Can You Be Sure?

DIRECTIONS: Read the assumptions below. Answer the questions that follow.

ASSUME THE FOLLOWING IS TRUE:

A. If Alex Grant learns to play tennis, then Mary Grant will buy him a Prince tennis racquet.

B. If Mary buys Alex a Prince tennis racquet, then Alex will promise to practice tennis at least twice a week.

C. Mary Grant buys Alex Grant a tennis racquet.

QUESTIONS:

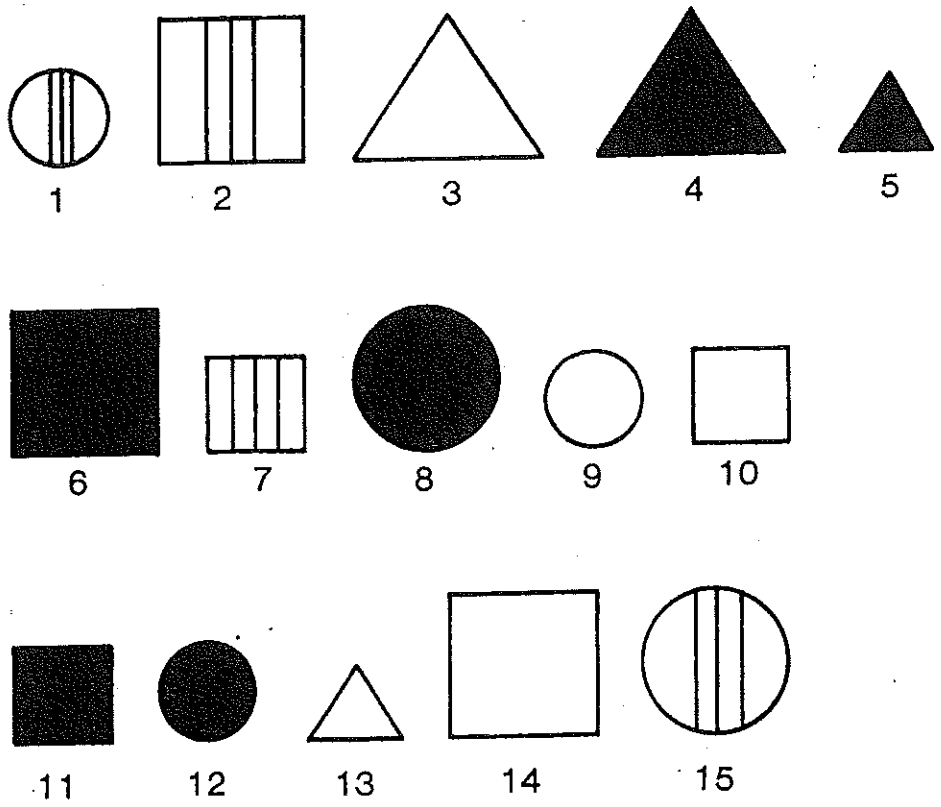
1. Did Alex Grant learn to play tennis? How do you know?

2. Will Alex promise to practice tennis at least twice a week? How do you know?

3. Did Mary Grant buy Alex a brand new tennis racquet? How do you know?

Match It Up

DIRECTIONS: Look at the shapes and numbers below. Then write the numbers of the shapes that belong to each class listed. The first one has been done for you.



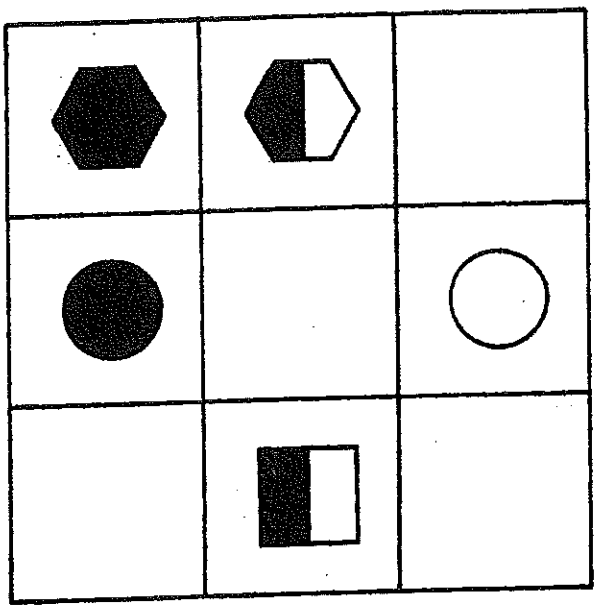
LARGE AND BLACK 4, 6, 8

1. SMALL AND STRIPED _____
2. WHITE TRIANGLES _____
3. SMALL AND WHITE _____
4. SMALL SQUARES _____
5. LARGE CIRCLES _____

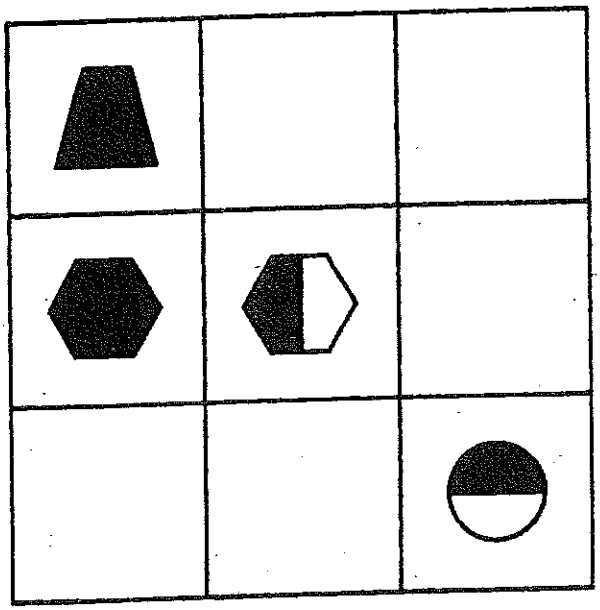
Fill in the Blanks

DIRECTIONS: Complete each matrix below by filling in the blanks with the figures that logically follow according to the patterns shown.

