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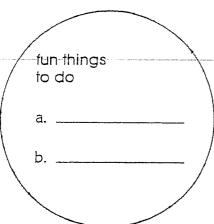
## Game, Set, Match

Discovering Logic, copyright © 1985

	nnis 3	5
2	4	6
are games."	So "board games" are a s st of <i>members</i> of <i>subsets</i> o	ner set. For example, all "board ubset of "games." Below is an f the set "games." Fill in the bl
	Subset	Member
1.	board games	chess
2		
3		
4		
So "indoor gar incomplete list	e "indoor games" are also " nes" and "ball games" are	
Set	Set	Member of Bo

#### Circle Sets

Circles are often used to represent sets. The circle below contains the set "fun things to do."

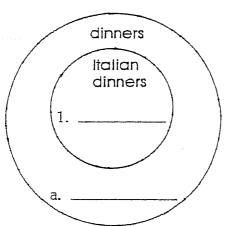


Since "a" and "b" are inside the circle they must be fun things to do. Since "c" is outside the circle it must *not* be a fun thing to do.

Write some fun things to do in the spaces after "a" and "b" and something that is *not* fun to do in the space after "c."

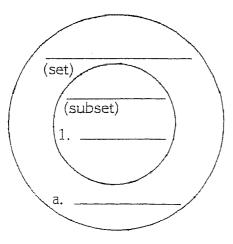
C. \_\_\_\_\_

A circle that is inside another circle represents a *subset*. "Italian dinners" are a *subset* of dinners.



Write a *member* of the *subset* "Italian dinners" in the space after "1." Write a *member* of the *set* "dinners" after "a." Remember, "a" is outside of the subset "Italian dinners."

Now make up your own set and subset.



Write the name of the set and subset and members and nonmembers of each in the spaces provided.

b. \_\_\_\_\_

#### Bioset

Subsets

Biologists are experts at classifying plants and animals. Below is a list of subsets of the sets "plants" and "animals." Also, there is a list of members of the subsets. Use the words on these lists to fill in the spaces in the sets of "plants" and "animals" at the bottom of the page. Some of the spaces have been filled for you.

**Members** 

	<del></del>				<u> </u>	
	flowers fish snakes	birds trees vegetables	rose robin daisy	oak cobra pine	ratţlesnake bluejay	
	plant	s				
A						
2	B.	flowers				
	2.		-///		animals	
C			// A:			
			2		В.	
					1raffl	esnake
			\C			

## Squiggles, Tiggles, and Zares

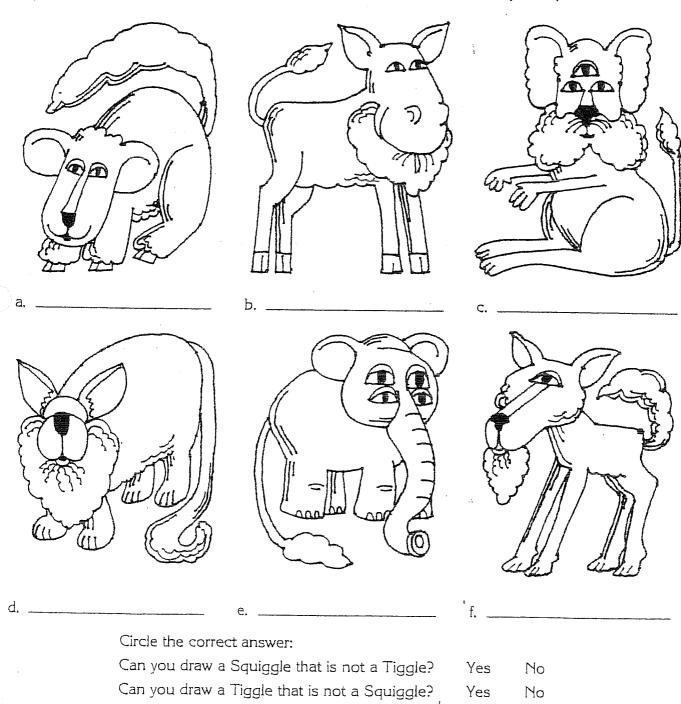
As a zoologist on the planet Bruto, you are trying to classify the animals you come across. One of the inhabitants tells you about three types of animals.

A Squiggle is any animal with at least two eyes.

A Tiggle is any Squiggle with a beard.

A Zare is any animal with a beard that is not a Squiggle.

Classify the animals below. Write your answers in the spaces provided.



