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#### **NOTES FROM THE AUTHORS**

MIDDLE SCHOOL MATH WITH PIZZAZZ! is a series of five books designed to provide practice with skills and concepts taught in today's middle school mathematics programs. The series uses many of the same puzzle formats as PRE-ALGEBRA WITH PIZZAZZ! and ALGEBRA WITH PIZZAZZ! both published by Creative Publications.

We believe that mastery of math skills and concepts requires both good teaching and a great deal of practice. Our goal is to provide puzzle activities that make this practice more meaningful and effective. To this end, we have tried to build into these activities three characteristics:

- **1. KNOWLEDGE OF RESULTS.** Various devices are used in the puzzles to tell students whether or not their answers are correct. Feedback occurs immediately after the student works each exercise. For example, if a particular answer is not in the code or scrambled answer list, the student knows it is incorrect. He or she can then try again or ask for help. Additional feedback and reinforcement occurs when the student finds a puzzle solution that is appropriate. This immediate knowledge of results benefits students and also teachers, who no longer have to spend time confirming correct answers.
- **2. A MOTIVATING GOAL FOR THE STUDENT**\*The puzzles are designed so that students will construct a joke or unscramble the answer to a riddle in the process of checking their answers. The humor operates as an incentive, because the students are not rewarded with the punch line until they complete the exercises. While students may decry these jokes as "dumb" and groan loudly, our experience has been that they enjoy the jokes and look forward to solving the puzzles. The humor has a positive effect on class morale. In addition to humor, the variety and novelty of procedures for solving the puzzles help capture student interest. By keeping scrambled answer lists short and procedures simple, we

have **tried** to **minimize** the time spent on finding answers or doing other puzzle mechanics.

3. CAREFUL SELECTION OF TOPICS **AND EXERCISES.** The puzzles within each topic area are carefully sequenced so that each one builds on skills and concepts previously covered. The sequence of exercises within each puzzle is designed to guide students in incremental, step-by-step fashion toward mastery of the skill or concept involved. A primary goal is the development of problem-solving ability. In order to solve problems, students need not only rules and strategies but also a meaningful understanding of basic concepts. Some puzzles in this series are designed specifically to build concepts. Other puzzles, especially those for estimation, also help deepen students' understanding by encouraging them to look at numbers as quantities rather than just as symbols to be manipulated. For puzzles specifically keyed to problem solving, we have tried to write problems that are interesting and uncontrived. We have included extra information in some problems, and have also mixed problem types within sets, so that the problems cannot be solved mechanically.

In addition to these efforts to make the puzzles effective, we have tried to make them easy to use. The topic for each puzzle is given both at the bottom of the puzzle page and in the Table of Contents on pages iv and v. Each puzzle is keyed to a specific topic in recent editions of leading middle school textbooks. Each puzzle requires duplicating only one page, and many of them provide space for student work. Finally, because the puzzles are selfcorrecting, they can eliminate the task of correcting assignments.

We hope that both you and your students will enjoy using these materials.

Steve and Janis Marcy

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### NOTES ABOUT USING THE PUZZLES

The selection of topics for *MIDDLE SCHOOL* MATH *WITH PIZZAZZI* reflects recent thinking about what is important in an updated middle school math program. Virtually every puzzle can be matched with a particular lesson in recent editions of popular textbooks. After students have received instruction in a topic and worked some sample exercises, you might assign a puzzle along with a selection of textbook exercises.

Students in the middle grades should begin to classify many mathematics problems and exercises into one of three categories:

- **1. MENTAL MATH.** Problems for which an exact answer can be obtained mentally.
- **2. ESTIMATION.** Problems for which an approximate answer, obtained mentally, is sufficient.
- **3. TOOLS.** Problems requiring **an** exact answer that cannot be obtained mentally. Students will use paper and pencil and/or calculators.

Some of the puzzles in this series focus specifically on one of these categories. A few puzzles actually present problems in all three categories and ask the student to make the classification.

By the time they reach the middle grades, students should generally be permitted to use calculators for problems that require tools (Category **3**).The most common argument against calculator use is that students will become overly dependent on them. This concern, though, appears to be based primarily on fear that students will rely on the calculator for problems in **Categories** 1 and 2, those that should be done mentally.

To solve problems in Category **3**, calculators are wonderful tools for computing. Students may also need paper and pencil to make diagrams, write equations, record results, etc., so they will need both kinds of tools. On the other hand, students should not need calculators for problems in Categories 1 and 2, problems that call for mental math or estimation'. Skills in these areas are essential not only in daily life but also for the intelligent use of the calculator itself. The puzzles in this series reflect these three categories and the distinction between them.

When students do use calculators, you may want to have them write down whatever numbers and operations they punch in and their answers. This makes it easier to identify the cause of any error and assists in class management. Even when students do mental math or estimation puzzles, have them write a complete list of answers and, where appropriate, the process used to get the answers. Encourage students to write each answer before locating it in the answer list. Students should complete all the exercises even if they discover the answer to the joke or riddle earlier.

One advantage of using a puzzle as an assignment is that you can easily make a transparency of **the** page and display the exercises without having to recopy them on the board. You can then point to **parts** of a problem as you discuss it. It is often helpful to cut the transparency apart so that you can display exercises on part of the screen and write solutions on the remaining area.

Other books by Steve and Janis Marcy published by Creative Publications

Pre-Algebra With Pizzazz! in a Binder Covers most topics in a pre-algebra curriculum

Algebra With Pizzazz! in a Binder Covers most topics in a first-year algebra curriculum

## How Can You Find a Double-Decker Bus?

For each exercise, circle the letter of the more reasonable measure. Write this letter in the box containing the number of the exercise.

The chart gives an approximate size for each of the most commonly used metric units of length.

Unit	Approximate Size
1 millimeter (rnm)	thickness of a dime
1 centimeter (cm)	width of your smallest finger
1 meter (m)	length of a baseball bat
1 kilometer (km)	length of 10 football fields



1	length	of an ant			2	lengtl	n of a new pe	ncil	
	R	5mm	Μ	5cm		Α	19 mm	0	19 cm
3	height	t of a basketb	all	hoop	4	distar	nce walked in	1 h	our
	U	30m	Н	3rn		К	5km	В	50m
5	diame	ter of a quart	er		6	length	n of a paper c	lip	
	G	24cm	0	24 mm		Е	3cm	S	30cm
7	length	of a tennis c	our	t	8	distar	nce driven on	a fr	eeway in 1 hour
	L	24m	D	<b>24</b> km		U	85 km	Α	850 m
9	thickn	ess of a nicke	əl		(10)	heigh	t of a dining ta	able	)
	Е	20mm	0	2 mm		К	75 mm	S	75 cm
(11)	length	of an autom	obil	e	(12)	length	n of a maratho	on ra	ace
	т	5 m	S	50m		т	400 m	F	<b>40</b> km
(13)	width	of a dollar bill			(14)	length	n of a sheet of	f typ	oing paper
	Ν	66 cm	Ρ	66 mm		ο	28cm	R	<b>28</b> mm
(15)	height	of a door			(16)	distar	nce from New	v Yo	rk to Los Angeles
	М	20 cm	В	2 m	-	D	450 km	т	4,500 km
7	2   1	4 4	12	9 1 11	3	6	15 8 1	0	16 5 13

 7
 2
 14
 4
 12
 9
 1
 11
 3
 6
 15
 8
 10
 16
 5
 13

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**TOPIC 1-a: Length** 

# **Cryptic** Quiz

1. What did the duck say to the store clerk when buying chapstick?



## Why Are Scales Like Roadmaps?

Do each exercise and find your answer in the set of answers to the right, Write the letter of the answer in the box containing the number of the exercise. If the answer has a , shade in the box instead of writing a letter in it.