1.



2.



Unless Riddles

Logically speaking, "unless" means the same thing as "or."

Example 1

Unless Greg caught the fish, Cindy caught the fish.

From this statement, you know that one of the two people caught the fish. Just as with "or" statements, if one of the clauses in an "unless" statement is false, then the other clause must be true.

Example 2

Unless Janet marries Bailey, Betty will marry him.

Betty will not marry Bailey.

From these two statements, you know that Janet will marry Bailey.

Solve the riddles below. You will notice that "unless" does not have to be between the two clauses.

Kad's Caper

1. Unless it rains, Lenny Kad will play soccer.
2. Unless Lenny plays soccer, he will go to the dance tonight.
3. Lenny wants to go to the dance tonight.

Is Lenny hoping for rain or shine? _____

The Lost Expedition

1. The Lost Expedition will march forever, unless Robert finds the compass.
2. Unless Barbara asks Robert to check his knapsack, he will never find the compass.
3. Unless Robert and Barbara stop fighting, she will never ask Robert to check his knapsack.
4. Unless Robert finds the compass, he and Barbara will never stop fighting.

What will happen to the Lost Expedition? _____

Name _____

IL5

More Unless Riddles

The rules for "unless" statements are the same as the rules for "or" statements.

I. In a true "unless" statement, at least one of the clauses must be true.

II. In a true "unless" statement, if one clause is false, then the other clause must be true.

Solve the riddles below.

Ski Driver

1. George will drive everyone to the ski slope, or Cami will take the bus.
2. Unless Cami gets a ride in a car, her mother will not let her go skiing.
3. Unless Sandra goes skiing, George will not drive.

For Cami to go skiing, Sandra must _____

Exhibit A

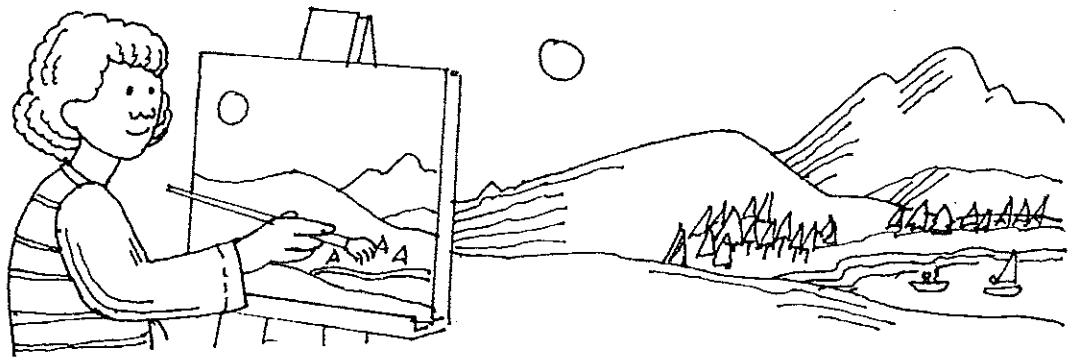
1. Unless Andrea finishes her painting, the art exhibit will not be complete.
2. Andrea will finish her painting, unless the lighting is poor.
3. The lighting will be good, unless it rains.

It will rain or the art exhibit will _____

Animals On Parade

1. The parade will go down either Fifth Street or Third Street.
2. The parade will go down Third Street, unless the dancing bears are too tired.
3. The dancing bears will be tired, unless there is a rest day before the parade.

Unless there is a day of rest before the parade, the parade will go down _____ Street.



Name _____

If-Then Riddles

"If-then" statements are tricky. The first clause (the "if" clause) is called a conditional. It describes a condition. The second clause (the "then" clause) is called a consequence. When the conditional—the "if" clause—is true, then the consequence—the "then" clause—must be true.

Example 1

If it is cloudy, then I need an umbrella.

It is cloudy.

From these two facts, you know that an umbrella is required.

Example 2

If it is raining, then my laundry is wet.

My laundry is not wet.

From these two statements, you know that it is not raining. When the "then" clause of an "if-then" statement is false, then the "if" clause must be false.

Solve the "if-then" riddles below.

Race-Off

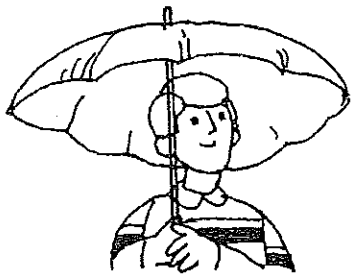
1. If Frank ran faster than Archie, then Frank won the race.
2. Louis won the race.

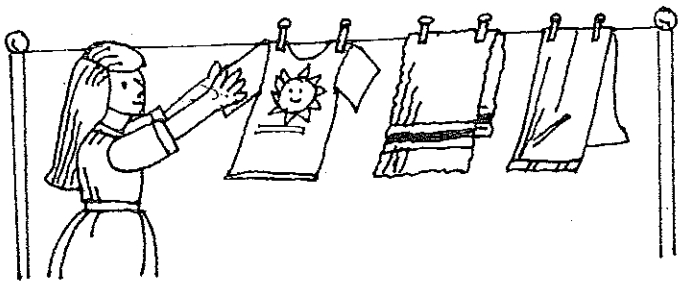
Who ran faster—Frank or Archie? _____

Forward Positions

1. If Gloria plays center, then Jodi will play guard.
2. If Jodi plays guard, then Karen will play forward.
3. If Karen plays forward, then Jenny will also play forward.
4. If Gloria plays guard, then Susan and Mickey will play forwards.
5. Gloria will play center.

Who will play the two forward positions? _____





Name _____

IL 7

If-Then II

"If-then" statements follow these rules:

I. When the "if" clause is true, the "then" clause is true.

II. When the "then" clause is false, the "if" clause must be false.

However, there is another possible situation: when the "if" clause is false, the then clause may still be true!

Example

If it is sunny, Beth will go to the beach.

It is not sunny.

Although it is not sunny, Beth may still go to the beach.

Solve the riddles below.

