

A GREAT IDEA!



**COMPETENCY
CATEGORY:**

Work Place

**COMPETENCY
NUMBER:**

H.67

COMPETENCY:

Demonstrate good reasoning skills that result in thinking first, then taking action.

OBJECTIVE:

Upon completion of this module, students will be able to demonstrate good reasoning skills that result in thinking first, then taking action.

JAG



Copyright © 2001
by

JOBS FOR AMERICA'S GRADUATES, INC.

All rights reserved under International and Pan-American Copyrights Conventions. No portion of this publication may be reproduced in any form without permission in writing from JOBS FOR AMERICA'S GRADUATES, INC. except by a local or state affiliate of the JAG NATIONAL NETWORK.



Published by JOBS FOR AMERICA'S GRADUATES, INC.
1729 King St., Suite 100
Alexandria, VA 22314
703.684.9479
703.684.9489 - Fax

Printed in the United States of America

Copies of this publication are available by contacting JOBS FOR AMERICA'S GRADUATES
or the JAG FIELD SERVICES OFFICE, 6021 Morriss Rd., Suite 111, Flower Mound, TX 75028.
972.691.4486 • 972.874.0063 Fax • www.jag.org

INDEX

RESOURCE	SPECIALIST	STUDENT (# PER)	PAGE
Learning Activity H.67-1			10
• Work Sheets – “Reasoning Skills Puzzles”			11 12 13 15 17
Learning Activity H.67-2			18
Learning Activity H.67-3			19
• Computers with Internet access			
Learning Activity H.67-4			20
• <u>The Adventures of the Blue Carbuncle</u> by Arthur Conan Doyle			
Learning Activity H.67-5			21
Learning Activity H.67-6			22
• Work Sheet—“Journal Writing”			23
Learning Activity H.67-8			24
• Types of Support Linkages			25
• Community Resources			26
• Service Activity Action Plan			27
Reading Activity H.67			29
• “Give Me A Break!”			30
Math Activity H.67			35
• Work Sheet— “What are the Chances?”			36
• Pair of dice for each team			
Pre-Assessment/Post-Assessment			41
Answer Key—Pre-Assessment/Post- Assessment			43
Answer Key—Learning Activity H.67-1			44
Answer Key—Reading Activity			46
Answer Key—Math Activity			48

INTRODUCTION

- New research has shown that babies begin to develop reasoning skills as early as 5 months of age.
- Reasoning is the process of drawing conclusions from facts.
- For reasoning to be sound, conclusions must follow facts.
- Reasoning is concerned with conclusions that have a good chance of being correct if the facts are correct.
- Reasoning is closely related to higher order thinking skills.
- These skills involve recalling information, forming concepts, critical thinking, and creating ideas.
- We will examine the topic of reasoning skills in this module entitled, "What A Great Idea!"

Administer Pre-Assessment

OUTLINE

A. Reasoning

1. There has been a great deal of talk about just what should be taught in our educational system.
2. One of the topics that has received a lot of attention is reasoning skills.
3. Increasingly, more businesses are looking for employees who can use good reasoning skills.
4. Good reasoning skills will enable you to define problems, think critically, evaluate solutions, and solve problems.

5. Interestingly, a study on people's opinions found that a majority of the population couldn't reliably provide genuine evidence for their opinions.
6. Likewise, they could not handle counter arguments to their opinion.
7. Reasoning skills can be developed with practice.

COMPLETE LEARNING ACTIVITY H.67-1 "REASONING SKILLS PUZZLES"

B. Bloom's Taxonomy

1. Bloom has developed various levels of learning related to reasoning and critical thinking.
2. In order to develop good reasoning skills and critical thinking skills you will need to understand and master Bloom's Taxonomy.
3. The various levels of Bloom's Taxonomy are (from lowest to highest):
 - a. Knowledge
 - b. Comprehension
 - c. Application
 - d. Analysis
 - e. Synthesis
 - f. Evaluation
4. Let's look at each of these levels in more detail.
5. Knowledge level – This is the lowest level and involves recalling such things as dates, major ideas, events, places, etc.

Example: List the customer complaints.

6. Comprehension level – This is the second level and involves such things as explaining, interpreting, describing, contrasting, summarizing, etc.

Example: Interpret the facts about a customer’s complaints.

7. Application level – This level involves such things as applying, demonstrating, calculating, illustrating, solving, modifying, etc.

Example: Thinking of what you did about similar customer complaints and demonstrating how you would handle things differently (for the better) this time.

8. Analysis level – This level involves ordering things, comparing, debating, arranging, selecting, inferring, etc.

Example: Seeing or recognizing patterns in the customer complaints that are being made.

9. Synthesis level – This level involves rewriting, composing, designing, modifying, rearranging, generalizing, etc.

Example: Designing a new customer service policy to reduce the number of customer complaints.

10. Evaluation level – This is the highest level and involves such things as recommending, judging, grading, assessing, convincing, etc.