## Flower Planet

As a botanist on the Flower Planet, you have many flowers to classify. Use these rules to classify the flowers below:

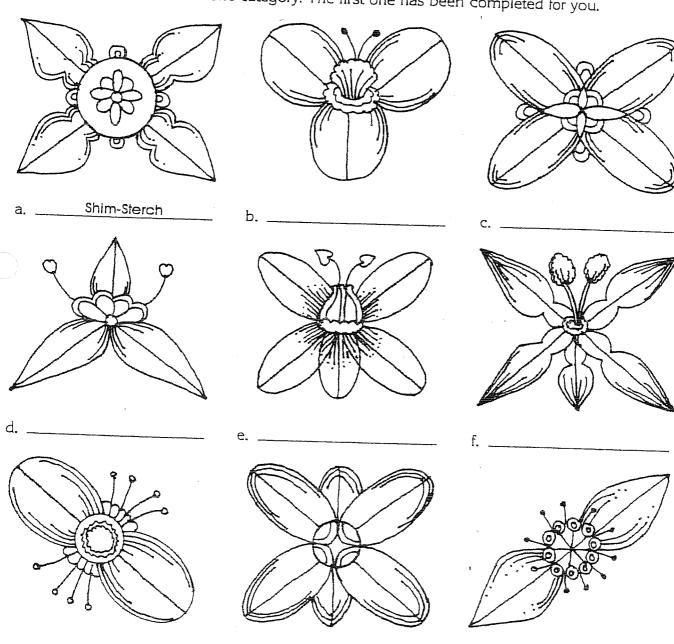
A Sterch is any flower with four or more petals.

A Shim is any flower with pointed petals.

A Skilch is any Shim that is not a Sterch.

A Spatch is any flower with rounded petals.

Label each flower with the correct classification. Some flowers may fit into more than one category. The first one has been completed for you.



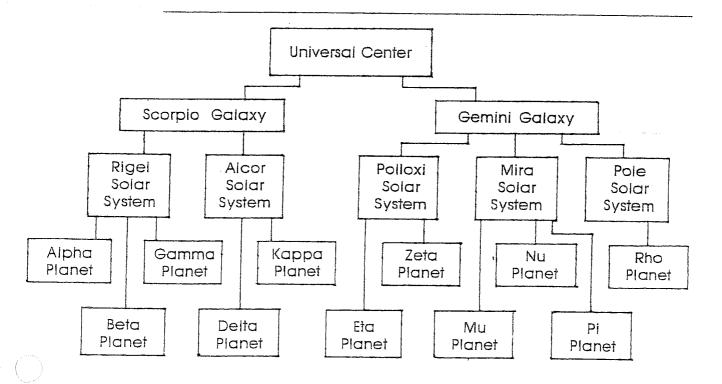
Name

#### Galactic Post Office

The postal route for a section of the universe is diagramed at the bottom of the page. Letters can travel only along the lines. Examine the diagram and answer the questions below.

#### Questions

- 1. Through which Solar System office would a letter pass on its way from Eta to Zeta?
- 2. Through which two Solar System offices would a letter pass on its way from Mu to Rho?
- 3. What is the greatest number of offices a letter might pass through on its way from one planet to another (not including the sending and receiving post office)?
- 4. Which three planets receive letters directly from the Mira Solar System office?
- 5. Through which offices does a letter pass on its way from Eta to Pi?



# The F.B.R. Story

The F.B.R. (Federal Bureau of Relationships) has spilled its files. On the left are twelve pairs of words that are related to each other in a definite way. On the right are six files labeled according to the type of relationship filed inside them. Write the letter of the correct file next to each relationship. The first one has been completed for you.

Relationship  1. chick to hen	File in:	work to worker
2. soccer to goalie		Α
3. elephant to mouse		worker to work
4. typing to secretary		е——е
5. tall to short		В
6. healing to doctor		sport to equipment
7. surgeon to operating		- · ·
8. calf to cow		
9. football to helmet	-	game to player
10. janitor to cleaning	<del></del>	D
11. baseball to bat		
12. bridge to card player		large size to small size
		E
		baby animal to mother
		•——

#### The F.B.R. Files

The F.B.R. (Federal Bureau of Relationships) needs help. On the left are twelve pairs of words that are related to each other. On the right are five files labeled with pairs of words that are related. After each word pair on the left, write the letter of the file that has the most similar relationship. The first one has been done for you.

Deter			
Relationship  1. leg to animal	File in:	branch to tree	
2. hockey stick to hockey	•	A	
3. bee to hive	-		
4. London to England		bird to nest	***************************************
5. fin to fish		В	
6. verse to song	-	chantosta	
7. Madrid to Spain		chapter to book	
8. spider to web		- C	
9. golf club to golf	<del></del> ,		
10. scene to motion picture		Paris to France	
11. wing to bird		D	
12. inning to baseball game	·	bat to baseball	
			_

## Incomplete Pairs

Each sentence below should contain two *pairs* of words, but one *word* is missing. Think about the relationship of the first *pair* of words. The second *pair* of words should have the same relationship as the first *pair*. Choose the word that best completes the sentence and write it in the blank.

1. Dark is to light as quiet is to
silence color music noisy
2. Bed is to bedroom as oven is to
porch kitchen cooking eating
3. Horse is to rider as car is to
driver gas saddle tires
4. Spots are to leopards as stripes are to
dalmations zebras white lines
5. Notes are to music as letters are to
read writing song creative
6. Day is to noon as night is to
sunset midnight sleeping darkness
7. Wire is to electricity as pipe is to
plumber wrench plumbing water
8. Petal is to flower as finger is to
toe fingernail thumb hand
9. Hot is to burn as cold is to
freeze ice temperature sledding
10. Camera is to photographer as stethoscope is to
listening doctor X-ray florist

#### SEQUENCING

Linear sequencing is a very practical logical skill. Practice improves cause and effect reasoning and the ability to follow schedules and manage time effectively.