Football Setup

1. Rich or Dennis will play quarterback.
2. If Rich plays quarterback, then Mike will play tackle.
3. Rich will not play quarterback.

Who will play quarterback? _____ Will Mike play tackle? _____

Figure Eights

1. If Julie goes ice skating, then her friend Jeff will go ice skating.
2. If Jeff goes ice skating, then his sister Angie will go ice skating.
3. Jeff will not go ice skating.

Will Julie go ice skating? _____ Will Angie go ice skating? _____

Ripple Riddle

1. Only three people can go swimming.
2. If George goes swimming, then one person cannot go swimming.
3. If Ann goes swimming, then Lisa will go swimming.
4. If Lisa goes swimming, then Larry will not go swimming.
5. If Larry goes swimming, then George will go swimming.
6. If Ann goes swimming, then one person cannot go swimming.

Which three people can go swimming? _____

Name _____

IL 8

Analyze These Analogies

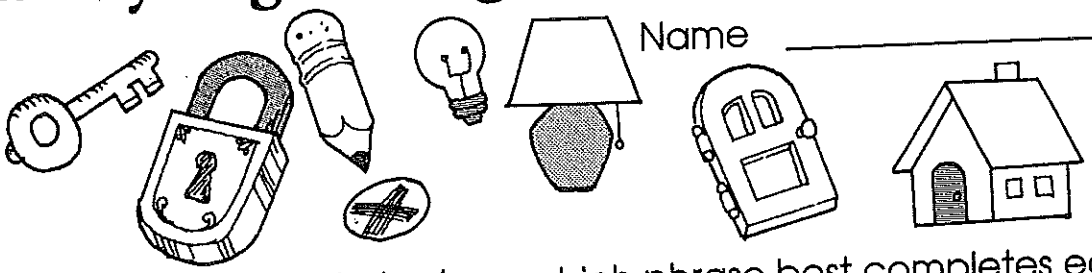
Name _____

Put an **X** in the circle by the phrase to correctly complete each analogy.

1. ax is to chop as . . .	◯ measure is to ruler ◯ scissors is to cut
2. peach is to tree as . . .	◯ broccoli is to asparagus ◯ cucumber is to vine
3. marathon is to runner as . . .	◯ regatta is to sailor ◯ gymnast is to tumbling
4. racket is to tennis as . . .	◯ club is to golf ◯ jockey is to horse
5. scientist is to laboratory as . . .	◯ bathyscaph is to diver ◯ astronaut is to spacecraft
6. odious is to disgusting as . . .	◯ morose is to gloomy ◯ moron is to intellectual
7. throw is to pitch as . . .	◯ kick is to punt ◯ basket is to basketball
8. shaky is to tremulous as . . .	◯ vertical is to horizontal ◯ isolate is to sequester
9. scalpel is to surgeon as . . .	◯ bookmobile is to library ◯ wrench is to plumber
10. spaghetti is to pasta as . . .	◯ sausage is to bacon ◯ kumquat is to fruit
11. koala is to marsupial as . . .	◯ porcupine is to rodent ◯ emu is to pelican

29

Analyzing Analogies



Name _____

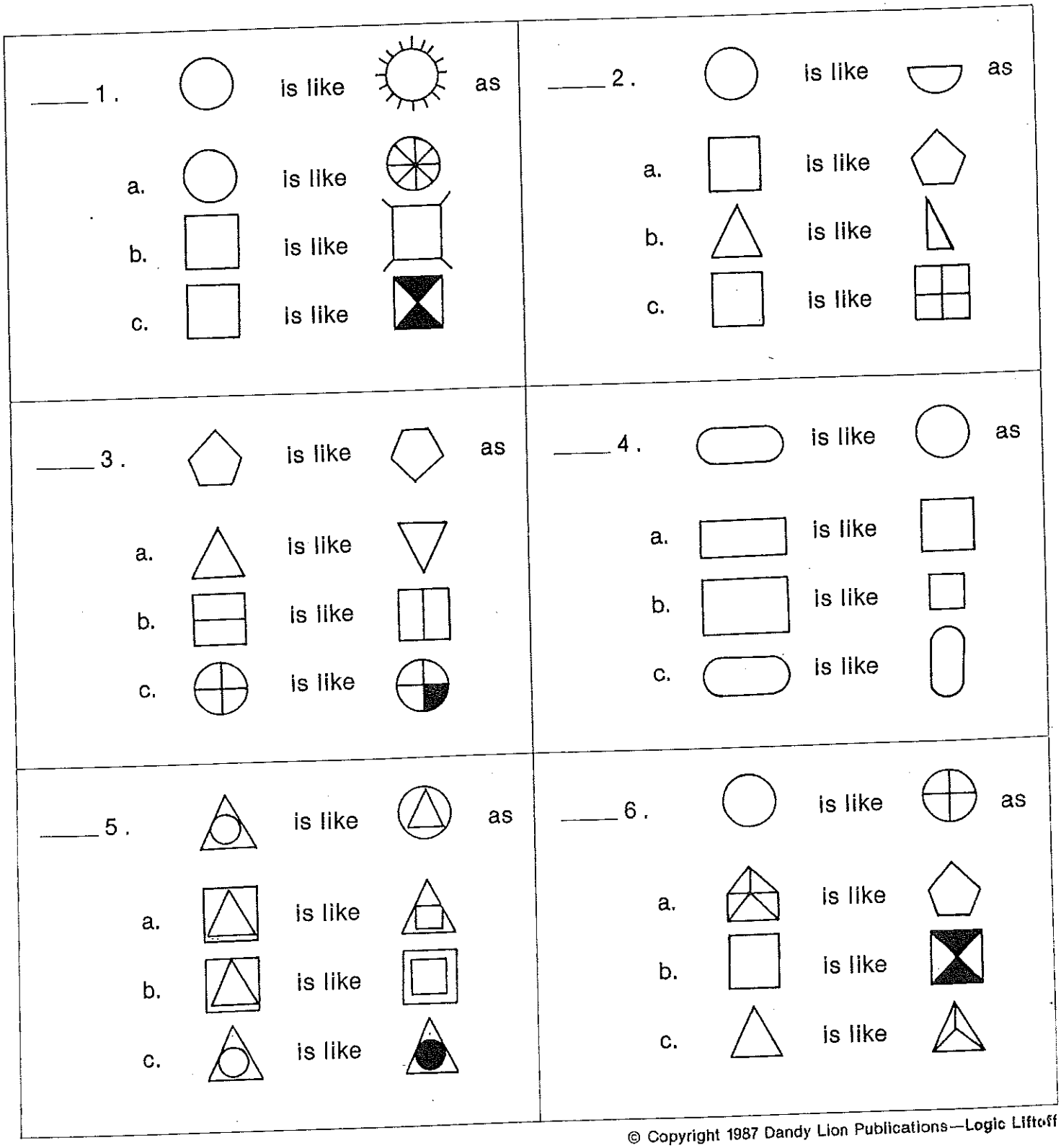
Put an **X** in the circle to show which phrase best completes each analogy.