Example: Writing a recommendation as to how the new customer service policy should be implemented.

11. Let’s retrace the examples presented above. See if you notice the differences in the levels of thinking.

COMPLETE LEARNING ACTIVITY H.67-2
“SCHOOL DRESS CODE”

COMPLETE LEARNING ACTIVITY H.67-3
“CITYWIDE BAN”

C. Putting it all together

1. First, we examined some background information about reasoning skills, and then we looked at Bloom’s Taxonomy of Learning. Now we need to bring the two concepts together in order to better prepare you to demonstrate good reasoning skills.
2. The first step in the reasoning process is **assessment**.
3. Assessment involves collecting all the **facts** related to the issue or problem being addressed.
4. Let’s look at the problem mentioned earlier in this module – a customer’s complaints.
5. Assessment would involve clearly stating the facts related to the customer’s complaints – who, what, when, where, how?
6. The second step in the reasoning process is **analysis**.
7. Analysis looks at how to best resolve the dilemma or conflict in question.
8. This would involve an examination of all possible solutions. This is where you can apply Bloom’s Taxonomy of thinking.
9. This is where you can look beyond the simple solutions to solve long-term problems.
10. Let’s look at the problem of a customer’s complaint again.
11. What are all the facts related to the problem, and more importantly, what are the long-term problems?
12. For example – let’s say that the customer is complaining about the quality of a product she purchased. The complaint has now

become more complicated because of the “attitude” of the sales person about her complaint.

13. A complete analysis of the situation shows that the product’s quality is questionable and that the sales person’s customer relations skills need to be improved.
14. A decision has been made to remove remaining products from the inventory and return them to the manufacturer because of poor product quality. Secondly, the sales associate will be trained and coached to be more sensitive to customer complaints.
15. This analysis involved a number of Bloom’s skills – Knowledge Level – Recalling facts; Comprehension Level – interpreting and summarizing, and Application Level – solving by removing the unsold products from the inventory.
16. Step three in the reasoning process is to **implement** the proposed solution as determined in the analysis process.
17. Implementation requires flexibility. The solution selected in the analysis process may not work. This is the place where you may need to go to your back up plan for a solution.
18. The last and final step in the reasoning process is to **evaluate** the results.
19. What was the outcome of the actions taken? Was it effective?
20. Evaluation is how we measure our successes.

Note to Specialist: Discuss each of these with your students and ask for similar examples.

Knowledge Level - **Recall details** about a customer’s complaints.

Comprehension Level- **Interpret the facts** about a customer’s complaints.

- Application Level - **Think** of what you did about **similar** customer complaints and **demonstrate** how you would handle things differently this time.
- Analysis Level - **See** or **recognize patterns** in the customer complaints that are being made.
- Synthesis Level - **Design** a **new** customer service policy to reduce the number of customer complaints.
- Evaluation Level - **Write** a **recommendation** as to how the new customer service policy should be implemented.

COMPLETE LEARNING ACTIVITY H.67-4
“THE ADVENTURES OF THE BLUE CARBUNCLE”

COMPLETE LEARNING ACTIVITY H.67-5
“WORK PLACE REASONING SKILLS”

COMPLETE LEARNING ACTIVITY H.67-6
“JOURNAL WRITING”

COMPLETE LEARNING ACTIVITY H.67-7
“SERVICE LEARNING”

COMPLETE READING ACTIVITY H.67
“GIVE ME A BREAK!”

COMPLETE MATH ACTIVITY H.67
“WHAT ARE THE CHANCES?”

Administer Post-Assessment

LEARNING ACTIVITY H.67-1
“REASONING SKILLS PUZZLES”

OBJECTIVE: To develop reasoning skills

RESOURCES: Work Sheets – Learning Activity H.67-1

SUGGESTED TIME: 1-2 hours

DIRECTIONS:

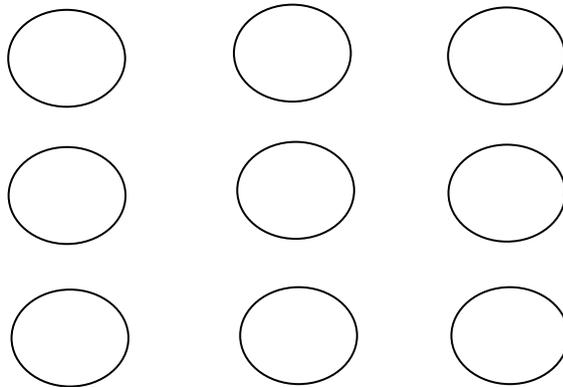
1. Pass out copies of the work sheets for Learning Activity H.67-1.
2. Ask students to use their reasoning skills to solve the problems.
3. Discuss the results with your students.

LEARNING ACTIVITY H.67-1
“REASONING SKILLS PUZZLES”
WORK SHEET

PART I

DIRECTIONS: Use your reasoning skills to solve this problem.