TOPIC 1-c: Renaming Units of Length

**D-9** 

MIDDLE SCHOOL MATH WITH PIZZAZZ! BOOK D © Creative Publications Why Did the Hen Jump Up and Dowr When She Looked Into the Nest?

Complete each statement, then find your answer in the set of answers to Write the letter of the exercise in the box containing the number of the an



TOPIC 1-c: Renaming Units of Length

## What Did the Finger Say to the Thumb?

Choose the correct answer for each exercise. Write the letter of the answer in **the** box containing the number of the exercise. The table below may help you.

			Unit Approximat				ate Si	Size									
		1 milliliter (mL)capacity of an eyedropper1 liter (L)capacity of a juice carton1 kiloliter (kL)capacity of 4 bathtubs															
I. Choose the more reasonable estimate of capacity.																	
(1)	a pot for co	ooking		(2)	) a ta	ablesp	oon				(3)	ar	n auton	nobil	е	gas	tank
Ŭ	<b>K</b> 2 kL	<b>E</b> 2 L		0	<b>C</b> 1	15 L	ł	15 m	۱L		$\sim$	Ν	50 L	Ρ	5	kL	
4	a swimmin <b>A</b> 80 L	g pool <b>O</b> 80 k	L	<ul> <li>(5) a drinking glass</li> <li>(6) a water cod</li> <li>(6) a water cod</li> <li>(6) A water cod</li> <li>(6) A water cod</li> </ul>									coole R	oler jug <b>R</b> 2 L			
*****	******	******	******	~~~~~·	****	*****	****	~~~~	*****	*****	****	****	*****	****	<b>*</b> ~	***	*****
II. C	Complete ea	ich state	ement.	ı								/	Answe	rs 7	- 1	14:	
7	8.5 L	=		mL								B	25	١	1	90	
8	0.4 L	=	<del>_</del>	mL								U	1,750	V	V	40	,000
9	90,000 mL	=		L								0	8,500	I	3	32	
10	250 mL	=		L								D	4,000	1	I	0.7	75
(11)	1.75 kL	=		L								S	900	F	R	17	5
(12)	40 kL	=		L								G	0.25	ł	l	40	0
(13)	750 L	=		kL								T	3.2	ι	J	7.5	5
(14)	3,200 L	a		kL													
*****	*********	******		******	****	*****	****	****	****1	****1	*****	**1	******	****	***	***	*****
	Solve.				-l'-+-		1-					Α	Inswer	s 15	-	16:	
(15)	contained	e bougi 350 mL	nt <b>12</b> ca . How i	ans of ( many li	ters c	oda. I of sod	=acn a dic	l she	buy′	?		R	48	V	,	4.2	
(16)	Chef Pierre served in 2	e made 200-mL	6.4 L c cups, h	of crear	med c any cu	carrot ups ca	soup an be	o. If it e fille	∶is d?			L	32	N		5.4	
8	5 1	13 3		10 16	7	15	1		12	2	14	6		9		4	11
L			<u> </u>			<u> </u>		L	L	L	<u> </u>	L			L		

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### What Do Salmon and Cod Use When They Go to War?

Choose the correct answer for each exercise. Find the letter of the answer in the string of letters near the bottom of the page and CROSS IT OUT each time it appears. When you finish, write the remaining letters in the rectangle at the bottom of the page. The table below may help you.





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D-13

TOPIC 1-f: Review: Capacity and Weight

		What Should You Study to Learn	
Ш	14 min 30 s	How to be a Cowboy?	
S	1; 55	now to be a Cowboy:	
£	15 min 26 s	Cross out the letter next to each correct answer. When you finish,	
¥	3 d 15 h	g the answer to the title question will remain.	
≻	420	I. Complete each statement.	
z	3 min 28 s	(1) 4 h = min (2) 7 min = sec	
0	6 h 28 min	$(2) 2 h 20 \min $	
ш	3		
≥	6 h 15 min	5) 180 min = h 6) 540 sec = min	
I	4 min 40 s	7         80 min = h min         8         135 sec = min sec	
0	3,920	(9) 3 d = h $(10) 3 d = min$	
υ	72		
۵	240	II Add or subtract. Simplify if possible	
ш	2 d 17 h	(11) 2 h 30 min (12) 5 min 40 s (13) 7 h 8 min	
В	3 min 42 s	+3 h 45 min $+8 min 50 s$ $+2 h 43 min$	
$\supset$	1; 20		
×	12 h 28 min		
∢	9 h 51 min	(14) <b>8 min 10 s</b> (15) <b>12 h 25 min</b> (16) 32 min 50 s	
⊢	310	$-3 \min 30 \text{ s}$ $-5 \text{ h} 45 \min $ $-17 \min 24 \text{ s}$	
z	12 h 42 min		
ш	14 min 56 s		
٩	9	(17) 6 h 47 min $(18)$ 9 min $(19)$ 5 d 4 h	
0	4,320	+4h13min $-5min32s$ $-2d11h$	
с	11 h		
F	10 h 58 min		
I	150	III. Solve.	
S	6 h 40 min	20 It takes 15 h 20 min to travel from Los Angeles to Salt Lake City by	
<	2; 15	train. It takes only $2 \text{ n}$ 38 min to fly between the two cities. How much longer does the train take?	

TOPIC 1-g: Time

## What Has Four Legs and Flies?

This title question has TWO different answers. Part I gives you one answer and Part II gives you the other. Follow the directions for each part.

I. Identify each measurement that is marked with a letter. Write each letter in the box that contains the corresponding measurement.





II. For each exercise, measure the line segment to the nearest  $\frac{1}{8}$  inch. Write the letter of the exercise in the box containing the measurement.



D-15

TOPIC 2-a: Measuring Line Segments With a Ruler

## Why Do Elephants Lift Weights?

Measure each line segment below to the nearest one-eighth inch. Find your answer in the answer column. Write the letter of the exercise in the box containing the number of the answer.



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 $3\frac{7}{8}$  in.

 $2\frac{7}{8}$  in.

in.

1)

2)

3

## **Measure with Pleasure**

Follow the directions below. When you complete each step, put an  $\times$  in front of it. Measure carefully and you will get the picture!

- 1. Copy rectangle ABCD on another sheet of paper. The rectangle is 7 in. wide and  $9\frac{1}{2}$  in. high.
- 2. Place your ruler on  $\overline{AB}$ . Measure  $3\frac{1}{8}$  in. across from Point **A**. Make a dot to mark this point. Label it Point E
- ----- 3. Place your ruler on  $\overline{BC}$ . Measure down  $1\frac{1}{4}$  in. from Point *B*. Make a dot to mark this point. Label it Point F.
- **4.** On  $\overline{BC}$ , measure down  $5\frac{7}{8}$  in. from B. Label this Point G.

$$---$$
 5. Point H is on  $\overline{BC}$ ,  $7\frac{3}{8}$  in. from B.