1. key is to lock as . . .	○ lightbulb is to lamp ○ house is to door
2. cloud is to billowy as . . .	○ rain is to shower ○ cactus is to prickly
3. window is to pane as . . .	○ bookcase is to shelf ○ bumper is to automobile
4. roof is to house as . . .	○ shoe is to sole ○ bow is to boat
5. surgeon is to hospital as . . .	○ priest is to church ○ teacher is to student
6. swim is to pool as . . .	○ read is to library ○ javelin is to discus
7. lawyer is to client as . . .	○ doctor is to hospital ○ banker is to depositor
8. falter is to hesitate as . . .	○ exact is to accurate ○ passage is to passive
9. ornate is to austere as . . .	○ divan is to davenport ○ elegant is to inferior
10. lather is to foam as . . .	○ larceny is to theft ○ prohibit is to permit

IL 10

Name _____

Finish the following analogies by choosing the set of pictures or figures that best completes each sentence.



Name _____

Analogies are comparisons between two things. They compare features that are not always obvious. Finish the following analogies by choosing the set of pictures or figures that best completes each sentence. Write the correct letter on the line.

_____ 1. BOD is like EFG as

a. EFG is like JIH

b. ACE is like FHJ

c. 153 is like 426

_____ 2.  is like  as

a.  is like 

b.  is like 

c.  is like 

_____ 3.  is like  as

a.  is like 

b.  is like 

c.  is like 

_____ 4.  is like  as

a.  is like 

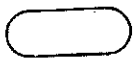
b.  is like 

c.  is like 

_____ 5.  is like  as

a.  is like 

b.  is like 

c.  is like 

_____ 6.  is like  as

a.  is like 

b.  is like 

c.  is like 

Name _____

Finish the following statements by choosing the word that best completes each analogy. Consider carefully the relationship between the first two members of the analogy. Then look for the same relationship between the second two members of the analogy. Write the letter of the correct answer in the space.

Example grape : vine :: apple : tree

1. gallon : quart :: hour : _____
   a. clock
   b. day
   c. time
   d. minute

2. see : behold :: distinct : _____
   a. fuzzy
   b. vague
   c. clear
   d. disturb

3. beagle : dalmatian :: appaloosa : _____
   a. horse
   b. palomino
   c. herd
   d. stallion

4. penthouse : skyscraper :: summit : _____
   a. climb
   b. peak
   c. mountain
   d. snow

5. tribe : Sioux :: cheese : _____
   a. milk
   b. mouse
   c. age
   d. Cheddar

6. mirror : looking glass :: disappear : _____
   a. vanish
   b. appear
   c. reflection
   d. magic

7. spoon : spoons :: elf : _____
   a. fairy
   b. leprechaun
   c. tiny
   d. elves

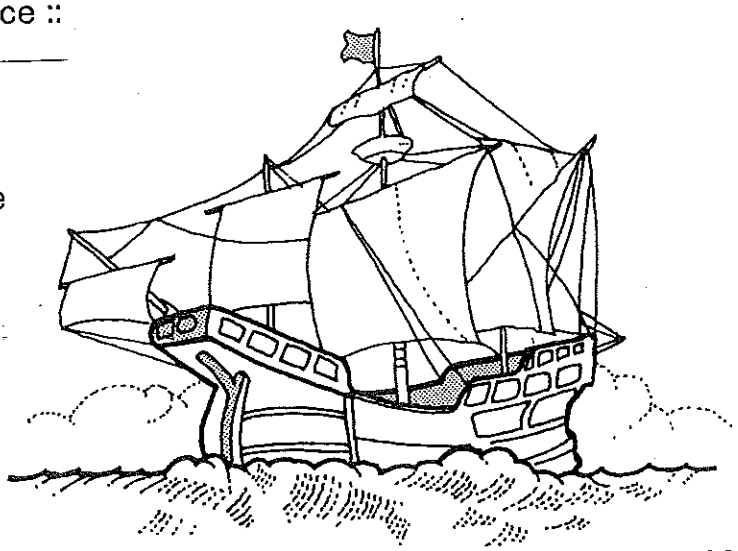
8. snow : skiing :: ice : _____
   a. cold
   b. slick
   c. hockey
   d. frozen

9. noise : silence :: steadfast : _____
   a. steady
   b. soldier
   c. quiet
   d. unreliable

10. child : skip :: duckling : _____
    a. ugly
    b. egg
    c. waddle
    d. downy

11. beige : brown :: mauve : _____
    a. gray
    b. light
    c. purple
    d. color

12. cotton : fabric :: schooner : _____
    a. sailing
    b. wooden
    c. scorpion
    d. ship



Name _____

Finish the following statements by choosing the word that best completes each analogy. Consider carefully the relationship between the first two members of the analogy. Then look for the same relationship between the second two members of the analogy.