1. Connect all nine dots using no more than four straight lines.
2. The dots cannot be repositioned.
3. The connecting line must be drawn in one continuous stroke. (Leave the pencil on the paper until all lines have been drawn.)



Source: Mike Vance, *Thinking Out of the Box*

LEARNING ACTIVITY H.67-1
“REASONING SKILLS PUZZLES”
WORK SHEET

PART II

DIRECTIONS: Use your reasoning skills to solve this problem.

THE ISLAND FIRE

A man is on an island that is one mile long and about 100 yards wide. The grass and shrubs are very dry from a long drought. Suddenly, a fire starts at one end of the island. It is racing toward him along the width of the island fanned by a strong wind blowing in his direction. He cannot take refuge in the sea because it is infested with sharks. There is no beach, just sheer cliffs. What can he do to avoid being consumed in the flames?

Source: Paul Sloane and Des MacHale, Challenging Lateral Thinking Puzzles

LEARNING ACTIVITY H.67-1
“REASONING SKILLS PUZZLES”
WORK SHEET

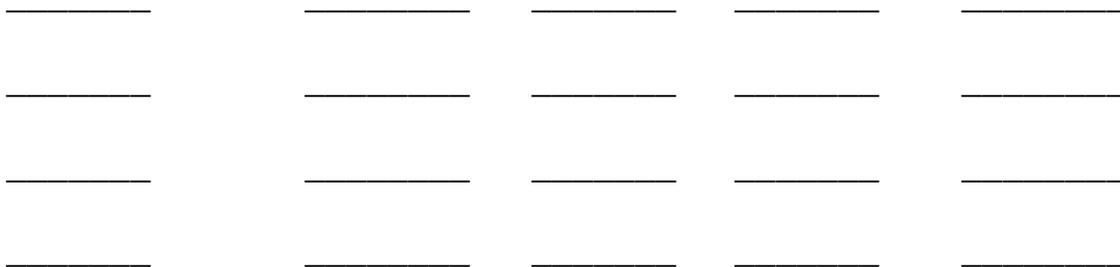
PART III

DIRECTIONS: Use your reasoning skills to solve this problem.

1. As nouns are randomly called out, write these words in Column 1.
2. Then write ten additional non-related nouns in Column 5.
3. Your task is to fill in the three blank lines with a new word that is logically related or associated with the one immediately preceding it.
4. Keep in mind that your goal is to **logically** reach Column 5.
5. Remember, the final word need not be related to Column 1, only to the word immediately preceding it.

EXAMPLE:

Column 1	2	3	4	Column 5
<u>Teacher</u>	<u>Writing Board</u>	<u>AV</u>	<u>Video</u>	<u>TV Set</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____



Source: Edward E. Scannell and John W. Newstrom, Still More Games Trainers Play

LEARNING ACTIVITY H.67-1
“REASONING SKILLS PUZZLES”
WORK SHEET

PART IV

DIRECTIONS: Use your reasoning skills to answer these questions.

1. Being very tired, a child went to bed at 7:00 o'clock at night. The child had a morning piano lesson, and therefore set the alarm clock to ring at 8:45. How many hours and minutes of sleep could the child get?

2. Some months (like October) have 31 days. Only February has precisely 28 (except in a leap year). How many months have 30 days?

3. A farmer had 18 pigs, and all but 7 died. How many were left?

4. Divide 50 by $\frac{1}{3}$, and add 7. What is the answer?

5. What is the minimum number of active baseball players on the playing field during any part of an inning? Maximum?

6. What four words appear on every denomination of U.S. currency?

7. If a physician gave you five pills and told you to take 1 every half-hour, how long would your supply last?

8. If you had only one match and entered a cold, dimly lit room where there was a kerosene lamp, an oil heater, and a wood-burning stove, which would you light first?

9. Two women play checkers. They play five games without a draw (tie) game and each woman wins the same number of games. How can this be?

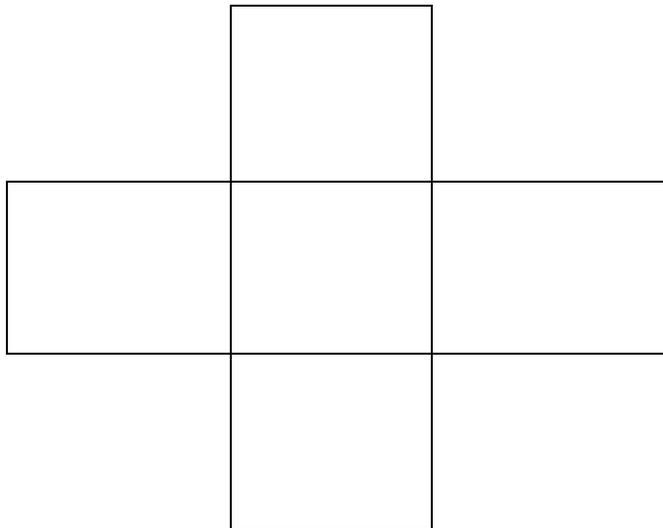
10. What word is misspelled in this test?