- ---- 6. Point *I* is on  $\overline{BC}$ , 8  $\frac{3}{8}$  in. from B.
- \_\_\_\_ 7. Point J is on AD, 7 in. from A. Connect points Hand J.
- **.....** 8. Point K is on  $\overline{AD}$ ,  $8\frac{1}{2}$  in. from A. Connect points  $\blacksquare$  and K.
- \_\_\_\_ 9. Point L is on  $\overline{JH}$ ,  $3\frac{1}{8}$  in. from J. Draw  $\overline{EL}$ .
- \_\_\_\_10. Point *M* is on  $\overline{EL}$ ,  $\frac{7}{8}$  in. from E. Draw  $\overline{GM}$ .
- \_\_\_\_11. Point *N* is on  $\overline{AD}$ ,  $5\frac{3}{4}$  in. from A. Draw  $\overline{MN}$ .
- **\_\_\_\_12.** Line up your ruler on Points E and F. Mark a point 1 in. from E and label it Point *O*. Connect points E and *O*.
- -----13. Point P is on  $\overline{EL}$ ,  $\frac{5}{8}$  in. from E. Draw  $\overline{OP}$ .
- **\_\_\_\_14.** Point Q is on  $\overline{EL}$ ,  $6\frac{1}{4}$  in. from E. Draw  $\overline{GQ}$ .
- \_\_\_\_15. Point R is on  $\overline{EL}$ ,  $6\frac{5}{8}$  in. from E Draw  $\overline{NR}$ .
- \_\_\_16. Point S is on  $\overline{NR}$ ,  $2\frac{3}{4}$  in. from N. Draw  $\overline{MS}$ .
- \_\_\_\_17. Point T is on  $\overline{KI}$ ,  $1\frac{1}{8}$  in. from K. Draw  $\overline{JT}$ .
  - **\_\_\_18.** Point *U* is on  $\overline{KI}$ , 6 in. from *K*. Draw  $\overline{HU}$ .

С

## What Is the Title?

TO FIND THE TITLE OF THIS PICTURE:

Do each exercise below. Find your answer in the code and write the letter of the exercise above it. (Each answer appears only once.)



CODED TITLE:



### What Did Airhead Klutz Look For When He First Took Up Waterskiing?

Find each answer in the set of boxes under the exercise. Write the letter of the exercise in the space above the answer.

I. Complete each statement.



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*JO* 

20%

\$

2

*JO* 

1040

### Why Did the Young Actress Stuff Her Autograph Into Bottles & that Low-Calorie Cola?



Find each answer in the appropriate set of boxes at the bottom of the page. Write the letter of the exercise in the box containing the answer. II. Complete each statement. I. Complete each statement. You are changing each You are changing each measure to a smaller unit. measure to a larger unit. (N) 12 qt = \_\_\_\_ gal (E) 5 gal = \_\_\_\_ qt (T) 9 gal = \_\_\_\_ qt (E) 40 qt = \_\_\_\_ gal 8 pt = \_\_\_\_ qt 0) 2 qt = \_\_\_\_ pt S) (A) 15 qt = \_\_\_\_ pt 24 pt = \_\_\_\_ qt А 10 c = \_\_\_\_ pt 1 pt=\_\_\_\_c É 18 c = \_\_\_\_ pt (D) 7 pt = \_\_\_\_ c R) S) 3 c = \_\_\_\_\_ fl oz (E) 16 fl oz = c ) 10 c = \_\_\_\_ fl oz M) 64 fl oz = \_\_\_\_ c ΤÌ 7 qt = \_\_\_\_ gal \_\_\_\_ qt (E) 1 gal 2 qt = \_\_\_\_ qt 1 (H) 30 qt = \_\_\_\_ gal \_\_\_\_ qt S) 6 gal 3 qt = \_\_\_\_ qt (W) 4 pt 1 c = \_\_\_\_ c 9 pt = \_\_\_\_ qt \_\_\_\_ pt (E) 25 c = \_\_\_\_ pt \_\_\_\_ c (H) 1 gal = \_\_\_\_ pt (N) 12 fl oz = \_\_\_\_ c \_\_\_\_ fl oz (E) 1 pt = \_\_\_\_\_ fl oz (T) 50 fl oz = \_\_\_\_ c \_\_\_\_ fl oz (N) 1 qt = \_\_\_\_ fl oz Answers for Column I 24 8 20 15 9 30 32 36 6 14 12 80 48 27 2 4 16 Answers for Column II 7;2 10 9 12 8 4:1 3 12:1 14 1;4 7 1:3 8:1 5 6;2 4 2

TOPIC 2-c: Capacity

**D-20** 

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#### Did You Hear About... В G Η K Α С D E L Μ U W Х Ν 0 Ρ Q R S Т V ? Do each exercise and find your answer in the appropriate answer column. Answers A – L: Answers M – X: Notice the word next to the answer. Write this word in the box containing the letter of the exercise. SAID 9 ONLY 48 I. Complete each statement. 19 THE 2:1 THEN (A) 3 gal = \_\_\_\_ qt (B) 8 pt = \_\_\_\_ c $(C) 5 qt = ___ pt$ 75 TO 6 LEFT (D) 6 c = \_\_\_\_ fl oz (E) $\frac{1}{2}$ gal = qt (F) $2\frac{1}{2}$ pt = \_\_\_\_ c 12;4 THE WHO 10 (G) 1 qt = \_\_\_\_ c (H) 1 qt = \_\_\_\_ fl oz (I) 4 gal 3 qt = \_\_\_\_ qt 13 GOING 5 HE (J) 7 qt = \_\_\_\_ pt (K) 7 qt = \_\_\_ c (L) 7 qt = \_\_\_ fl oz RIGHT 224 BECAUSE 1 (M) 20 qt = \_\_\_\_ gal (N) 12 pt = \_\_\_\_ qt (O) 16 fl oz = \_\_\_\_ c 12 THE 15 IS (P) 36 c = \_\_\_\_ pt (Q) 8 pt = \_\_\_\_ gal (R) 9 qt = \_\_\_\_ gal \_\_\_ qt 7 WAY 14 RIGHT (S) 48 fl oz = \_\_\_\_ pt (T) 60 c = \_\_\_\_ qt (U) 100 fl oz = \_\_ c \_\_ fl oz 5 IF 2 THAT II. Solve. 32 GOING 2 IS $(\mathbf{V})$ Mr. Fizz bought 6 cans of root beer. Each can contained 12 fl oz. How many cups 16 DRIVER 10 LEFT of root beer did he buy? С (W) A certain paint is sold in both 1-gal cans and 1-gt cans. The gallon can costs \$13 WAY 9:6 A 28 and the quart can costs \$5. How much do you save per gallon by buying the larger cans? 180 ON 3 RIGHT Mrs. Ramirez bought 2 qt of orange juice. If the juice is served in 6-oz glasses, (X) WAS 18 NOT 4 how many glasses can be completely filled?

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D-21

TOPIC 2-c: Capacity

### What Did They Call the Guy Who Made 367 Mistakes While Typing One Page?

Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

I. Complete each statement.



TOPIC 2-d: Weight

lb

OT

RO

400

UP



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D-23

## What JobDoes the Buttermilk Biscuit Have in the Movie?

Do each exercise and find your answer in the appropriate answer box. Write the letter of the answer in the box containing the number of the exercise.



**TOPIC 2-f: Adding and Subtracting Measurements** 

**D-24** 

## What Does a Cat Need to Play Baseball?



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D-25

TOPIC 3-a: Basic Geometric Figures

### What Did Mrs. Claws Say During the Thunderstorm?



**D-26** 

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## Why Did the Brontosaurus Need Band-Aids?

For each exercise, circle the letter of the best estimate. Write this letter in the box containing the number of the exercise.



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## **Books Never Written**



## What Happens When Cupid Shoots an Arrow?

Use a protractor to construct the angles below. Each side you draw will pass through a number. Write the vertex letter of the angle in the box containing this number.