Example afar : near :: beautiful : ugly

1. silence : stillness :: examine : _____
   a. inspect
   b. doctor
   c. teeth
   d. failure

2. basket : straw :: vase : _____
   a. pitcher
   b. flower
   c. cracked
   d. ceramic

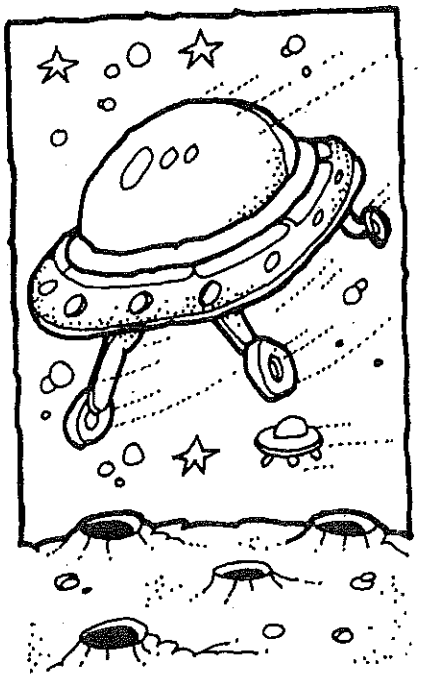
3. piano : violin :: cantaloupe : _____
   a. slice
   b. seed
   c. watermelon
   d. vine

4. roof : house :: crest : _____
   a. climb
   b. hill
   c. crust
   d. fall

5. solution : answer :: test : _____
   a. spelling
   b. difficult
   c. trial
   d. tests

6. planet : Venus :: fruit : _____
   a. vegetable
   b. harvest
   c. tree
   d. banana

7. tolerant : prejudiced :: indifferent : _____
   a. boy
   b. curious
   c. different
   d. time



8. owl : owls :: louse : _____
   a. loose
   b. mouse
   c. lose
   d. lice

9. ant : colony :: outlaw : _____
   a. gang
   b. crime
   c. sheriff
   d. lawyer

10. kite : fly :: wagon : _____
    a. wheel
    b. horse
    c. roll
    d. bike

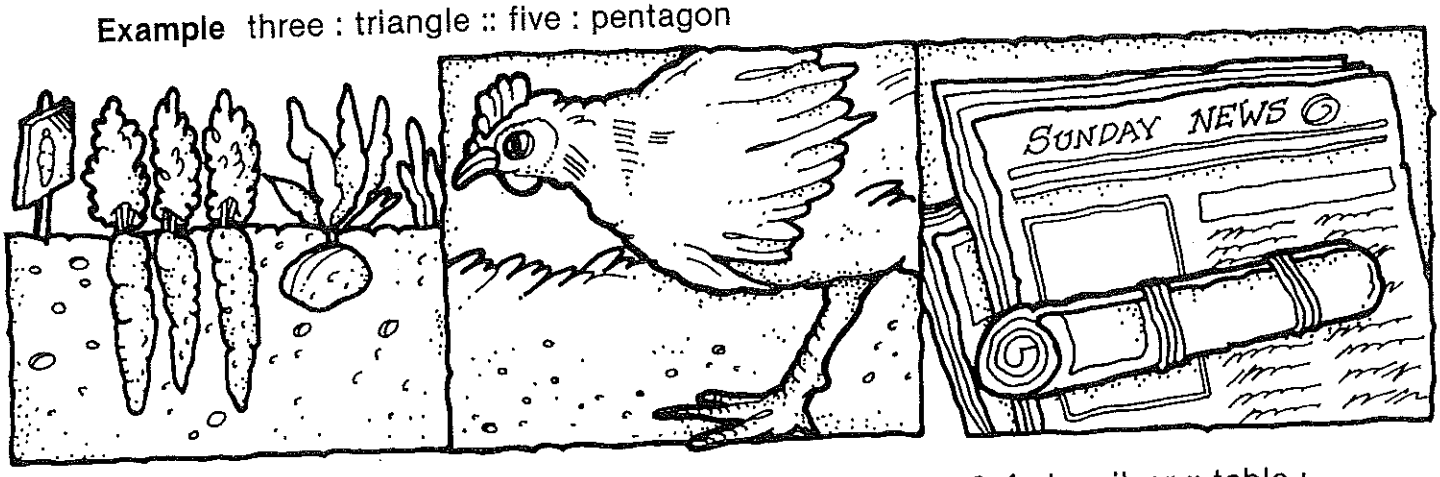
11. mold : shape :: inhabit : _____
    a. moldy
    b. inhibit
    c. reside
    d. habit

12. initial : last :: obnoxious : _____
    a. orthodox
    b. pleasant
    c. disagreeable
    d. punishment

Name _____

Finish the following statements by choosing the word that best completes each analogy. Consider carefully the relationship between the first two members of the analogy. Then look for the same relationship between the second two members of the analogy.

Example three : triangle :: five : pentagon



1. chance : risk :: reliable : _____
   a. help
   b. dare
   c. driver
   d. dependable

2. Mississippi : river :: petunia : _____
   a. flower
   b. garden
   c. violet
   d. purple

3. pear : apple :: blond : _____
   a. girl
   b. hair
   c. brunette
   d. curl

4. brief : lengthy :: comedy : _____
   a. laugh
   b. funny
   c. slapstick
   d. tragedy

5. carpenter : saw :: judge : _____
   a. lawyer
   b. gavel
   c. decision
   d. courtroom

6. bewildered : perplexed :: vague : _____
   a. chicken
   b. vogue
   c. happy
   d. unclear

7. flowers : flower :: axes : _____
   a. hatchet
   b. chop
   c. trees
   d. ax

8. kangaroo : mob :: aborigine : _____
   a. tribe
   b. hunt
   c. spear
   d. abnormal

9. fork : silver :: table : _____
   a. chair
   b. kitchen
   c. leg
   d. mahogany

10. serene : excited :: north : _____
    a. south
    b. pole
    c. snow
    d. west

11. editorial : newspaper :: verse : _____
    a. opinion
    b. poem
    c. comics
    d. version

12. regatta : boats :: meet : _____
    a. meeters
    b. swimmers
    c. competition
    d. parting

Name _____

Finish the following statements by choosing the word that best completes each analogy. Consider carefully the relationship between the first two members of the analogy. Then look for the same relationship between the second two members of the analogy.
Example ten : decade :: one hundred : century.