Connect-the-Dots, I and II: Students will practice determining numerical order.

Dog House Day and Turkey Feast: Students will consider the steps involved incompleting an activity and will develop a plan based on the natural sequence of steps.

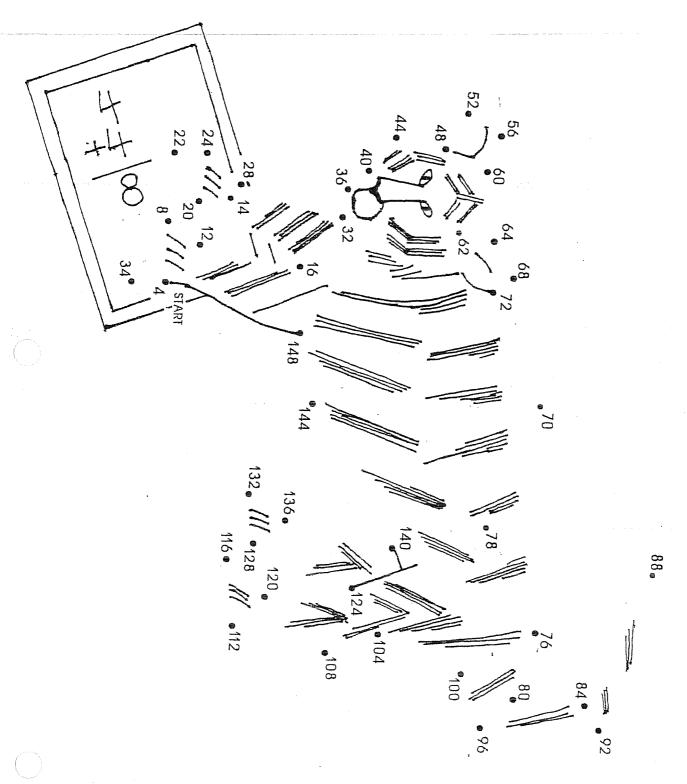
Dodgers' Ranch, Founder's Island, and Lost Treasure Trek: Students will plan a spatial sequence in accordance with prescribed rules and convert spatial sequence to verbal description.

A Day at Marine Park: Students will plan a day's schedule.

Haywire Wires: Students will unscramble two separate events and arrange them in the proper sequence.

## Connect-the-Dots I

Connect the dots beside the numbers. Begin with the number 4 and connect, in *order*, all the *multiples* of 4. Be careful—there are some numbers on this page that are not *multiples* of 4.

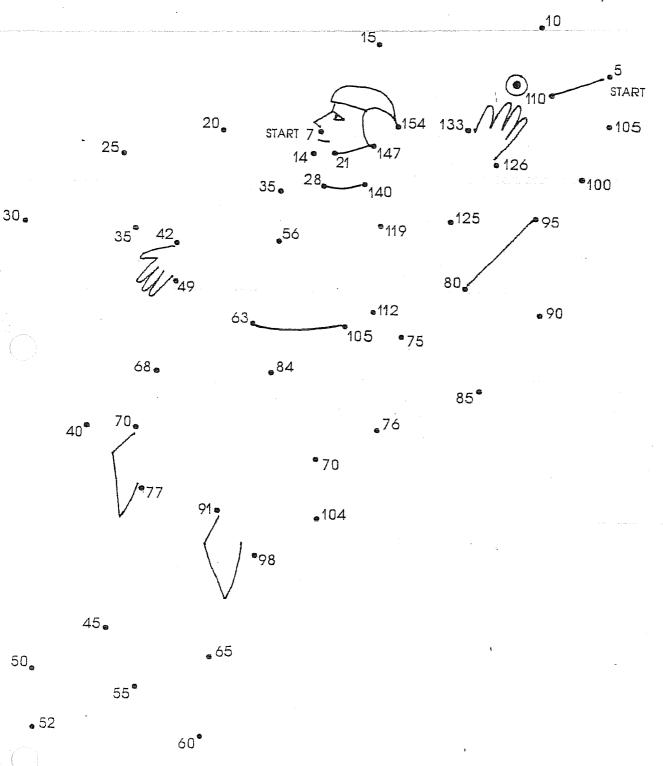


Name \_

#### Connect-the-Dots II

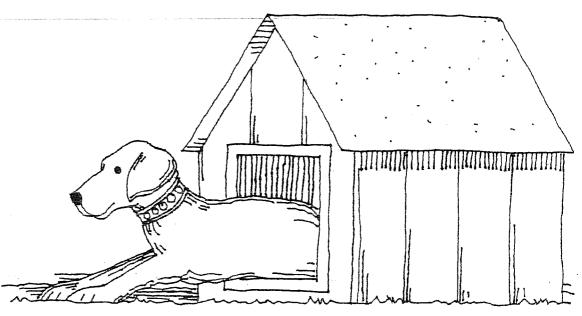
Name .