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TOPIC 3-e: Drawing Angles With a Protractor

in the



TOPIC 3-f: Complementary and Supplementary Angles **D-30** 

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### How Did the Judge Find Out About the Rotten Milk?

Do each exercise and find your answer in the Code Key. Notice the letter next to the answer. Write this letter in the box containing the number for the exercise.

- Complete each statement. Ι.
- Two angles are **complementary** if the sum of their measures is 1
- 2 Two angles are **supplementary** if the sum of their measures is .
- The complement of a 30° angle has a measure of . 3
- The supplement of a 65° angle has a measure of .
- II. Find the measure of each numbered angle.



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TOPIC 3-g: Related Angles Formed by Intersecting Lines





TOPIC 3-h: Parallel and Perpendicular Lines

D-32

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D-33

### Why Couldn't the Two Elephants Go Swimming Together?



### What Did the Boy Candy Say to the Girl Candy?

Do each exercise and find your answer in the set of answers to the right. Write the letter of the answer in each box containing the number of the exercise. If the answer has a , shade in each box containing that exercise number.



TOPIC 3-j: Triangles

### What Do You Get When You,,,

1. Cross two ducks with a match? Answer:

```
<u>37°</u> <u>57°</u> <u>99°</u> <u>67°</u> <u>104°</u> <u>76°</u> <u>59°</u> <u>113°</u> <u>42°</u> <u>53°</u> <u>67°</u> <u>99°</u> <u>18°</u>
```

2. Cross a stick of dynamite with a lemon pie? Answer:

113° 68° 63° 34° 34° 54° 38° 54° 67° 99° 57° 90° 36° 59° 67°

Find the angle measures indicated. Look for each answer in the code. Each time the answer appears, write the letter of the exercise above it.



Daffynition Decoder		
For each exercise, find the angle measure indicated. Look for each answer in the code. Each time the answer appears, write the letter of the exercise above it.	4 3 9 10 11	
Warehouse: $\frac{105^{\circ}}{105^{\circ}} \frac{40^{\circ}}{36^{\circ}} \frac{36^{\circ}}{78^{\circ}} \frac{151^{\circ}}{151^{\circ}} \frac{55^{\circ}}{40^{\circ}} \frac{40^{\circ}}{116^{\circ}} \frac{116^{\circ}}{56^{\circ}} \frac{36^{\circ}}{30^{\circ}} \frac{116^{\circ}}{116^{\circ}} \frac{116^{\circ}}{56^{\circ}} \frac{36^{\circ}}{30^{\circ}} \frac{36^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{36^{\circ}}{30^{\circ}} \frac{36^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{36^{\circ}}{100^{\circ}} \frac{36^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{36^{\circ}}{100^{\circ}} \frac{36^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{36^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^{\circ}} \frac{116^{\circ}}{100^$	$\overline{5^{\circ}}$ $\overline{146^{\circ}}$ $\overline{36^{\circ}}$ $\overline{151^{\circ}}$ $\overline{105^{\circ}}$ $\overline{40^{\circ}}$ $\overline{135^{\circ}}$ $\overline{42^{\circ}}$ $\overline{34^{\circ}}$ $\overline{55^{\circ}}$ $\overline{146^{\circ}}$ $\overline{78^{\circ}}$ $\overline{166^{\circ}}$ $\overline{74^{\circ}}$ $\overline{29^{\circ}}$ $\overline{34^{\circ}}$ $\overline{135^{\circ}}$ $\overline{100^{\circ}}$ $\overline{55^{\circ}}$ $\overline{56^{\circ}}$ $\overline{60^{\circ}}$ $\overline{56^{\circ}}$ $\overline{98^{\circ}}$ $\overline{135^{\circ}}$ $\overline{100^{\circ}}$	
(H) If $m \angle 1 = 50$ °, then $mL2 =$	(N) If $mL8 = 78^{\circ}$ and $m \ge 9 = 60^{\circ}$ , then $m \ge 10 =$	
(F) If $mL3 = 120$ °, then $mL4 =$	(D) If $m \ge 9 = 47^{\circ}$ and $m \ge 10 = 33^{\circ}$ , then $m \ge 8 =$	
(O) If $mL2 = 35$ ° then $m \angle 1 =$	(U) If $m \le 10 = 45^{\circ}$ and $m \ge 8 = 90^{\circ}$ then $m \le 9 =$	
(E) If $mL4 = 45$ , then $mL3 =$	(a) If $m \angle 10 = 10^{\circ}$ and $m \angle 9 = 40^{\circ}$ , then $m \angle 10 =$	
(B) If $mL6 = 29$ , then $mL8 =$	(T) If $m \angle 11 = 130^{\circ}$ and $m \angle 9 = 52^{\circ}$ , then $m \angle 8 =$	
(W) If $mL6 = 20^{\circ}$ then $mL8 =$	(ii) If $m \angle 11 = 0.01^{\circ}$ and $m \angle 9 = 52^{\circ}$ , then $m \angle 8 =$	
(r) If $mL0 = 29$ , then $mL5 =$	(w) If $mL8 = 81^{\circ}$ and $m \ge 9 = 24$ ; then $m \ge 11 =$	
(c) If $mL5 = 116^{\circ}$ , then $mL7 =$	(R) If $mL2 = 56$ ; then $mL4 =$	
(1) If $mL8 = 82^{\circ}$ , then $mL7 =$	(L) If $m \ge 1 = 56$ ; then $m \ge 4 =$	
(A) If $m \angle 11 = 144^{\circ}$ , then $m \angle 10 =$	(S) If $m \ge 1 = 56$ ; then $mL3 =$	

TOPIC Review: Related Angles

**D-**36

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# Can a Polar Bear Go On a Safari?

Write the name that best describes each quadrilateral. (Put each quadrilateral in the smallest or most exact class to which it belongs.) Write the letter of the exercise in the box containing the number of the answer.



#### Why Was Cinderella Kicked Off the Baseball Team?

For each exercise, circle the letter of each figure that belongs in the category named. Arrange these letters to form a word. Then write this word on the line next to the name of the category.

(You may assume the following: sides that appear parallel are parallel; sides that appear perpendicular are perpendicular; sides that appear congruent are congruent.)



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**TOPIC 3-1: Quadrilaterals** 

### Why Didn't the Snobbish Potatoes Want Their Daughter to Marry a News Broadcaster?

Under each figure, circle the number-letter combination next to each word that correctly names the figure. Write the letter in the matching numbered box at the bottom of the page.



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TOPIC 3-1: Quadrilaterals

# Why Do Ants Visit the Zoo on Cold Days?

Write the word missing from each statement in the boxes next to the statement. Notice which letters are in numbered boxes. Write each of these letters in the matching numbered box at the bottom of the page.

A (					7	Γ	7	
``	$\square$	/			ـــــ			
1	A triangle is a with three sides and three angles.							6
2	A polygon with four sides and four angles is a 21	• •		10				
3	A polygon with fivesides and five angles is a			15				
4	A polygon with six sides and six angles is a	11					2	
5	An octagon is a polygon with eight sides and eight	L	18				4	
6	A polygon with ten sides and ten angles is a		12					
7	In the set of figures above, Figure A is a	16			8			
8	Figure B is an			1				
9	Figure C is a	20		5				
10	Figure D is a				13			
(11)	The point of intersection of two sides of a polygon is called a	L		7		19		
(12)	A line segment (not a side) connecting two vertices of a polygon is called a			3		14		
(13)	A polygon with all sides the same length and all angles the same measure is called a polygon.		17					9
1	2 3 4 5 6 7 8 9 10 11 12 13 14	4 15		16	17 1	8 19	20	21

**TOPIC 3-m: Polygons** 

D-40

### Why Couldn't Orgo Buy a Round Trip Ticket?

Follow the directions for each section. Each exercise will give you a number-letter pair. Write the letter in the matching numbered box at the bottom of the page.