1. wig : toupee :: spine : _____
   a. posture
   b. backbone
   c. orthopedics
   d. flexible

2. cardboard : box :: silk : _____
   a. worm
   b. weave
   c. blouse
   d. oriental

3. ruby : emerald :: Danish : _____
   a. pastry
   b. ham
   c. Icelandic
   d. diamond

4. child : children :: hat : _____
   a. brim
   b. cap
   c. hats
   d. beret

5. sharp : keen :: cut : _____
   a. sword
   b. slice
   c. knife
   d. scissors

6. awl : cobbler :: rope : _____
   a. twine
   b. jute
   c. sailor
   d. hemp

7. city : Omaha :: weed : _____
   a. herbicide
   b. hoe
   c. crabgrass
   d. garden

8. fragrance : stench :: tarnished : _____
   a. andiron
   b. silver
   c. polished
   d. brass

9. topaz : garnet :: hibiscus : _____
   a. jonquil
   b. flower
   c. petal
   d. blossom

10. hickory : maple :: Parmesan : _____
    a. cheese
    b. Cheddar
    c. milk
    d. goat

11. hydrogen : water :: sodium : _____
    a. oxygen
    b. salt
    c. carbon dioxide
    d. mineral

12. smooth : rough :: stingy : _____
    a. president
    b. generous
    c. stringy
    d. cheap

Name _____

One of the oldest of all logic problems, the syllogism, has three parts. The first two statements are called premises. The last statement is call the conclusion. A syllogism can be either valid (true) or invalid (false), depending on whether the conclusion is supported by the premises.

Example

All flowers smell good.
Violets are flowers.
Therefore, violets smell good.

Valid

All girls are females.
Some girls giggle.
Therefore, all females giggle

Invalid

Here are several premises and conclusions. Read each set carefully and decide if the syllogisms are valid or invalid. You may assume that the premises are true.

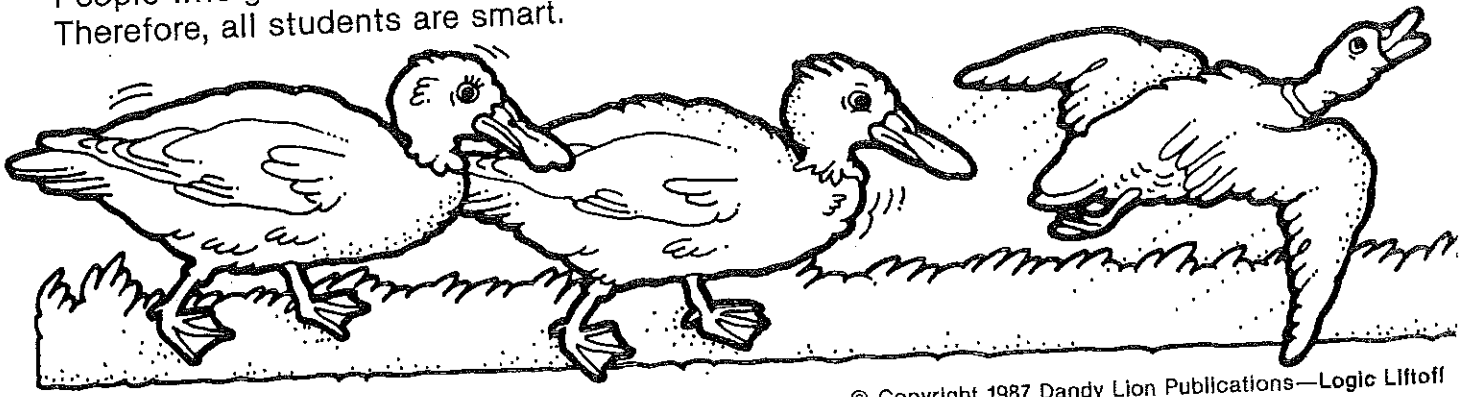
1. All basketball players can shoot baskets.
   Bill is a player on the basketball team.
   Therefore, Bill can shoot baskets.
   valid invalid

2. All ducks can swim.
   Some ducks live in the zoo.
   Therefore, the ducks in the zoo can swim.
   valid invalid

3. All vegetables are healthy.
   Some vegetables are green.
   Therefore, green things are healthy.
   valid invalid

4. No lions are purple.
   All purple things giggle.
   Therefore, all lions giggle.
   valid invalid

5. All students go to school.
   People who go to school are smart.
   Therefore, all students are smart.
   valid invalid



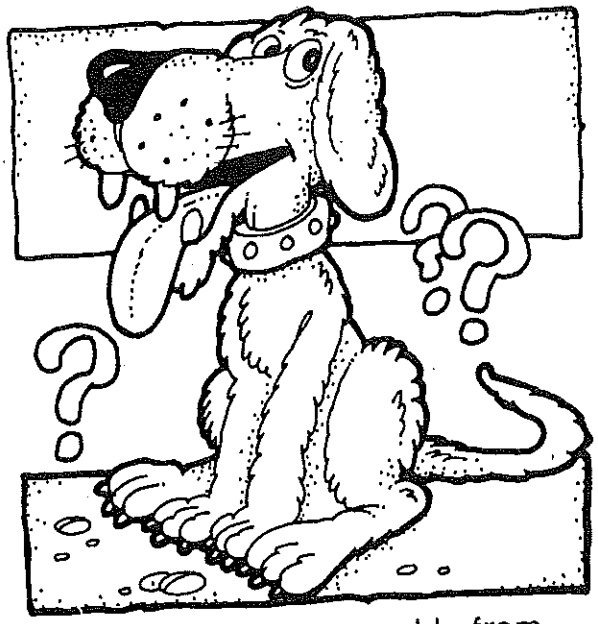
Name _____

Inferences are "educated guesses." They are conclusions that are drawn from known information, but the conclusions are only partially supported by the information. Inferences take you from the known to the unknown. Inferencing involves reading between the lines, judging, and surmising. Some inferences are reasonable and some are not.