Connect the dots beside the numbers. Begin with the number 5 and connect, in *order*, all the *multiples* of 5. Then, starting with the number 7, connect, in *order*, all the *multiples* of 7. These two drawings together will form one picture.



## Dog House Day

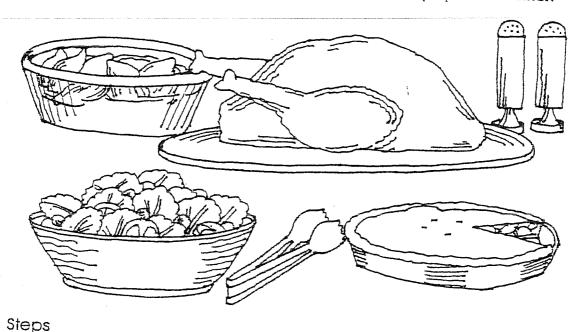
Allison decided to build a doghouse for her Labrador retriever. Think about the things she will need to do. Cross out two of the steps below that aren't necessary to build a doghouse. Then number the steps 1 to 8 in the order they should be done.



sieps
a. Cut out the door.
b. Nail the roof onto the walls.
c. Buy the wood, nails, and paint.
d. Buy a flea collar.
e. Draw the plans for the doghouse.
f. Put away the tools and clean up.
g. Call the furniture movers.
h. Cut out the wood for the sides and the roof.
i. Paint the doghouse.
j. Put up the walls.

## iurkey Feast

Preparing a Thanksgiving dinner isn't easy. Read the steps below. Cross out two of the steps below that aren't necessary when preparing a Thanksgiving dinner. Then number the steps 1 to 8 in the best order to prepare the dinner.



# a. While the turkey is cooking, cut the vegetables for the salad. b. After the yams are baked, melt marshmallows over them. c. Clean and stuff the turkey. d. After the salad vegetables are cut, put the yams in the oven to bake. e. Wash the car and then wax it. f. Buy the turkey and the other groceries. g. Put the stuffed turkey into the oven.

i. Just before serving dinner, put the dressing on the salad.

\_\_ j. On the way home from the grocery store, get a pumpkin pie from

h. Finish eating any cookies that are in the house.

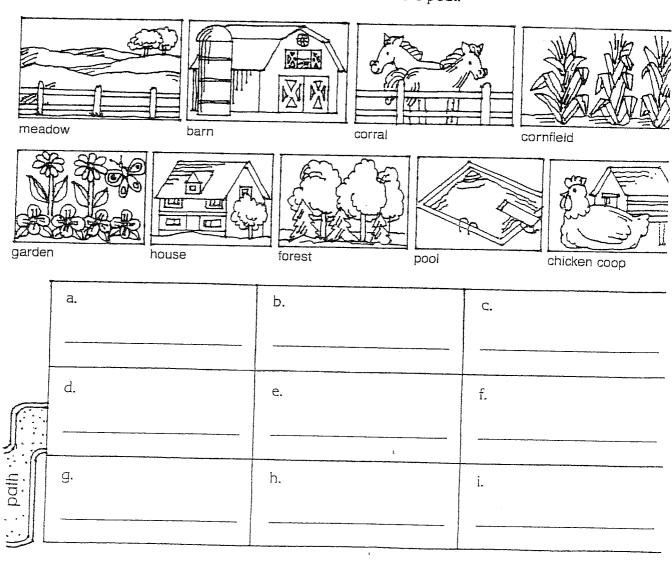
the bakery.

## Dodgers' Ranch

Help Roy and Sue Dodger plan their new ranch. Read the requirements below. Then fill in the map at the bottom of the page with the names of each item Roy and Sue want, correctly arranged.

#### Requirements

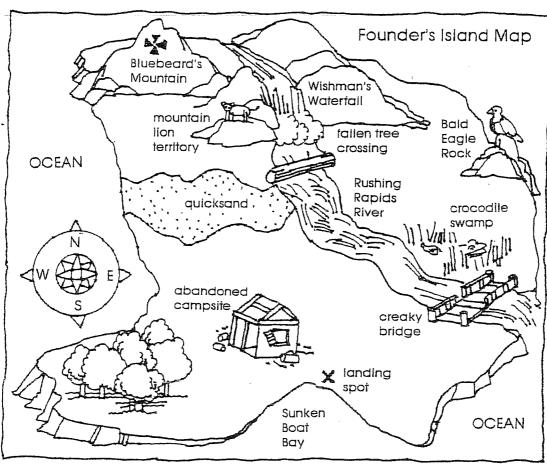
- 1. Sue wants the path to lead directly to the house.
- 2. Roy said the pool should be directly behind the house.
- 3. Sue would like the garden to be visible from the path, and Roy wants the meadow to be between the garden and the corral.
- 4. The chicken coop should be in the middle of the ranch.
- 5. The forest should be as far from the garden as possible.
- 6. Sue does not want the barn next to the pool.