LEARNING ACTIVITY H.67-1
“REASONING SKILLS PUZZLES”
WORK SHEET

PART V

DIRECTIONS: Use your reasoning skills to solve this problem.

If you make two straight cuts on a piece of paper shaped as a cross (see below), can you rearrange the cut cross to form 2 squares?



LEARNING ACTIVITY H.67-2
“SCHOOL DRESS CODE”

OBJECTIVE: To develop reasoning skills

RESOURCES: None

SUGGESTED TIME: 2–3 hours

DIRECTIONS:

1. Divide the class into two teams. The topic – to establish a school-wide dress code.
2. One team is to support the topic; the other team is to oppose the topic.
3. Give each team 1 hour to develop their position using good reasoning skills.
4. Have each team present their position to the class.
5. Discuss the results.

LEARNING ACTIVITY H.67-3
“CITYWIDE BAN”

OBJECTIVE: To develop reasoning skills

RESOURCES: Computers with Internet access

SUGGESTED TIME: 2-4 hours

DIRECTIONS:

1. Divide the class into two teams.
2. Select a topic such as:
 - a. A citywide ban on handguns
 - b. A citywide ban on smoking in public places
 - c. A citywide
3. One team will side with the idea to support the topic.
4. One team will oppose the idea.
5. Have each team use their reasoning skills to support or oppose their issue.
6. Discuss the process as well as the results.

LEARNING ACTIVITY H.67-4
“THE ADVENTURES OF THE BLUE CARBUNCLE”

OBJECTIVE: To use reasoning skills to solve a problem

RESOURCES: The Adventures of the Blue Carbuncle by Arthur Conan Doyle

SUGGESTED TIME: 10-20 hours

DIRECTIONS:

1. Have each student read the story The Adventures of the Blue Carbuncle.
2. What were the methods used by Sherlock Holmes to solve the problem?
3. Discuss the methods used in the story with the class.
4. How can these methods be used on the job?

LEARNING ACTIVITY H.67-5
“WORK PLACE REASONING SKILLS”

OBJECTIVE: To demonstrate reasoning skills in the work place

RESOURCES: None

SUGGESTED TIME: 1 hour

DIRECTIONS:

1. Have students identify and discuss with the class at least one example of how they have used reasoning skills in the work place.

LEARNING ACTIVITY H.67-6
“JOURNAL WRITING”

OBJECTIVE: Student will demonstrate writing skills by creating a journal entry centered on a topic assigned by the Specialist

RESOURCES: None

SUGGESTED TIME: 1 hour

DIRECTIONS:

1. Provide students with the topic they are to use for this journal writing activity. The topic should relate to this module.
2. Assign the page range for the journal writing assignment.

This range could vary depending on the timeframe provided for the assignment, the writing skills of the entire group, a small group of students, or individual students. The Specialist can individualize this assignment by placing the page length in the blank space on the work sheet.

LEARNING ACTIVITY H.67-6
“JOURNAL WRITING”
WORK SHEET

NAME:

DATE:

TOPIC:

DATE DUE:

PAGE LENGTH:

LEARNING ACTIVITY H.67-7
"SERVICE LEARNING"

OBJECTIVE: Students will participate in a service learning activity assigned by the Specialist

RESOURCES: Learning Activity H.67-7

SUGGESTED TIME: 1 hour

DIRECTIONS:

1. Identify the type of support linkage which could be used to reinforce the key concept(s) in this module with students (See "Types of Support Linkages").
2. With your students, identify the school and/or community resources which could be contacted to create a Service Learning Activity for this module (See "Community Resources").
3. With students, brainstorm, organize, implement and evaluate the effectiveness of the Service Learning Activity using the "Service Activity Action Plan."

TYPES OF SUPPORT LINKAGES		
Direct Services to Students	Consultative and Technical Assistance	Information and Referral
Community agencies	Professional organizations	Career counseling centers
Parents and personal advocates	Service organizations	Work experience and job placement services
Local education agency support/auxiliary staff	Parent organizations	School and private psychologists
Volunteer and service organizations	Advisory groups	Tutors
Placement services	State education agency personnel	Recreational programs
Postsecondary programs and personnel	Business/industry personnel and programs	Employers
Transitional services	Other vocational support service teams	Employment Services
Other school-based personnel	Local colleges and universities	Community agencies for counseling or health services
	Vocational education research and development resource center(s)	New schools (transfer students)
		Division of Vocational Rehabilitation
		Job Training Partnership Program

Source: HANDBOOK FOR VOCATIONAL SUPPORT SERVICE TEAMS IN MARYLAND

COMMUNITY RESOURCES

Federal and State Agencies provide services to their local and regional offices. Such services include financial support, job training and placement programs, housing, health, youth programs, consumer information, and legal aid. Examples include:

- legal services
- armed services
- state employment services
- state agency or school for the visually impaired
- State Department of Welfare
- mental health agency
- Department of Immigration
- Veterans Administration
- Social Security Administration
- Job Training Partnership Act (JTPA)
- Community Action Program
- law enforcement agency
- legal and judicial agencies
- Bureau of Indian Affairs
- public health service
- social services
- adult continuing education programs
- Office of Economic Opportunity
- civil service programs
- Rehabilitation Services Administration
- employment services
- Parks Department
- public health programs
- Adult Basic Education programs
- migrant programs
- military service representatives
- Planned Parenthood
- correctional facilities
- Governor's/Mayor's Committee for Employment of the Disabled

Community agencies and organizations provide such services as youth recreation, counseling and tutoring, employment and job training, foster care placement, and leadership development. Examples include:

- Chamber of Commerce
- YMCA/YWCA
- drug and alcohol abuse centers
- Red Cross
- child abuse/women's centers
- urban league
- adult continuing education programs
- student financial aid programs
- League of Women Voters
- mental health clinics
- probation and parole services
- children and youth services
- foster homes
- halfway houses
- community action programs
- migrant programs
- bilingual programs
- dropout prevention programs
- parent-teacher organizations
- American Legion
- Veterans of Foreign Wars
- Salvation Army
- JAYCEES
- Optimists
- Goodwill Industries

Citizen and special interest groups typically offer scholarship programs, legal aid, daycare, and transportation. Examples include:

- Lions Club
- canes
- Rotary
- churches
- women's and men's clubs in the community
- crisis intervention centers
- hospitals
- Girl Scouts
- Campfire Girls
- Big Brothers and Sisters
- Boy Scouts
- Indian guides
- Knights of Columbus
- Sertoma
- Elks
- retired citizens
- Volunteer tutor groups

Business, industry, and labor organizations are good sources of field trips, guest speakers, job opportunities, and occupational and product information. Examples include:

- Trade and labor unions
- Advisory committee members
- Employers
- Personnel offices
- industrial supervisors

Source: Sarkees-Wircenski, M. & Scott, J. VOCATIONAL SPECIAL NEEDS

SERVICE ACTIVITY ACTION PLAN

IMPLEMENTATION ACTIVITY/IDEA	
IMPLEMENTATION STEPS	RESOURCES NEEDED

PERSONNEL/AGENCIES/ COMMUNITY	REPRESENTATIVE INVOLVED RESPONSIBILITIES
POSSIBLE BARRIERS	CREATIVE SOLUTIONS
TIMEFRAME	

READING ACTIVITY H.67
“GIVE ME A BREAK!”

OBJECTIVE: To read with comprehension

RESOURCES: Reading Activity H.67

SUGGESTED TIME: 1 hour

DIRECTIONS:

1. Make copies of Reading Activity H.67 and distribute to each student.
2. Have students read “Give Me A Break!”
3. Have students complete the “Reading Recall” and check their answers for accuracy.
4. Discuss the story with your students.

“GIVE ME A BREAK!”

“What does she expect?” exclaimed Sergai, to no one in particular.

Sergai was upset because he was asked to oversee the sales floor by himself for the evening and no one left him with any guidance. What was he to do if something went wrong?

And something was just about to go wrong. Sergai could see it coming. Through the mall entrance to the store strolled 4 kids about 14 or 15 years old. One was smoking, which is against store policy, and the others were yelling and carrying on, pushing each other, cursing, taking items off the displays and just throwing them back.

Some of the customers were staring while others didn't care to put up with any hassles and just headed for the door.

Sergai didn't want to admit it, but these 4 looked like trouble. The way they dressed and the way they talked. And here he was watching the store while his boss was out this evening.

After what seemed like a lifetime, Sergai walked up to the 4 young kids and asked if they needed any help.

After a few taunts and some smart remarks one of the kids told him to get lost. They'd call him if and when they wanted his assistance.

Again sensing more trouble to come, Sergai walked back to the Customer Service Center, keeping a lookout as to the actions of the 4.

Sergai was thinking of his options, trying to use good reasoning skills. First an assessment of the situation was in order. Four kids were disrupting the other customers and are beginning to trash the displays. CDs and DVDs were being tossed everywhere.

A quick analysis of the situation left Sergai with a couple of options. First, he could ask them to leave. Second, he could call mall security but he would have to go in the back to do so and he just didn't want to take his eyes off the 4 of them. Sergai knew he would need to act fast. He was certain that the kid in the black leather jacket just put a handful of DVDs

inside his shirt. Option three was to get the “eye” of one of the other customers to report the trouble to mall security.

After a loud commotion as one of the wall display units came crashing to the floor, Sergai took action. On his way to the 4 kids he got the attention of a young man. As Sergai walked past the man he signaled for him to get mall security. The man gave him a subtle nod and walked quickly out the front door.

Sergai got to the scene of the disturbance as the 4 kids were stepping on the DVDs that had fallen to the floor.