I. Find each pair of congruent figures. Use the number from one figure and the letter from the other.



II. Complete each statement, then find your answer in the answer column. Use the number of the exercise and the letter of the answer.





TOPIC 3-o: Similar Triangles

#### What Did the Waitress Mean When She Yelled to the Cook: "1 + 1"?



Fill in each blank with one of the answers at the bottom of the page. Then write the letter of the exercise above its correct answer.

The figure at the right is a circle with center at O.

E	The points on a circle are all the same distance from the
S	A line segment from the center to any point on the circle is a
U	A line segment with both endpoints on the circle is a
	A chord that passes through the center of a circle is a
$\bigcirc$	A diameter of the circle in the drawing above is the segment
E	Which of the following is <i>not</i> a radius: $\overline{OA}$ , $\overline{OD}$ , or $\overline{BC}$ ?
S	Which of the following is <i>not</i> a chord: $\overline{BC}$ , $\overline{OA}$ , or $\overline{AC}$ ?
(N)	Part of a circle, such as between points 5 and C, is an
Ē	An angle whose vertex is at the center of a circle is a
P	Which of the following is not a central angle: LAOD, LCOD, or LBCA?
S	Points <b>A</b> , B, <b>C</b> , and D are all the same from point <b>O</b> .
$\bigcirc$	If the length of $\overline{AC}$ is 20 cm, then the length of $\overline{OC}$ is
$(\mathbb{N})$	If the length of OA is 20 cm, then the length of OD is
Ŵ	If the length of $\overline{OD}$ is 20 cm, then the length of $\overline{AC}$ is
Ĺ	The length of a radius is the length of a diameter.
Ā	The set of points in a plane at a fixed distance from a given point is a

T The set of points in a plane at a fixed distance from a given point is a \_\_\_\_\_

10 cm	arc	center	ray	ZBCA	half	chord	OA	ZCOD	AC	20 cm	central angle	<u>00</u>	diameter	distance	80 cm	radius	circle	BC	40 cm

# ♥ What Did the Secretary Say ♥ a to Her Boy Friend? ♥ ♥

For each exercise, circle the letter of each **figure** that is divided by a line of symmetry. Arrange these letters to form a word. Then write this word on the line next to the exercise number.





D-45

# Why Did the River Guide Carry a Rifle?

Find the PERIMETER of each figure. **Cross out** the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.







3.5 m

(3)

4 m

•

.

a

5 m

Find the perimeter of each rectangle.



typing paper 8  $\frac{1}{2}$  in. wide and 11 in. long. How many feet of border are needed to go around a square bulletin board that is 4.5 ft on each side?

HE	TO	ST	SH	OT	OP	FL	00	LS	OA	TT
48 in.	43.4 m	144 in.	18.6 km	18 ft	21 m	46.4 m	156 in.	37 ft	160 mm	32 ft
HE	AT	RA	IN	TO	SO	Pl	PE	NG	DS	ET
180 cm	35 ft	184 mm	21.8 km	7.2 m	41 cm	42 in.	200 cm	39 in.	156 in.	11.4 km

TOPIC 4-a: Perimeter

# What Is the Title?

# TO FIND THE TITLE OF THIS PICTURE:

Do each exercise below and find your answer in the code. Each time the answer appears, write the letter of the exercise above it.



#### CODED TITLE:

-	21	6.3	15.75	42	16.6	70	215	15	15.75	21	16.5	15.75	96	65.6	19	
-	15	70	16.6	90	17.25	6.3	64	21	200	100	90	6.3	70	15.75	96	230
I. Fi	ind th	ne pe	rimeter	ofe	ach figu	ure.										
0	Tria 3.9	ngle cm, a	with sid and 4.5	des o cm	f 8.2 cr	n,	cr	n	<b>B</b>	Recta and 2	ingle v 8 in.	with sid	es o	f 22 in.		in.
G	Squ	iare v	vith sid	es of	16.4 n	n _	r	n		Equila	ateral	triangle	e with	n sides		61
<b>(E)</b>	Par	allelo	gram v	vith s	ides of					of 5.2	5 ft					π
$\sim$	40 c	cm ar	nd 75 c	m			Cr	n	Э	Regul of 2.7	lar he: 5 in.	xagon	with	sides		in.
(A)	Rec of 0	gular .63 k	decago m	on wi	th side:	S	kr	n	U	Rhom	nbus v	vith side	es of	50 ft		ft
II. S	Solve	•••				•••						••••		●-● ● ● ●		
L	The Its le its p	e widt ength perime	h of a la h is 5 ft eter.	arge more	Americ e than i	can fla ts wic	ag is 8 hth. Fir	ft. nd ft		The w Its len perime	<i>r</i> idth c igth is eter.	of a rec twice i	tang ts wi	ular pos idth. Fir	ster is nd its	s 16 in. in.
M	The 360	perir cm.	neter c Find th	of a s e len	quare v igth of (	windc one s	w is ide. cr	n	F	The p side is How le	erime s 14 ft ong is	eter of a long. A the thi	triai Anotl ird si	ngle is 3 ner side de?	38 ft. e is 9	One ft long. ft
R	A pe triar is ha the	ennai ngle. alf the perim	nt is sh The sh e lengtl neter of	apec ort si h of e f the	l like ar de is 1 each loi pennar	n isos 4 in. l nger : nt. —	iceles ong ar side. F ir	nd ïnd n.	(s)	The lo long. than ti the lei perim	onges The s he lor ngth c eter?	t side c econd s ngest si of the lc	f a tr side de. <sup>-</sup> onge:	iangula is 1.5 n The thir st side.	ar sai n shc d sid Wha	l is 9 m orter e is half t is the m
MIDE © Cr	OLE SO eative	CHOOI Public	L MATH V ations	NITH I	PIZZAZZ	! BOOł	٢D	D-	47					ΤΟΡΙ	C 4-a:	Perimeter

#### Why Did the Piano Player Bang Her Head Against the Keyboard?

Find the circumference (*C*) of each circle, given the diameter (*d*) or radius (*r*). Use 3.14 for  $\pi$ . Draw a straight line connecting the square by the exercise to the square by its answer. The line will cross a number and a letter. Write the letter in the matching numbered box at the bottom of the page.