Name

#### under's Island

Treasure has been buried at the peak of Bluebeard's Mountain. Study the treasure map below and plan a safe land route from Sunken Boat Bay to the treasure. Then write the directions at the bottom of the page with warnings of any dangers.



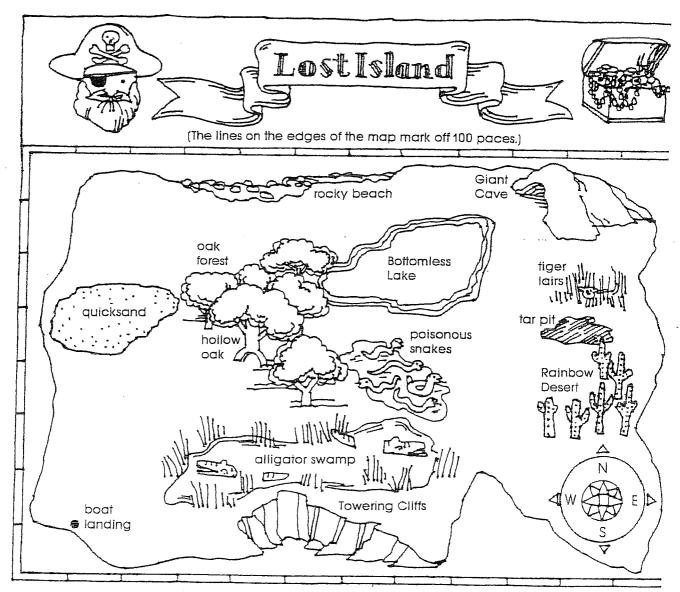
	Sunken Boat Bay		OCEAN
Directions to the Treasure			
		1	
		1	
Namo			

### Lost Treasure Trek

Your adventure club found a note telling where treasure was buried on the Los Island. Read the note carefully. Then, on the map at the bottom of the page, draw a path from the boat landing to the treasure. Mark the treasure spot with an X.

#### Note

Walk north past the swamp 300 paces. Just before the quicksand, turn east and walk until you reach the hollow oak. Then walk north through the oak forest about 300 paces until you reach the rocky beach. Turn east and walk around the north shore of the lake to Giant Cave. Then walk south about 300 paces, but beware of the tiger lairs. As soon as you pass the tar pit, turn east. Walk 100 paces and start digging!



## Day at Marine Park

You've been hired as the manager at Marine Park. You need to plan a schedule for the three dolphin shows, the two seal shows, and the two whale shows each day. Use the information below to plan the schedule, and write it into the Marine Park program at the bottom of the page.

#### Requirements

- 1. There is only one arena for the dolphin, seal, and whale shows.
- 2. All shows last half an hour.
- 3. The seals, who always do the first show, need an hour to rest between shows.
- 4. The dolphins perform last to make cleaning up at the end of the day easier.
- 5. The whales never perform right after the seals or after lunch.
- 6. The dolphins and the whales need to rest for half an hour between shows.

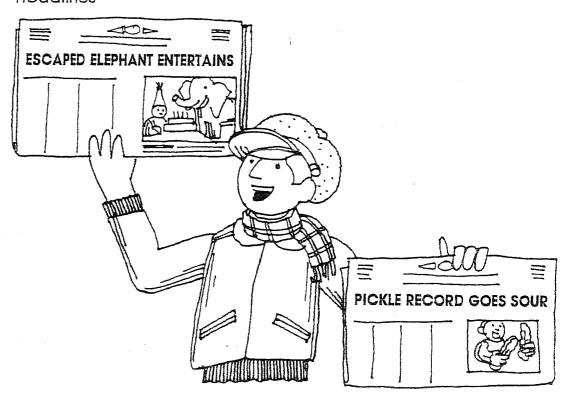
Marine Park Program	
Show	Time
· · · · · · · · · · · · · · · · · · ·	. 10:00 a.m.
	10:30 a.m.
	11:00 a.m.
	11:30 a.m.
	12:00 p.m.
Lunch break	12:30 p.m.
· · · · · · · · · · · · · · · · · · ·	1:30 p.m.
	2:00 p.m.

Name			

### Haywire Wires

Two of your star reporters typed their stories into the newspaper's computer. Unfortunately, their stories got jumbled together. The headlines for the two stories are listed below. Untangle the computer readout at the bottom of the page into two separate stories. Then, on a separate piece of paper, write the sentences from the jumbled stories, in order, with the right headline on top.

#### Headlines



#### Computer Readout

After escaping from Farnum's Circus, Jingo the elephant wound up at a birthday party. At the Middletown Fair this weekend, Harry Squires sat down to an unusual lunch—and dinner. Six-year-old Lisa Bernam was about to blow out the candles when she got some unexpected help. When he was finished, Squires had eaten 472 dill pickles, a new record. Unfortunately, Jingo also blew the cake away. Still, he saved the day by doing tricks until his trainer came for him. When he beat the old record of 456 pickles, the crowd gave him a standing ovation and then went to see the pie-eating contest. The trainer commented, "Some animals just can't stop entertaining." Harry amazed the crowd by winning that event, too! The happy winner said, "Usually, I prefer cake."