“I am sorry, but I must ask you to leave,” stated Sergai in as stern a voice as he could. Sergai was more than a little nervous. These kids may not have been 14 or 15. Perhaps they were more like 18, about his age.

Sergai’s request to leave was greeted with a “Who’s gonna make us?” reply from the one who was obviously the leader.

Sergai held his ground. If he backed down here, there was no telling what might happen. Just as Sergai was about to open his mouth, he heard this deep voice from behind him say, “I will.”

Sergai turned to see Officer Morales, a 6’4”, 220 lb. officer with the Grapevine Police Department.

The leader of the 4 gave some smart remark and moved toward the officer like he was going to manhandle him to show his buddies just how tough he was.

As the kid reached in his rear pocket for something, Officer Morales was on this kid like a blanket. He grabbed his arm and in one swift motion he dropped him to the floor in a heartbeat. As the other 3 began to move Officer Morales told them to stand in their tracks. Two of them did so immediately, but the third one continued to move toward the officer. With the leader on his face, the officer grabbed the other kid and dropped him to the floor also.

Well, that was the end of the situation. A back-up unit arrived and the 4 kids were arrested and taken away.

The next day, Sergai gave a full report to his manager along with a recommendation that all sales personnel be equipped with cell phones, pre-programmed with 911 numbers for security.

Sergai's manager was impressed and recommended Sergai's promotion to his own store for using his reasoning skills to solve a serious problem.

READING RECALL

DIRECTIONS: How well did you read? Complete the following sentences.

1. Sergai was upset because he
 - a. ___ had to work.
 - b. ___ was asked to oversee the sales floor.
 - c. ___ didn't like his job.
 - d. ___ didn't like his manager.

2. One of the kids was
 - a. ___ smoking.
 - b. ___ drinking.
 - c. ___ a friend of Sergai's.
 - d. ___ employed in the mall.

3. Some of the customers
 - a. ___ helped the 4 kids.
 - b. ___ purchased CDs.
 - c. ___ headed for the door.
 - d. ___ spoke to the kids.

4. Sergai, at first,
 - a. ___ asked the kids to leave.
 - b. ___ asked the kids to stop smoking.
 - c. ___ didn't notice the 4 kids.
 - d. ___ asked the kids if they needed help.

5. Sergai's first option was to
 - a. ___ call security
 - b. ___ ask them to leave.
 - c. ___ call the police department.
 - d. ___ ask the kids if they needed help.

6. A loud commotion was caused by
- a. ___ one of the kids.
 - b. ___ one of the display cases crashing to the floor.
 - c. ___ two of the kids fighting.
 - d. ___ Sergai.
7. One of the customers acknowledged Sergai's request by
- a. ___ shaking his head.
 - b. ___ nodding his head.
 - c. ___ shaking his hand.
 - d. ___ making eye contact.
8. Sergai's request to leave was greeted with
- a. ___ a verbal reply.
 - b. ___ no reply.
 - c. ___ an obscene gesture.
 - d. ___ a non-verbal reply.
9. Officer Morales was with
- a. ___ mall security.
 - b. ___ the Grapevine Mall Police Department.
 - c. ___ store security.
 - d. ___ the Grapevine Police Department.
10. Sergai recommended that store personnel be equipped with
- a. ___ pagers.
 - b. ___ hand guns.
 - c. ___ cell phones.
 - d. ___ cell phones and pagers.

MATH ACTIVITY H.67
“WHAT ARE THE CHANCES?”

OBJECTIVE: To demonstrate the ability to use the principles of probability to solve problems

RESOURCES:

- Work Sheet – Math Activity H.67
- Pair of dice for each team

SUGGESTED TIME: 2 hours

DIRECTIONS:

1. Make copies of the work sheet for Math Activity H.67 and distribute to each student.
2. Have students complete the questions on the work sheet and check their answers for accuracy.
3. Discuss the math activity with your students.

MATH ACTIVITY H.67
“WHAT ARE THE CHANCES?”
WORK SHEET

DIRECTIONS: Use principles of probability to solve the following problems to the best of your ability.

“Figuring your chances, calculating the odds or playing the percentages” are all ways of determining how *likely* something is to happen. For example, if you flip a coin, the likelihood of it coming up “heads” is 1 out of 2 or 1/2 because there is one thing that can happen out of two possibilities. The following questions rely on understanding probability to arrive at the answer.

1. Don has four colors in his wardrobe: black, brown, blue and gray. When he gets up in the morning, he doesn’t turn on the light because it bothers his roommate, so he reaches into his closet and randomly selects a pair of pants and shirt.
 - a. If Don has two pants and two shirts of each color, what are the chances he will get the same color pants and shirt?

- b. Sometimes Don likes to wear blue and gray. If he has blue pants selected, what are the chances that he will get either a blue shirt or a gray shirt? (Hint: Probability of A or B is equal to the Probability of A + the Probability of B. $P(A \text{ or } B) = P(A) + P(B)$.)