Example

Bobbi calls her dog in for dinner each night at 5:00 p.m. Each night he comes in wagging his tail as soon as he is called. It doesn't matter if she calls him Buster, Custer, Mister, Sister, or George. He always comes. Bobbi thinks that her dog must be trained to get his dinner each night at 5:00 and will come no matter what she says. Or he likes to be called different names just like she likes to be called Bobbi sometimes and Roberta sometimes.

The first inference is a correct one. The second inference is not a reasonable one.



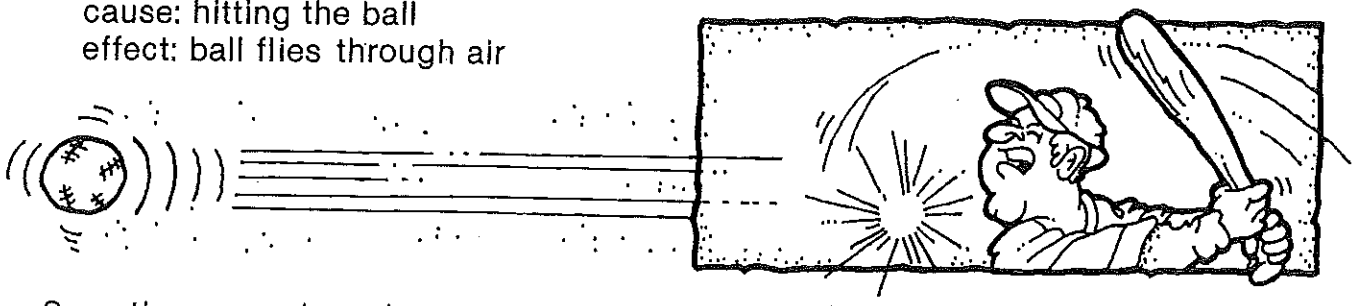
Read the following statements and decide if the inferences are reasonable from the information that is given. In each case choose the most reasonable or logical explanation. Write "yes" if the inference is sound and "no" if it is not. Be ready to defend your answers.

1. Joan buys a new pair of shoes.
   a. Her old shoes are worn out. _____
   b. She needs a new pair of shoes to match her new dress. _____
   c. She found a pair of shoes she likes at a price she is willing to pay. _____
2. Betty doesn't eat her broccoli.
   a. Betty doesn't like green vegetables. _____
   b. Betty doesn't like broccoli. _____
   c. Betty isn't hungry. _____
3. Jason doesn't speak to his best friend, Robert, when he passes him in the hall.
   a. Jason did not see Robert. _____
   b. Jason is mad at Robert. _____
   c. Jason never speaks to anyone. _____
4. People who go to the Robust Gym always look thin and healthy.
   a. All the healthy, thin people go to the Robust gym. _____
   b. Going to the gym makes you thin and healthy. _____
   c. All the unhealthy people are at home in front of the television. _____
5. Byron got caught cheating on his spelling test.
   a. He didn't know how to spell the words on his own. _____
   b. The teacher doesn't like him. _____
   c. He will probably grow up and cheat on his income taxes. _____

Name _____

When two incidents happen at the same time or close to the same time, they are sometimes related in such a way that one thing causes the other. For instance, hitting the ball with the bat makes it fly through the air.

cause: hitting the ball
effect: ball flies through air



Sometimes people make errors in reasoning by saying that one thing causes another when they are not related, but merely happen at the same time or within a short time frame.

Read the following statements and match the cause with the effect.

Cause	Effect
1. ____ If you're late for school	a. it will break.
2. ____ If you deprive a plant of water and light	b. it will rust.
3. ____ If you drop an egg on the floor	c. it will die.
4. ____ If you leave your bike out in the rain	d. you'll make up the time after school.

Read the following statements and decide if there is a logical cause-effect relationship between the happenings. Write "yes" or "no" on the line.

5. _____ Tanya notices that whenever she washes her jeans they are tight. She reasons that washing the jeans must shrink them.
6. _____ Tom crosses his fingers while walking to the plate because that will make him hit the ball farther.
7. _____ Norene notices that there is a high tide whenever there is a full moon. She decides that the high tide must cause the moon to be full.
8. _____ Whenever it rains the hills turn green. Tom thinks that the rain must cause the hills to change color.
9. _____ Bertha notices that whenever she forgets her lunch and her mother has to bring it to her, her mother is in a grouchy mood. She thinks that maybe her forgetfulness causes her mother's bad mood.
10. _____ Whenever there are clouds in the sky it rains. Bobby thinks there cannot be rain without clouds.
11. _____ As a result of an extensive campaign to vaccinate children, there has been a decrease in the numbers of children who get measles.
12. _____ Mr. Jones finds himself in a traffic jam at 5:00 p.m. each day. He notices that the other drivers seem unhappy. He thinks that getting off work must make them unhappy.
13. _____ Each fall the leaves of some trees turn colors and then drop to the ground. The trees that do not change color, do not drop their leaves. Therefore, the color change must cause the trees to drop their leaves.

IL19

Name _____

Tell-Tale Footprints

Mrs. Morton wants to know which of her three children—Mikie, Julie, or Charles—left the muddy footprints on her clean floor. Read the following clues and see if you can solve the mystery.

1. At 5:00 Mrs. Morton came home to find muddy footprints on the kitchen floor.

2. Charles was wearing size 11 tennis shoes that were very dirty.

3. Julie and Mikie were seen playing in a mud puddle on their way home from school at 4:00, but Julie was wearing overshoes.