#### Inference

Inference activities teach students to gather evidence that leads to solutions.

Newton's Club Meeting, Meeting in the Quarry, and Waldo the Word Magician: Students will use creative guessing to narrow down possible solutions to word riddles.

Code Whiz and Message Magic: Students will decode and encode messages.

PL8S R US and Say It with a PL8: Students will apply language skills to determine the meaning of coded license plates. Then they will use their general knowledge to infer a personality suited to the decoded meaning.

This to That and Elastic Words: Students will supply missing words in a list. They will infer each new word from the letters of the previous word.

## Newton's Club Meeting

In each set of sentences below, find the secret word that "juggle" replaces. It replaces the same word in all four sentences of a set. However, the secret word is different for each set. After you decode the three secret words, discover the new club meeting place by completing the sentence at the bottom of the page

new club meeting place by completing the sentence at the bottom of the pag-
Set One
1. Did Mom "juggle" the car in the driveway?
2. Everyone left the "juggle" after the ball game.
3. The bus will "juggle" behind the museum.
4. Every national "juggle" is open to the public.
juggle =
Set Two
1. A "juggle" a day keeps the doctor away.
2. We ate "juggle" pie for dessert.
3. Aunt Sally made homemade "juggle" sauce.
4. There was a worm in Joe's "juggle."
juggle =
Set Three
1. The club met in the "juggle" house.
2. My cousin made a family "juggle."
3. The kids down the block dared me to climb up a "juggle."
4. The bird's nest was high up in the "juggle."
juggle =
The new club meeting place:
At the behind the
(Set Two) (Set Three)
ı

## Meeting in the Quarry

In each set of sentences below, find the secret word that "quarry" replaces. It replaces the same word in all four sentences of a set. However, the secret word is different for each set. After you decode the three secret words, discover the meeting place of the backpacking club by completing the sentence at the bottom of the page.

c	<u>_</u>	. ,	$\overline{}$	_	_
ς,	$\leftarrow$			n	₽

- 1. The hypnotist put the audience "quarry" hypnosis.
- 2. The dog buried his bone "quarry" the house.
- 3. I get nervous when deadlines put me "quarry" pressure.
- 4. It's bad luck to walk "quarry" ladders.

quarry = \_\_\_\_\_

#### Set Two

- 1. I can skip a "quarry" on the water.
- 2. I love listening to "quarry" and roll.
- 3. Don't "quarry" the boat; we might fall in the water.
- 4. This stale bread is hard as a "quarry."

quarry = \_\_\_\_

#### Set Three

- 1. In a week you can "quarry" a package from Montana to New York.
- 2. We want to "quarry" the box across the country.
- 3. There are ten lifeboats on board in case the "quarry" sinks.
- 4. They sailed across the Atlantic Ocean on a cruise "quarry."

quarry = \_\_\_\_\_

The backpacking club meeting place:

(Set Cne) the \_\_\_\_\_ shaped like a \_\_\_\_(Set Three)

Name \_\_\_\_\_

# Waldo the Word Magician

In each set of sentences below, find the secret word that "magic" replaces. It replaces the same word in all four sentences of a set. However, the secret word is different for each set. After you decode the three secret words, discover the magician's command by completing the sentence at the bottom of the page.

Set	On	e

- 1. When someone is in trouble, give a helping "magic."
- 2. Ron's mother asked him to "magic" her a wrench.
- 3. Gina throws a ball with her left "magic."
- 4. If you know the answer to a question, raise your "magic."

magic = \_\_\_\_\_

#### Set Two

- 1. The plane flew "magic" the city of Los Angeles.
- 2. When the show was "magic," the audience applauded.
- 3. I like to pour milk "magic" my cereal.
- 4. Put the scarf "magic" your shoulders.

magic = \_\_\_\_\_

#### Set Three

- 1. You must wear a hard "magic" at construction sites.
- 2. A "magic" can prevent you from catching a winter cold.
- 3. The "magic" rack is in the hall.
- 4. I saw a magician pull a rabbit out of his "magic."

magic = \_\_\_\_

The magician commanded:

(Set One) the magician's \_\_\_\_\_(Set Three)

Name \_\_\_\_\_

#### Code Whiz

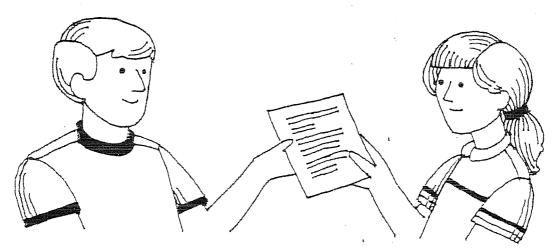
Make up your own secret code. Write a different letter of the alphabet in the space below each letter of the alphabet. Every time you use a letter, cross it out on the string of letters printed below so that you don't accidentally repeat letters.