2. Today's colleges have a 20% dropout rate. If a student enters college and he or she neither improve or decrease their study skills, what are their chances of graduating from college?

3. If a card player wanted to draw a face card and an ace from a shuffled deck of cards for a score of 21, what are the chances of:
- a. The player drawing either a face card or an ace for the first card? (Hint: There are 52 cards in a deck)

- b. Drawing an ace on the second draw if a face card was drawn first?

- c. The probability of drawing a face card first and then an ace from a deck of 52 cards. (Hint: The probability of two unrelated events happening together can be determined by multiplying the two probabilities together – $P(A \text{ and } B) = P(A) \times P(B)$).

4. If you roll a die, what is the probability that you will roll:

- a. a 3?

- b. a 3 or 4?

- c. an even number?

5. If the weather forecast calls for a 20% chance of rain, what is the probability that it will **not** rain?

Wait for the Specialist's instructions to complete #6.

6. Using a set of two dice, work with a partner to complete the following:
- a. What is the probability of rolling a 7? (Hint: number of events, 1, divided by the number of possibilities)

Write the answer to your calculation.

Now roll the dice a total of 22 times. Use the blanks below to record your results by placing a check on the line next to the roll number when you roll a 7. Then, total the number of checks you have and divide by 21. When finished work with the class to determine the average results of the class

Dice roll results, 6a:

1.	_____	7.	_____	13.	_____	19.	_____
2.	_____	8.	_____	14.	_____	20.	_____
3.	_____	9.	_____	15.	_____	21.	_____
4.	_____	10.	_____	16.	_____	22.	_____
5.	_____	11.	_____	17.	_____		
6.	_____	12.	_____	18.	_____	Total:	_____

b. What is the probability of rolling a pair?

Now roll the dice a total of 40 times and record the results below by placing a check on the line by the roll number when you roll a pair. Then total the number of checks. Divide by 40. When finished, work with the class to determine the class average results.

Dice roll results, 6b:

- | | | | | | | | |
|-----|-------|-----|-------|-----|-------|-----|-------|
| 1. | _____ | 11. | _____ | 21. | _____ | 31. | _____ |
| 2. | _____ | 12. | _____ | 22. | _____ | 32. | _____ |
| 3. | _____ | 13. | _____ | 23. | _____ | 33. | _____ |
| 4. | _____ | 14. | _____ | 24. | _____ | 34. | _____ |
| 5. | _____ | 15. | _____ | 25. | _____ | 35. | _____ |
| 6. | _____ | 16. | _____ | 26. | _____ | 36. | _____ |
| 7. | _____ | 17. | _____ | 27. | _____ | 37. | _____ |
| 8. | _____ | 18. | _____ | 28. | _____ | 38. | _____ |
| 9. | _____ | 19. | _____ | 29. | _____ | 39. | _____ |
| 10. | _____ | 20. | _____ | 30. | _____ | 40. | _____ |

Total: _____

PRE-ASSESSMENT **POST-ASSESSMENT**

DIRECTIONS: Answer the following questions to the best of your ability.
A listing of points as opposed to sentences is suggested.

1. Define the term reasoning.

2. Good reasoning skills will enable you to do what 4 things?

3. Reasoning skills can be developed with _____.

4. What are the 6 levels of Bloom's Taxonomy?

5. What are the 4 steps in the reasoning process?

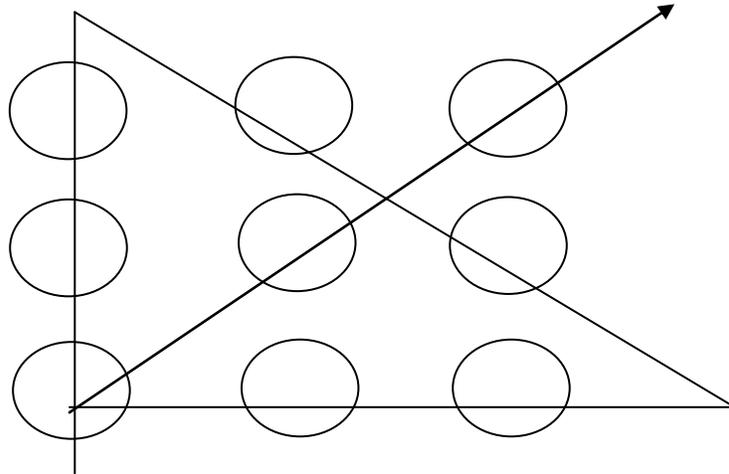
ANSWER KEY

PRE-ASSESSMENT **POST-ASSESSMENT**

1. Define the term reasoning.
 - Drawing conclusions from facts
2. Good reasoning skills will enable you to do what 4 things?
 - Define problems
 - Think critically
 - Evaluate solutions
 - Solve problems
3. Reasoning skills can be developed with _____.
 - practice
4. What are the 6 levels of Bloom's Taxonomy?
 - Knowledge
 - Comprehension
 - Application
 - Analysis
 - Synthesis
 - Evaluation
5. What are the 4 steps in the reasoning process?
 - Assessment
 - Analysis
 - Implementation
 - Evaluate

ANSWER KEY
LEARNING ACTIVITY H.67-1

PART I



PART II

THE ISLAND FIRE

The man should set fire to the ground beneath him and walk towards the main fire. The wind will fan the fire he started so as to burn out the end of the island towards which the wind is blowing. He can then walk back to a piece of burnt land and stand there safely when the main fire reaches his end of the island.

