sarah benefit from a change in work schedules?
   b. Does she really prefer what she is doing, to be the manager?
   c. Does Sarah need glasses?
   d. Should Sarah take a driver education course?

**Pat's Headache**

Pat worked hard to master data entry. At the same time, he was moved to a large, noisy office. Pat started getting headaches and making mistakes for the first time.

49. Choose the possible cause from the list below.
   a. Data entry was too difficult for Pat
   b. Pat's mistakes were caused by tension or stress
   c. Pat has forgotten how to do data entry
   d. The computer is not working correctly

50. What question about Pat's problem might give important, additional information that could lead to a solution?
   a. Should Pat's computer be inspected?
   b. Should Pat see a psychologist?
   c. Is Pat more bothered by noise, or by having too many workers around him?
   d. Should Pat take a refresher course in data entry.

Now select your area of work and then turn to the appropriate page for “Let’s Apply to Your Workplace” questions:
   - Nursing Assistant ------------------ Page 345 - 350
   - Dietary Services ------------------ Page 351 - 356
   - Environmental Services ----------- Page 357 - 362
Let’s Apply To Nurse Assistant
Problem Solving - Lesson 4 of 5

Skill Area #1: Decide Which Facts About the Problem are Important

When diagnosing a problem, sometime it is difficult to determine if a factor is a cause of the problem or just a resulting effect of the problem. This can be particularly true if the cause is hidden. One method of diagnosing causes is to list every possible cause and eliminate those factors that have no bearing on the situation. The following exercise will test your ability to determine cause and effect.

Mrs. Jones Blood Pressure

- Mrs. Jones has had a problem with high blood pressure
- She shares a room at your facility with another resident
- She must take her blood pressure medication twice a day
- Some days she does not want to take her medication and hides it under her tongue and then throws it in the trash can after the nurse assistant leaves the room
- Mrs. Jones is very active and likes to take walks in the hallway or outside on nice days
- The nurse assistant must take Mrs. Jones blood pressure and record it on her chart every morning and again in the evening
- The resident doctor has a note on Mrs. Jones chart that says that he should be called if her blood pressure goes above 180 – 90
- After taking Mrs. Jones blood pressure, she tells you that she ate some salty snacks with her roommate last night, even though she knows that she should not consume salt

When you took Mrs. Jones blood pressure this morning you found it to be a little higher than it normally runs. Read the following statements and decide if the fact is relevant or irrelevant.

1. She shares a room at your facility with another resident
   a. Relevant
   b. Irrelevant

2. Some days she does not want to take her medication and hides it under her tongue and then throws it in the trash can after the nurse assistant leaves the room
   a. Relevant
   b. Irrelevant

3. She must take her blood pressure medication twice a day
   a. Relevant
   b. Irrelevant
4. Mrs. Jones is very active and likes to take walks in the hallway or outside on nice days
   a. Relevant
   b. Irrelevant

5. After taking Mrs. Jones blood pressure, she tells you that she ate some salty snacks
   with her roommate last night, even though she knows that she should not consume salt
   a. Relevant
   b. Irrelevant
Skill Area #2: Separate Symptoms from Causes of Problems

Nursing assistants must be capable of separating the cause of the problem from its symptoms. The following exercise concerns the problem with the very high and inconsistent blood pressure readings. Decide whether the statement is an example of a cause or a symptom.

6. The blood pressure cuff is old and frayed and the Velcro connector does not hold properly.
   a. Cause
   b. Symptom

7. The nurse’s assistant cannot hear the heartbeat with the stethoscope.
   a. Cause
   b. Symptom

8. The nurse’s assistant repeated the process three times in succession on the same resident and recorded very different readings.
   a. Cause
   b. Symptom

9. The dial on the gauge seems to be loose and moves very erratically.
   a. Cause
   b. Symptom

10. The nurse’s assistant has the wrong size cuff for the resident and the cuff is not secure on the resident’s arm.
    a. Cause
    b. Symptom
Skill Area #3: Identify Possible Causes

Nursing assistants constantly monitor their work areas for possible problems that might affect resident services. Nursing assistants must also determine the possible causes of the problems before they can correct the problem situation. This may involve contacting other staff personnel for assistance in resolving the problem.

Nursing assistants are required to take vital signs of the residents. After taking the blood pressure of two residents, a nurse assistant determines that something is not right since the blood pressure readings are very high and inconsistent when repeated on the same resident.

In this exercise, examine possible causes of the blood pressure reading inconsistencies and indicate whether each is likely or unlikely.

11. The blood pressure gauge has been dropped or damaged in some way and is not displaying accurate readings.
   a. Likely
   b. Unlikely

12. Proper procedures for taking the blood pressure are not being correctly followed and accurate information is not being recorded.
   a. Likely
   b. Unlikely

13. The resident is tired and this is causing the readings to be inaccurate.
   a. Likely
   b. Unlikely

14. The stethoscope has been damaged and the sounds cannot be heard accurately.
   a. Likely
   b. Unlikely

15. The blood pressure cuff is not properly applied therefore causing incorrect readings.
   a. Likely
   b. Unlikely
Skill Area #1: Decide Which Facts About the Problem are Important

When diagnosing a problem, sometime it is difficult to determine if a factor is a cause of the problem or just a resulting effect of the problem. This can be particularly true if the cause is hidden. One method of diagnosing causes is to list every possible cause and eliminate those factors that have no bearing on the situation. The following exercise will test your ability to determine cause and effect.