— A	В		D	E	F		H		J	K
L	М	N		P	Q	R	S	T	Ü	<sup>9</sup> V
W	X	Υ	Z				-	-		

#### ABCDEFGHIJKLMNOPQRSTUVWXYZ

Now make up your own message using your secret code. In the space below write a sentence using secret code letters in place of the corresponding alphabet letters.

Next give the secret code and message to a friend, and ask him or her to decode the message.



Name

# Message Magic

Below are four messages in code. Each message can be decoded by its corresponding decoding key on the right side of the page. Decode and write out the secret messages.

Decoding Keys  1. Replace each code letter with the letter that comes before it in the alphabet.
2. Replace each code letter with the letter that comes after it in the alphabet. (Replace the code letter "z" with the letter "a".)
3. Replace each code letter with the letter that comes two after it in the alphabet. (Replace "y" with "a", and "z" with "b".)
1

Nam

## PL8S R US

The license plates below can be decoded into sayings and names. Tricks are used to make a message fit in the seven spaces of a license plate. Write the saying or name for each plate on the blank lines provided. The first two have been done for you.

e in the later has been been been been been been been bee	1. LV2FISH	Love to fish		
2	L8 4WRK	Late for work	1	
- 3	. UR2MUCH			
4	. YOU R8			
5.	LUCK 4U			
6.	GR8 POP			
7.	RU4REAL			
8.	STAR 2B	·		
9,	W8 4 US			
10.	LV2B ME			
11.	10SPLYR			
12.	1DERFUL _			

Name

## Say It with a PL8

Decode each of the personalized license plates below. Then write a description of a person whose job or personality the plate might fit. The first one has been done for you.

1.	URSMART	You are smart: a good student
2.	2TH MAN	
3.	IRITRYM	
4.	2L SELR	
5.	IDRVKDS	
6.	C WRTHY	
7.	I DOCTR	
8.	4STRNGR	
9.	l H8WRK	
10.	REF 4 E	·
11.	ICSTARS	
12.	W8 LFTR	``

Name \_\_\_\_\_\_,

# his to That

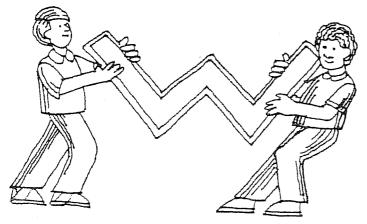
For each set of words below, change the top word into the bottom word. Change one letter at a time. Each time you change a letter, you must still make a real word. The first set has been done for you.

	_	- mas pecti dolle ioi	/OU.
	1. dog	2. eat	3. test
	_dot		
	cot		-
	cat	pie	pass
•	4. firm	5. wild	6. hand
	wood	bone	
	<b>-</b>		foot
		(Dai ya	our own)
	7. candý	8. hope	9. party
, # <u></u>			
	lines		•
HH			

# Elastic Words

Shrink each word below, one letter at a time. Each time you remove a letter, it must still spell a real word. The first word has been done for you.

grasps	2. hearts	3. fingers	irst word has been dor  4. partly	
gasps	_			5. hasten
gaps				
gas				
as				
!	a	in	a	a
			er at a time. Each time	: you add a letter, it
		word below, one lette l a real word.	er at a time. Each time	you add a letter, it
	Expand each must still spell	word below, one lette l a real word. 7. it	er at a time. Each time	you add a letter, it 9. in
		7. it		
	6. a			
		7. it		



splatter

#### CREATIVE LOGIC

Logic is strengthened with creative thinking to motivate it. These open-ended activities combine creativity and reasoning.

Opinion Versus Proposition: Students will determine whether statements are opinions or propositions.

Slingin' Slogans and Building Billboards: Students will create descriptions which inspire as well as explain. These exercises involve both inferring and implying. The fine line between fact and fiction should be emphasized. There are an infinite number of solutions to these exercises. Students can compare their answers to see the wide range of possibilities and differences between people.

Words in Pictures: Students will use reasoning to match visual clues in pictures with the appropriate corresponding phrases. Some of the pictures contain words.

Time Capsule: Students will describe the essence of the world they live in.

A Touch of Color and Colorful France: Students will use creative visual thinking to color areas of maps.

# Opinion Versus Proposition

A statement may be either an opinion or a proposition. Opinions are beliefs about which some people may agree and others may disagree; they are not true or false. An opinion is an attitude with no concrete proof of its truth.

A proposition, on the other hand, is either true or false no matter what people may think about it. A proposition can be proved or disproved relative to other accepted information.

Read the ten statements below. If the statement is an opinion, write an "O" before it. If the statement is a proposition, write a "P" before it.



# Statements 1. Jane's father gave her flowers on her last birthday. 2. Rock music is too loud. 3. The Statue of Liberty is not as tall as the Empire State Building. 4. The wheel is the most useful invention ever designed. 5. Ice cream melts in hot weather. 6. Abraham Lincoln was the fifteenth president of the United States. 7. Abraham Lincoln was the seventh president of the United States. 8. The moon is smaller than the earth.

9. The last movie that Lisa saw was very good.

\_\_\_\_\_ 10. No pair of jeans is worth fifty dollars.