4. Julie was seen entering the house by the back door at 4:50, looking very guilty.

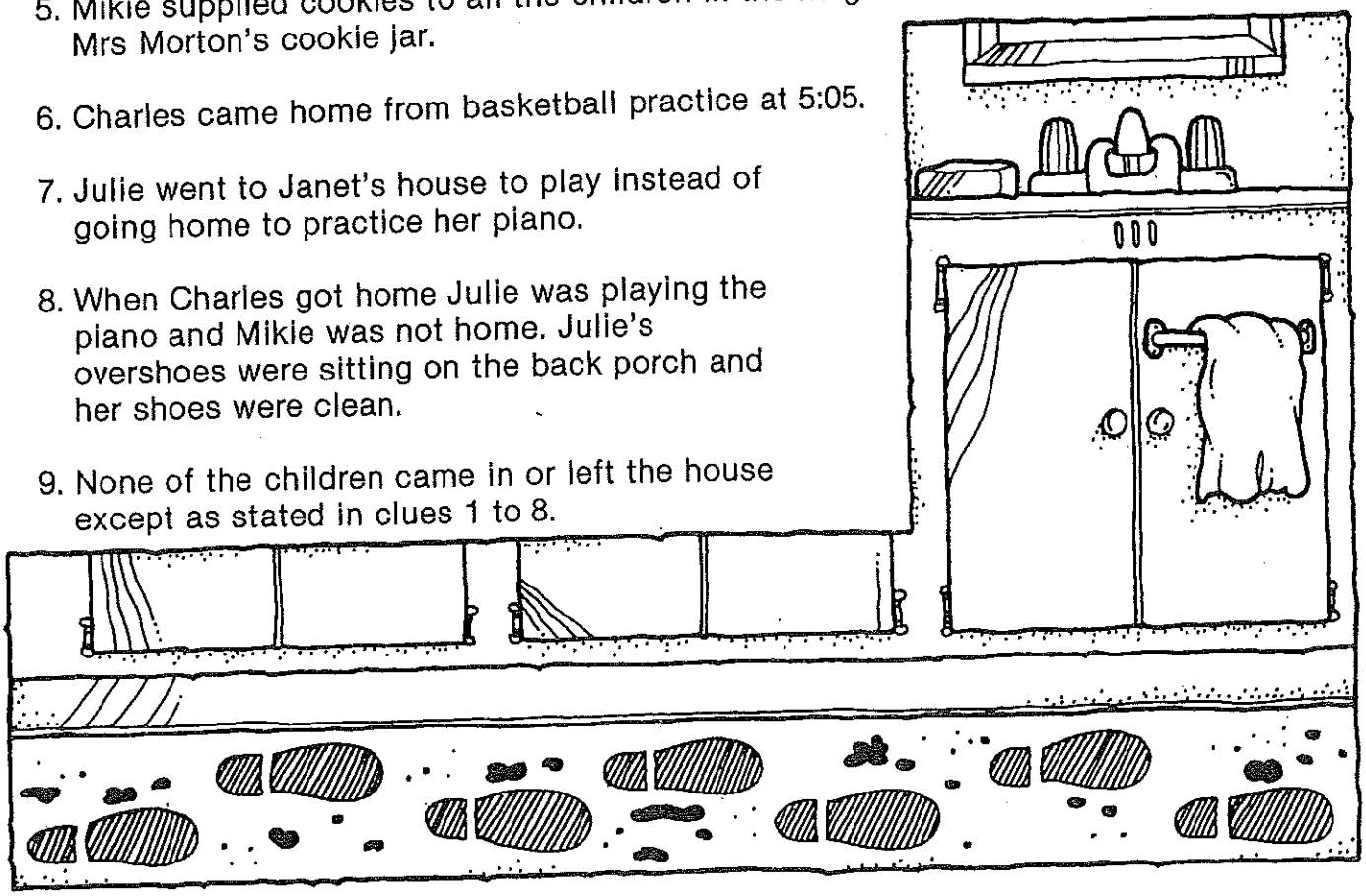
5. Mikie supplied cookies to all the children in the neighborhood at 4:30, from Mrs Morton's cookie jar.

6. Charles came home from basketball practice at 5:05.

7. Julie went to Janet's house to play instead of going home to practice her piano.

8. When Charles got home Julie was playing the piano and Mikie was not home. Julie's overshoes were sitting on the back porch and her shoes were clean.

9. None of the children came in or left the house except as stated in clues 1 to 8.



Solution _____

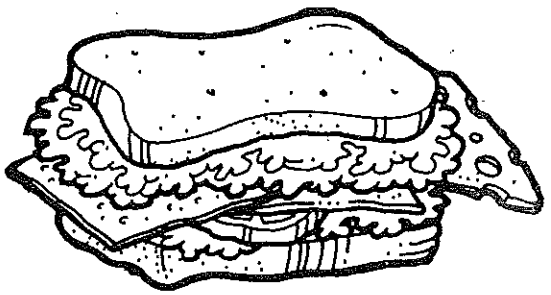
Key available

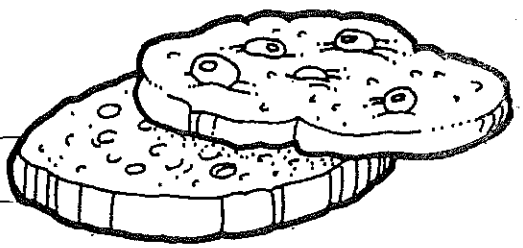
Name _____

Brown Bag Mystery

It's a mystery! Everyone would like to know what happend to Bianca's cookies. Read the following clues and see if you can find out what happened to the cookies.

1. An inspection at the lunch table showed that Carol had a bag of chocolate chip cookies in her lunch, but she said she did not take the cookies.
2. Bianca reported that her cookies were missing at the beginning of the lunch period.
3. Bianca found a tuna sandwich in her lunch.
4. Bianca's mother always fixes her peanut butter and jelly sandwiches.
5. Andy's mother had sent tuna.
6. Andy was seen entering the classroom at the first recess.
7. Andy, Carol and Bianca all like cookies and all three had their lunches in brown paper bags.
8. Carol was the first one to be excused to get her lunch.
9. Andy is allergic to oranges.
10. Bianca keeps her lunch in her desk.
11. Andy and Carol keep their lunches on the shelf at the back of the room.
12. Andy's lunch sack had a chicken sandwich, an orange, and oatmeal cookies.
13. Bianca was crying and wanted her lunch back, which she thought should include a peanut butter and jelly sandwich and cookies.
14. Carol's mother only sends oatmeal cookies.
15. Bianca had seen her mother pack chocolate chip cookies in her lunch.
16. Today's date is April 1.





Solution _____

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