PART III

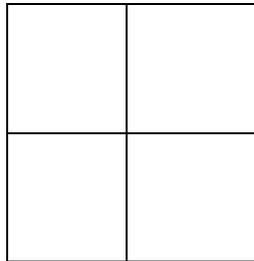
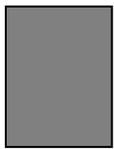
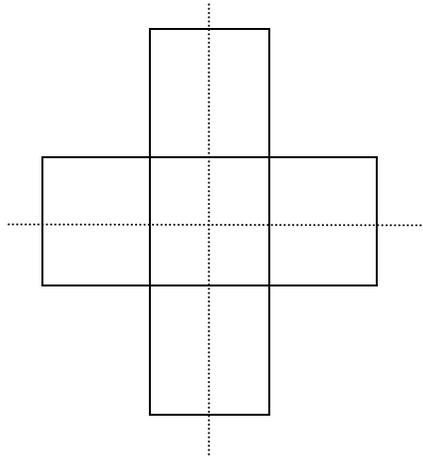
- Answers will vary

PART IV

1. 1 hour, 45 minutes
2. 11 months (all but February)
3. 7 pigs
4. 157 (3 X 50, +7)
5. 10 (9 fielders + 1 batter); 13 (9 + 1 batter + 3 base runners). Add 1 if you count the on-deck batter
6. "In God We Trust", or "United States of America"

7. Two hours (now, + 4 half-hours)
8. The match
9. They aren't playing each other
10. "Mispelled" is misspelled

PART V



ANSWER KEY
READING ACTIVITY

1. Sergai was upset because he
 - a. ___ had to work.
 - b. **X** was asked to oversee the sales floor.
 - c. ___ didn't like his job.
 - d. ___ didn't like his manager.

2. One of the kids was
 - a. **X** smoking.
 - b. ___ drinking.
 - c. ___ a friend of Sergai's.
 - d. ___ employed in the mall.

3. Some of the customers
 - a. ___ helped the 4 kids.
 - b. ___ purchased CDs.
 - c. **X** headed for the door.
 - d. ___ spoke to the kids.

4. Sergai, at first,
 - a. ___ asked the kids to leave.
 - b. ___ asked the kids to stop smoking.
 - c. ___ didn't notice the 4 kids.
 - d. **X** asked the kids if they needed help.

5. Sergai's first option was to
 - a. ___ call security
 - b. **X** ask them to leave.
 - c. ___ call the police department.
 - d. ___ ask the kids if they needed help.

6. A loud commotion was caused by
- a. one of the kids.
 - b. one of the display cases crashing to the floor.
 - c. two of the kids fighting.
 - d. Sergai.
7. One of the customers acknowledged Sergai's request by
- a. shaking his head.
 - b. nodding his head.
 - c. shaking his hand.
 - d. making eye contact.
8. Sergai's request to leave was greeted with
- a. a verbal reply.
 - b. no reply.
 - c. an obscene gesture.
 - d. a non-verbal reply.
9. Officer Morales was with
- a. mall security.
 - b. the Grapevine Mall Police Department.
 - c. store security.
 - d. the Grapevine Police Department.
10. Sergai recommended that store personnel be equipped with
- a. pagers.
 - b. hand guns.
 - c. cell phones.
 - d. cell phones and pagers.

ANSWER KEY
MATH ACTIVITY

1. a. 1 of 4, or $\frac{1}{4}$, or 25%
b. 2 of 4, or $\frac{1}{2}$, or 50%
2. 4 of 5, or $\frac{4}{5}$ or 80%
3. a. 2 of 13, or $\frac{2}{13}$, or 15.38%
b. 4 of 51, or $\frac{4}{51}$, or 7.84%
c. 4 of 663, or $\frac{4}{663}$, or 60.33%
4. a. 1 of 6, or $\frac{1}{6}$, or 16.6%
b. 2 of 6, or $\frac{1}{3}$, or 33%
c. 3 of 6, or $\frac{1}{2}$, or 50%
5. 80%
6. a. 3 of 21, or $\frac{1}{7}$, or 14.28%
 - Answers will vary, but should be close to 3 of 21, or $\frac{1}{7}$, or 14.28%b. 1 of 6, or $\frac{1}{6}$, or 16.66%
 - Answers will vary, but should be close to 1 of 6, or $\frac{1}{6}$, or 16.66%