## <sup>e l</sup>ingin' Slogans

Advertisers develop slogans—catchy phrases—to help sell different things. Below are five products and five slogans. Match the slogan with the product by writing the correct letter in the space provided.

#### Product

#### Slogan

- 1. A set of knives \_\_\_\_\_
- a. The ultimate game—more color, more skill, more points, more fun!
- 2. A blanket \_\_\_\_\_
- b. For pictures worthy of your memories.
- 3. A video game \_\_\_\_\_
- c. As sharp-looking as they are sharp.
- 4. A camera \_\_\_\_\_
- d. Not just another world—pure luxury getting there.
- 5. An airline flying to China \_\_\_\_\_
- e. Take cover—our cover.

Make up your own slogans for these products. Think about what kind of person would want the product.

- 1. A car: \_\_\_\_\_
- 2. A radio station: \_\_\_\_\_
- 3. A vacation place:



SO

Name

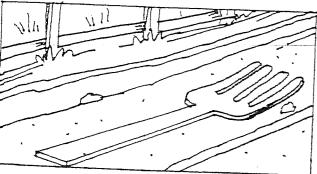
# Building Billboards

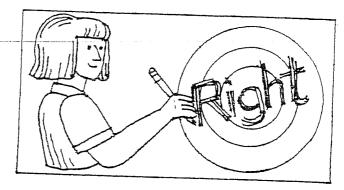
Designing good advertisements requires creative thinking. Make up an imaginary product. Write the product's name, a description of it, and a sales slogan in the space provided below. Then, on the bottom of the page, draw a billboard that advertises your product.

Commence of a programme and an arrangement of the second	Description		
		i i	
	Slogan:		
		Billboard	
•			
		4	
\.			

# Words in Pictures

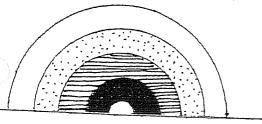
At the bottom of the page are ten familiar phrases. Six of them have been illustrated in the cartoons below. Beneath each cartoon, write the expression it describes.

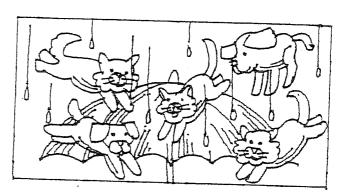




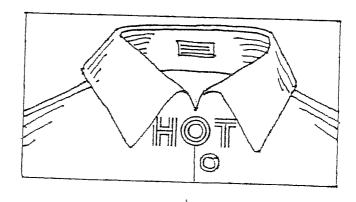












mewhere over the rainbow ining cats and dogs the wool over my eyes

Hot under the collar The final straw Rise to the occasion

Anywhere but here Fork in the road

Break a record Right on target

Name

#### IIme Capsule

You have the opportunity to bury a time capsule (a sealed, very durable box), which will be opened after one hundred years. Future discoverers of the box will be able to guess, from the contents, what your life was like a hundred years before their time.

Below are four different categories. For each category choose an object that you think would best represent it. Then, in the space provided, describe the object. Write why you think it would be a good choice for a time capsule.

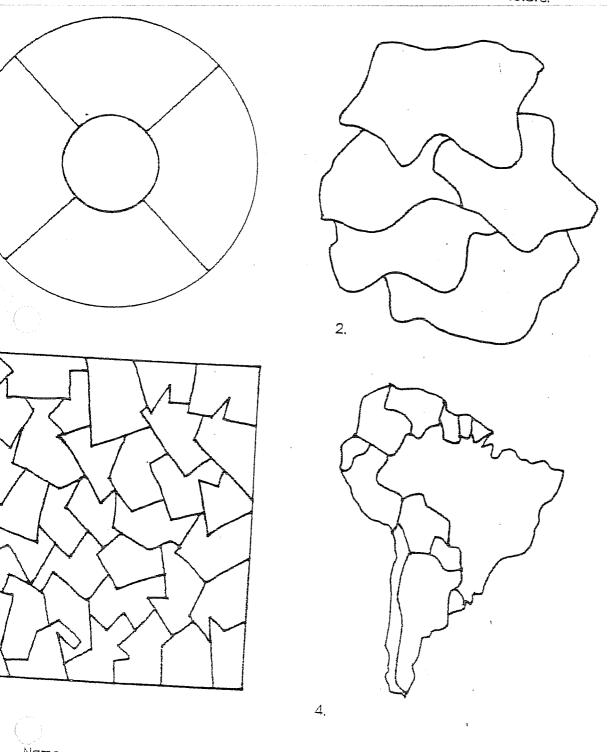
#### Time Capsule

1. Your scho	ol:
2. Your city: _	
. Transportati	on:
Yourself:	
	·

Name

# Touch of Color

Cartographers, the people who make maps, discovered that most maps can be colored with five or less colors. Each area of a map must be a different color than any area that touches it. It's easier than it seems. The trick is to start by coloring the regions with the most neighbors first. Below are four maps. Color the first two with three colors. Color the second two with four colors.



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# Colorful France

Coloring a map takes some planning. Below is a map of the regions of France Using only four different colors, color the regions so that each one is a different color from all the ones touching it.