(1) $d = 3 \text{ cm}  \blacklozenge$						_			•	C =	125.0	3 in.
(2) $d = 8$ in.	(9)				(	G			+	C =	31.4	cm
$\bigcirc$ d = 7 cm $\blacklozenge$		(13)			A				٠	C =	94.2	in.
$(4)  d = 40 \text{ in.}  \blacklozenge$	6	(1	6)		Ć	$\mathcal{O}$	P	)	•	<i>C</i> =	9.42	cm
5 <i>d</i> = 9.2 cm ◆					E	-	Ċ.	) (E)	•	C =	72.2	2 in.
6 <i>d</i> = 1.5 in. ♦	2		(15)	रो	U			$\bigcirc$	+	C=	301.4	44 in.
(7) <i>d</i> = 600 m ◆				9		<b>`</b>	Ŵ	)	•	C =	25.1	2 in.
(8) <i>d</i> = 23 in. ◆	G		7)	S	) (Н	)			•	C =	15.7	in.
9 d = 10 cm ♦	(1)				,		(E		•	<i>C</i> =	28.8	88 cm
(10) $r = 1$ in.				4	)		、		•	C =	13.8	16 cm
(11) $r = 6 \text{ cm}$ $\blacklozenge$	(12)					(A			+	<i>C</i> =	15.7	cm
(12) $r = 15$ in. $\blacklozenge$		(17)	(	- -					•	C =	21.9	8 cm
(13) <i>r</i> = 2.2 cm ◆				リ い	F	$\mathbf{D}$	(A)		•	<i>C</i> =	6.28	in.
(14) $r = 48$ in. $\blacklozenge$	(14)			/			$\bigcirc$		+	<i>C</i> =	314	m
(15) $r = 3.9 \text{ cm} +$			)					$\sim$	+	C =	4.71	in.
(16) $r = 2.5$ in. $\blacklozenge$		(10)		(	L	~		(S)	•	C =	37.6	8 cm
(17) <i>r</i> = 2.5 cm ◆	(8	$\mathbf{D}$				$(\mathbf{Y})$	Ì		•	C =	24.4	92 cm
(18) <i>r</i> = 50 m ◆									•	C =	: 1,88	4 m
1 2 3 4	5 6 7	' 8	9	10	11	12	13	14	15	16	17	18

TOPIC 4-b: Circumference

**D-48** 

Answers A – I:	Did You	I Hear	- Abou	l <b>t</b>			Answers J – R:
18.84 ft GUY	A	<b>.</b>	C	D	ш	Ш.	$5\frac{2}{7}$ in. FRESH
71.8 ft HELPED	U	T		~	¥		22 in. HE
1,570 m BOX	Σ	z	0	٩	σ	R v	37.68 ft EARTH
51 ft HAMBURGER	Find each answ	er in the ap	propriate ans	wer column a	and notice th	he word under it.	88 in. ON
11.932 cm	Write this word	in ure dux ur	unannig ure Feach circle	leller UI IIIe (    se 3 14 for	exercise.		34.5 ft SUBMARINE
12.56 cm					•		660 mm
44 ft			90 m			(2.1 m	132 mm
VEGETABLES							BECAUSE
13.188 m	)	/ \		)	\		84.78 in.
OHM	(E) $d = 20$ ft	(F)	<i>l</i> = 3.8 cm	(G) r = 2	50 m	(H) r = 5 cm	NO
1,630 m	)	)		)		)	154 mm
BIG				ç			THE
282.6 m	II. Find the circ	umference c	of each circle.	. Use $\frac{22}{7}$ for 1	<b>۲</b> .		720 mm
SILLY	(1)  d = 14  ft	5	<i>t</i> = 28 in.	$(\mathbf{K}) d = 4$	19 mm	(L) $d = 10\frac{1}{2}$ ft	JUMPED
31.4 cm OF	(M) r = 21 mm	) (2	= 3 <u>-1</u> in.	) (0 [=1	05 mm	$(P)  r = \frac{3}{2} \text{ in.}$	$4\frac{5}{7}$ in. PEAS
62.8 ft			N	$\mathbf{O}$		4	143 mm
DUMPED		3.14 IOF 71.		ו (	-	-	TOP
11.542 cm	(Q) The wheel diameter o	s on a bicyc if 27 in. How	le have a ' far does		e minute har long. How 1	nd of a large clock is far does the point	33 ft
OFF	the bicycle	travel with	each turn	of th	he hand mo	ve in one hour?	GROUND
	of the whe	els?					

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**D-49** 

**TOPIC 4-b: Circumference** 

### What Does a Tuba Call Its Father?

Give the number of square units in each figure. Find your answer and cross out the letters above it. When you finish, the answer to the title question will remain.



**D-50** 

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TOPIC 4-c: Area of Rectangles

# What Did the Baseball Coach Look For in Space?



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TOPIC 4-c: Area of Rectangles

# Why Do Elephants Have Ivory Tusks?

Do each exercise and find your answer in the answer columns. Write the letter of the answer in each box containing the number of the exercise.

I. Find the area of each figure.



TOPIC 4-c: Area of Rectangles

D-52

## How Was the Wooden Marionette Related to the Wooden Diving Board?

Use a calculator to solve each problem (round decimal answers to the nearest tenth). Find your answer in the answer column and notice the two letters next to it. Write these letters in the spaces over the exercise number at the bottom of the page.

WORLD RECORD: The largest jigsaw puzzle ever made was 85 by 55 ft and had 15,520 pieces. It was constructed by the United Way in	Answers
Keene, New Hampshire.	(HA) 1.7
1. What was the area of the puzzle in $ft^2$ ? $ft^2$	( <b>HE</b> ) 997,228.8
2. What was the area of the puzzle in in. <sup>2</sup> ? in. <sup>2</sup>	OM 165
3. What was the average size of each piece? in. <sup>2</sup>	
WORLD RECORD: The world's largest quilt, designed by <b>A.</b> Platteau, measures 69.6 by 99.5 ft. It was made from 16,140 equal-sized squares sewn together.	(DE) 7,130 (LY) 673,200 (TR) 15.344
4. What is the area of the quilt in $ft^2$ ?ft^2	(FX) 27,000 /
5. What is the area of the quilt in in. <sup>2</sup> ? in. <sup>2</sup>	21,099.4
6. What is the area of each square?in. <sup>2</sup>	WO 2.1
WORLD RECORD: The world's longest buffet table was 2 204.8 ft long	(DT) 4,675
and 8.2 ft wide. On June 19, 1982, approximately 4,000 people, including HM The King of Sweden, were seated at the table.	SA 86,310
7. What was the area of the table? ft <sup>2</sup>	HI 917,106.8
8. What was the perimeter of the table?	(ME) 6,925.2
9. If 4,000 people were equally spaced	( <b>FA</b> ) 6,626
around the perimeter of the table,	ST) 14,904
	(EE) 61.8
WORLD RECORD: The largest American flag ever made was first displayed on March 22,1980, and measures 411 by 210 ft.	VO 4,835
10. What is the area of the flag in ft <sup>2</sup> ?ft <sup>2</sup>	(MI) 9,590
11. What is the area of the flag in yd <sup>2</sup> ?yd <sup>2</sup>	(TH) 43.4
<ol> <li>The fabric used for the flag weighs about 1.6 lb per yd<sup>2</sup>. About how much</li> </ol>	EN 83,820
does the flag weigh?Ib	(ER) 28,186.4
3 7 9 1 5 10 4 8 11	2 12 6

• • • • • • • • •

### What Happened to Mr. Meter When Mrs. Meter's Mother Flew in for a Visit?

Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

I. Find the PERIMETER and the AREA of each parallelogram.



- II. Solve.
- 7 The base of a parallelogram is 10 in. The height is 2 in. more than half the base. Find the area.
- 9 The area of a parallelogram is 60 ft<sup>2</sup>. The height is 5 ft. How long is the base?
- 8 The height of a parallelogram is 4.5 cm. The base is twice the height. What is the area?
- (10) The area of a parallelogram is  $375 \text{ cm}^2$ . The base is 25 cm. Find the height.