1. You have been late for work ten times in the last four weeks. Which of the following is probably not a cause of your tardiness?
   a. The new bypass road takes just as much time as the old road and its red lights.
   b. You are taking some computer classes at night that lasts until almost midnight.
   c. You have had to be home a lot with the recent illness of your child
   d. The recent change to standard time from daylight time has affected your sleep

2. Recently, many of the dietary workers at work have been neglecting to wear their hairnets. Which is probably a false statement?
   a. They do not see the need for the hairnets
   b. Hairnets were not available
   c. Hair nets cause severe hair loss
   d. There are no rules regarding the use of hair nets

3. You discover the oven is not working. Which of the following is not a cause of the oven failure?
   a. A power failure
   b. A blown fuse
   c. The cook failed to turn the switch on
   d. The thermostat was set too high for the recommended food temperature

4. While working on setting up trays in the kitchen, you see cake batter dripping from the oven door. What is the most likely cause of this problem?
   a. The pan was not full but ran over
   b. Some batter was probably spilled and may be a fire hazard
   c. The oven is too hot
   d. The oven is not turned on
5. When reviewing the food trays, the food dishes do not match the menu cards for those trays. Which is the most likely cause?
   a. The server could not read any of the cards
   b. The cards are for a different meal
   c. The cards are for the wrong people
   d. The supervisor switched the cards to see if the server was paying attention
Skill Area #2: Separate Symptoms from Causes of Problems

Dietary Services workers must be capable of separating the cause of the problem from its symptoms. The following exercise concerns a dietary services worker in the process of cleaning the dining room after the evening meal. A pool of water is observed on the floor underneath a window in the back corner of the dining room. This might present safety and health hazards. Read the following fact statements and decide whether the fact is an example of a cause, a symptom, or neither one.

6. The window, along with the other windows in the dining room, has been open all afternoon.
   a. Cause
   b. Effect
   c. Neither

7. The water has spread out along the wall for about 4 – 5 feet and about 2 feet from the base of the wall.
   a. Cause
   b. Effect
   c. Neither

8. Mr. Marcus, one of the residents who normally eats at the table in the back corner of the dining room, was observed by one of the other residents with a pitcher of water in his hand, apparently trying to refill his water glass during the meal.
   a. Cause
   b. Effect
   c. Neither

9. Water spills on the floor of the dining room must be cleaned up immediately to reduce the possibility of a resident slipping and falling.
   a. Cause
   b. Effect
   c. Neither

10. While the residents were eating, it rained very hard for about 15 minutes, but the rain has passed and the sun is shining outside now.
    a. Cause
    b. Effect
    c. Neither
Skill Area #3: Identify Possible Causes

In this exercise, examine the possible causes of water underneath the dining room window and indicate whether each is likely or not likely.

11. The water was spilled by one of your coworkers, while cleaning off the tables.
   a. Likely
   b. Not likely

12. The hard rain caused some water to come in through the open window.
   a. Likely
   b. Not likely

13. The resident is intentionally pouring water on the floor.
   a. Likely
   b. Not likely

14. The water puddle is coming from another source from outside the room.
   a. Likely
   b. Not likely

15. There is a leak on the water supply line underneath the drinking water fountain in the back of the dining room, in the corner right next to the window.
   a. Likely
   b. Not likely
Let’s Apply to Environmental Services
Problem Solving - Lesson 4 of 5

Skill Area #1: Decide Which Facts About the Problem are Important

When diagnosing a problem, sometime it is difficult to determine if a factor is a cause of the problem or just a resulting effect of the problem. This can be particularly true if the cause is hidden. One method of diagnosing causes is to list every possible cause and eliminate those factors that have no bearing on the situation. The following exercise will test your ability to determine cause and effect.

Before you went to lunch you completed the job of re-waxing the floor in the residents’ lounge. Now, a half-hour later, the floor is still wet. The information on the wax container says that it should dry in 20 minutes. Look at the following statements and determine if they are relevant or irrelevant to the problem.

1. The floor had not been waxed for the last 6 weeks.
   a. Relevant
   b. Irrelevant

2. Because the floor in the residents’ lounge gets a lot of traffic, you applied an “extra heavy” application of wax.
   a. Relevant
   b. Irrelevant

3. Today is Wednesday, and everything seems to take longer on Wednesday.
   a. Relevant
   b. Irrelevant

4. You used wax that had to be mixed with water. The instructions say to add one part of wax to one part of water. You think that is what you did but are not sure because you were talking to a coworker while you were mixing the wax.
   a. Relevant
   b. Irrelevant

5. It is a nice warm spring day and the windows in the residents’ lounge are open.
   a. Relevant
   b. Irrelevant
Skill Area #2: Separate Symptoms from Causes of Problems

Environmental services workers must be capable of separating the cause of the problem from its symptoms. The following exercise concerns a housekeeper in the process of cleaning a resident’s room. A pool of water is observed on the floor underneath the resident’s sink. This might present safety and health hazards. Decide whether the statement is an example of a cause or a symptom.

6. There is a hole in the drain line.
   a. Cause
   b. Symptom

7. The air conditioner also has water underneath it, possibly from condensation.
   a. Cause
   b. Symptom

8. There is water stain on the wallboard underneath the sink area.
   a. Cause
   b. Symptom

9. There is a loose nut on the water supply line.
   a. Cause
   b. Symptom

10. The floor tile underneath the sink area has a brown stain, possibly from a water leak.
    a. Cause
    b. Symptom
**Skill Area #3: Identify Possible Causes**

In this exercise, examine the possible causes of water underneath the resident’s sink and indicate whether each is likely or not likely.

11. The resident is allowing water to spill over the sink while in use.
   a. Likely
   b. Not likely

12. There is a leak on the drain line under the sink.
   a. Likely
   b. Not likely

13. The resident is intentionally pouring water on the floor.
   a. Likely
   b. Not likely

14. The water puddle is coming from another source from outside the room.
   a. Likely
   b. Not likely

15. There is a leak on the water supply line underneath the sink.
   a. Likely
   b. Not likely