Т	SH	HE	RE	E	WE	WA	١T
31.6 cm	17.4 cm	33.8 cm	15 cm	32 in. <sup>2</sup>	56 m	1.38 m <sup>2</sup>	70 in.²
SC	A	NT	EN	DA	RE	AL	Т
37.6 cm <sup>2</sup>	180 m²	12 ft	18 m	380 ft	1.26 m²	16.32 cm <sup>2</sup>	16 ft
PR	IM	V	ET	TY	IS	ER	IT
5.4 m	350 ft	39.06 cm <sup>2</sup>	84 in. <sup>2</sup>	40.5 cm <sup>2</sup>	26 in.	6.3 m	8,100 ft <sup>2</sup>

**TOPIC 4-e: Area of Parallelograms** 



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D-55

TOPIC 4-f: Area of Triangles

#### What Happens When the Smog Lifts in Los Angeles, California?



Find the AREA and the PERIMETER of each triangle below. Look for both answers in the rectangle. Shade in each area containing a correct answer.





TOPIC 4-g: Review: Perimeter and Area of Rectangles, Parallelograms, and Triangles

# What Game Did Tarzan Like to Play?

Do each exercise below. Find your answer in the answer columns and notice the letter next to it. Look for this letter in the string of letters near the bottom of the page and CROSS IT OUT each time it appears. When you finish, write the remaining letters in the rectangle at the bottom of the page.





II. An artist designed a base for one of his sculptures with the dimensions shown. The top and bottom are rectangles. The sides are isosceles trapezoids.



**D-58** 

**TOPIC 4-h: Area of Trapezoids** 

What Is Dangerous about Living for 7 Days on Just One Can of Sardines?



# What Is the Title of This Picture?

Use the diameter (d) or radius (r) of each circle to find the circumference (C) and area (A) of the circle. Use 3.14 for  $\pi$ . Round answers to the nearest hundredth (if necessary). Each time an answer appears in the coded title, write the letter of the exercise above it.



#### CODED TITLE:



# Why Is a Mathematician Like an Airline?

Round each answer to the nearest hundredth (if necessary) and find it in the appropriate **answer** column. Use **314** for  $\pi$ . Fill in the correct unit of measure for each answer you choose. Write the letter of the exercise in the box containing the number of the answer.

- 1. A circle has a radius of **12** in. Find:
  - E The diameter of the circle.
  - $(\mathbf{H})$  The circumference of the circle.
  - T) The area of the circle.
- 2. A circle has a radius of 4.4 cm. Find:
  - S The diameter of the circle.
  - $\widehat{\mathbf{Y}}$  The circumference of the circle.
  - $(\mathbf{H})$  The area of the circle.
- 3. A circle has a diameter of 60 m. Find:
  - The radius of the circle.
  - O The circumference of the circle.
  - $\overline{\mathsf{T}}$  The area of the circle.
- 4. A circle has a diameter of 1.8 km. Find:
  - $\bigcirc$  The radius of the circle.
  - $\overline{(E)}$  The circumference of the circle.
  - $\overrightarrow{\mathsf{U}}$  The area of the circle.
- 5. Solve.
  - (B) Jack's cow is tied to a beanstalk with **a** piece of **rope that** is **15** ft long. What is the area of the circle in which the cow can graze?
  - T A round game table has a diameter of 1 m. How much plastic laminate is needed to cover the top of this table?
  - S The diameter of the earth at the equator is about 8,000 mi. Based on this figure, how far is it around the earth?
  - P Radio station KROQ broadcasts in all directions to a distance of 40 mi. How many square miles are in the station's broadcast area?
  - U WORLD RECORD: The world's largest Ferris Wheel was built in London in 1897. The wheel had a radius of 150 ft. How far would you travel in one turn of this wheel?

1 4 1	2	2	A	E	6	7	0	0	10	44	10	10	4 4	15	10	17	10	10	00	01
	2	3	4	) D	0		0	9			14	13	14	10	01	17	10	19	20	21
					l														( )	1
			1	1	}	}														( )
																			1 1	1 /







ш	95 in. <sup>2</sup>
Σ	9.2 in.
⊢	706.5 cm <sup>2</sup>
_	8.3 m
ш	8.4 in.
œ	26 ft
I	1,670 ft <sup>2</sup>
⊢	131 in. <sup>2</sup>
0	30 ft
≻	9.6 in.
۲	127.2 cm <sup>2</sup>
щ	2.5 cm
ш	28 ft
>	69.5 in. <sup>2</sup>
⊢	21.5 in. <sup>2</sup>
-	154 in. <sup>2</sup>
۲	814.5 cm <sup>2</sup>
G	7.8 m
Z	593.5 cm <sup>2</sup>
-	59 in. <sup>2</sup>
8	30.5 in. <sup>2</sup>
S	78.5 in. <sup>2</sup>
I	1,960 ft <sup>2</sup>
⊢	113.0 cm <sup>2</sup>

#### How Do You Get a One-Armed Monkey Down From a Coconut Tree?

Solve each problem. Use 3.14 for  $\pi$ . Find your answer and cross out the letter next to it. When you finish, the answer to the title question will remain.

- 1. Find the diameter of a circle if the circumference is 8 cm. Round to the nearest tenth.
- **2.** Find the diameter of a circle if the circumference is 24.5 m. Round to the nearest tenth.
- **3.** The largest living thing on earth is a California sequoia tree named the "General Sherman." The circumference of its trunk is about 82 ft. Find the diameter of the trunk to the nearest whole number.
- **4.** A revolving water sprinkler sprays water in all directions to a distance of-25 ft. What area does it cover? Round to the nearest 10 ft<sup>2</sup>.
- **5.** Pizza Mind Pizza sells a large pizza with a diameter of 14 in. and a medium pizza with a diameter of 11 in. Find the following to the nearest whole number:
  - A. The area of the large pizza.
  - B. The area of the medium pizza.
  - C. How much larger is the large pizza?
- 6. Nick Claus plans to have a model train running in a circle around his holiday tree. How many feet of track will he need if the diameter of the circle is 9.5 ft? Round to the nearest whole number.
- **7**, A record has a radius of 15 cm. The label has a radius of 6 cm. Find the following to the nearest tenth:
  - A. The area of the record (including the label).
  - B. The area of the label.
  - C. The area of the record that is not covered by the label.
- **B** The diameter of a basketball hoop is 18 in. The circumference of a basketball is 30 in.
  - A. Find the diameter of the basketball. Round to the nearest tenth.
  - B. How much less is the diameter of the basketball than the diameter of the hoop?
- 9 A circle is cut out of a piece of plywood that is 10 in. square. The scraps are thrown away.
  - A. Find the area of the circle.
  - B. How many square inches of plywood are thrown away?



**D-62** 

# D-63

# When Is a Chair Like the Fabric Used to Make It?

Write the correct formula to use in solving each problem. Find your answer in the Code Key and notice the letter next to it. Write this letter in the box containing the number of the problem.

1 A botanical garden was designed in the shape of a pentagon. How many meters of fencing are needed to go around the garden?



- 2 How many square feet of wallpaper are needed to cover a wall 8 ft high by 15 ft wide?
- **3** The diameter of a circular running track is 140 yd. How far would you run in one lap?
- **4** How much weather stripping is needed to go around a square window measuring 42 in. on a side?
- **5** A dangerous criminal has escaped from prison. The police believe he could not have traveled more than 10 mi in any direction from the prison. How many square miles must be searched?
- 6 How much lace edging is needed to go around a rectangular tablecloth measuring 52 in. by 70 in.?

4	9	7	5	3	10	1	12	6	2	8	11

- 7 How many tiles are needed to cover a square patio measuring 18 ft on a side if each tile covers 1 sq ft?
- 8 The orbit of the earth around the sun is approximately a circle with a radius of 93,000,000 mi. How far do we travel in one orbit around the sun?
- **9** How much felt is needed to make this banner?



50 cm

- **10** If each bag of fertilizer covers 2,000 sq ft, how many bags are needed to fertilize a rectangular lawn measuring 100 ft by **160** ft?
- **11** A lighthouse beacon can be seen 24 mi in all directions. What is the area over which the beacon can be seen?
- 12 Popeye put colorful plastic tape around the edge of a triangular sail. The sail had sides of 10 ft, 15 ft, and 18 ft. How many feet of tape did he use?

С	ode Key									
Perimeter1 Circumference										
S	P = sum of the lengths of the sides.									
A	$P = 2\ell + 2w$									
W	<i>P</i> = 4 <i>s</i>									
	$C = \pi d$ or $C = 2\pi r$									
Area										
T	$A = \ell w$									
E	$A=s^2$									
(H)	$A=\frac{1}{2}bh$									
N	$A = \pi r^2$									

#### What Happened to Zelda After She Swallowed Two Nickels, Three Dimes, and a Quarter?

Give the SURFACE AREA of each prism. Find your answer in the answer columns and notice the two letters next to it. Write these letters in the spaces over the exercise number at the bottom of the page.



A rectangular storage box is 12 in. wide, 15 in. long, and 9 in. high. How many square inches of colored paper are needed to cover the surface of the box? A teacher made a pair of foam dice to use in math games. Each cube measured 10 in. on a side. How many square inches of fabric were needed to cover the two cubes?

(TH) 73 m <sup>2</sup>		Ans	OB	OB 8,560 in. <sup>2</sup>					
(AL) 23.12 cm <sup>2</sup>	(AS) 94 c	cm <sup>2</sup>	(ER) 3	18.26 m <sup>2</sup>	NO	NO 25.92 cm <sup>2</sup>			
EW) 846 in. <sup>2</sup>	(T) 86 r	n <sup>2</sup>	(AN) 9,	,600 in. <sup>2</sup>	PL	PL 1,050 in. <sup>2</sup>			
(ER) 104 m <sup>2</sup>	CH 1,20	)0 in. <sup>2</sup>	(GE) 30	00.56 m <sup>2</sup>	(TR) 85 cm <sup>2</sup>				
4 2	7	1	5	5 8		6			

TOPIC 5-a: Surface Area of Rectangular Prisms

**D-64** 

# What Is Cold And Comes In Cans?

Find the surface area of each figure. Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.



## Why Did Humpty Dumpty Have a Great Fall?

Do each exercise and find your answer in the answer column. Write the letter of the answer in each box containing the number of the exercise. Use 3.14 for  $\pi$ .



**D-66** 

TOPIC 5-c: Surface Area of Cylinders

412.18 ft<sup>2</sup>

803.84 in.<sup>2</sup>

792.16 m<sup>2</sup>

251.2 ft2

904.32 ft<sup>2</sup>

861.6 cm<sup>2</sup>

367.38 m<sup>2</sup>

376.8 cm<sup>2</sup>

244.92 cm<sup>2</sup>

815.18 ft<sup>2</sup>

11,304 cm<sup>2</sup>

942 cm<sup>2</sup>

351.68 ft<sup>2</sup>

775.14 in.<sup>2</sup>

533.8 cm<sup>2</sup>

271.296 m<sup>2</sup>

876.06 m<sup>2</sup>

12,412 cm<sup>2</sup>

8,792 cm<sup>2</sup>

311.046 m<sup>2</sup>

4

10

# **Mystery:** What happened when a 6-year old, a 5-year old, a 4-year old, a 3-year old, and a 2-year old joined to form a basketball team?

Find the volume of each prism in cubic units. Write the letter of the exercise in the box containing the answer.











R









(L)  $\ell = 3; w = 7; h = 2$ 

s	
	3
3	

 $\hat{N}$   $\ell = 4; w = 3; h = 6$ 

Ε

6

$\sim$						
E)	<i>l</i> =	5:	W =	5:	h =	3

2

4

10	0.4		4.0		_										_	
40	24	36	16	32	72	64	12	48	80	45	28	75	42	30	60	18
		1		-									( ·			
	]															

### What Movie Is about a Kid Who Ran Away from Home with His Bicycle?

Find each answer in the answer columns and notice the two letters next to it. Write these letters in the spaces over the exercise number at the bottom of the page.

I. Find the volume of each rectangular prism.



**D-68** 

# What **b** Big, Gray, and Lives in California?

Find the volume of each prism. Write the letter of the exercise in the box above the answer at the bottom of the page.



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#### ☆ TRIVIA TEST ≫



**D-70** 

for the candle?

TOPIC 5-g: Volume of Cylinders

(Hint: 1 cm3 holds 1 mL.)



Find each answer in the appropriate set of boxes at the bottom of the page. Write the letter of the exercise in the box containing the answer. I. Find the length of one side (s) of each square.  $\bigcirc$ E (1)Area Area Area 400 ft<sup>2</sup> 25 m<sup>2</sup> 64 cm<sup>2</sup> cm **s** = m **S** = **S** = \_\_\_\_\_ ft II. Find the square root.  $(1)\sqrt{100}$ (0) √81 (S) √49 √16 √1 √144 (E) √36  $\sqrt{4}$ (D) (U)  $\sqrt{6,400}$  $\sqrt{10,000}$ (C) √<u>900</u> √2,500 III. Simplify. (E) 15<sup>2</sup> 25<sup>2</sup> 112 (H) (E) √121  $\sqrt{625}$  $(A) \sqrt{16} + \sqrt{9}$  $\sqrt{25} - \sqrt{9}$  $\sqrt{36} + \sqrt{64}$ (E  $\sqrt{16 + 9}$  $\sqrt{36 + 64}$ N √0.25 **√0.81 √0.01** Ĺ (B) (J) Answers for Part I and Part II 7 11 12 20 60 30 5 80 4 2 3 50 10100 6 90 9 8 Answers for Part III 10 121 11 18 12 0.1 14 25 0.5 15 0.4 0.9 225 715 625 2 7 5 4

### Why Did the Teacher Assign Extra Homework When She **Taught Adolescents?**

1

Find which two consecutive whole numbers the square root is between. Write the letter of the exercise on the number line between these two numbers.

Use the top number line for the first set of exercises, and the bottom number line for the rest.



TODAY'S HOMEWORK:

Memorize the Dictionary.
#### Why Do Adults Complain So Much?

I PON'T LIKE Find the length of the hypotenuse of each right triangle below. THIS OR THAT Find your answer in the answer column. Write the letter of the AND I DON'T .... answer in the box containing the number of the exercise. (1)2 3) 4 9 10 7 10 Answers  $\sqrt{85} \approx 9.2$ E) (4) 5 6 7  $\sqrt{562} \approx 23.7$ 8 D 12 6  $\sqrt{169} = 13$ 5  $\sqrt{130} \approx 11.4$ 0 9  $\sqrt{289} = 17$ U 6  $\overline{7}$ 8 9  $\sqrt{225} = 15$ 15 20 11  $\sqrt{800} \approx 28.3$ H 8  $\sqrt{25} = 5$ E 20  $\sqrt{580} \approx 24.1$ (12) (10 (11)  $\sqrt{2,500} = 50$ R 12 √<u>346</u> ≈ 18.6 S 7 16 5 √89 ≈ 9.4 Ρ  $\sqrt{275} \approx 16.6$ 18 4 √<u>65</u> ≈ 8.1 G 13 (15) (13) 8 14  $\sqrt{200} \approx 14.1$ 10 30 40 15 √<u>269</u> ≈ 16.4 R  $\sqrt{100} = 10$ A 5 9 1 11 3 13 6 10 15 2 8 12 14 4 7

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D-73

TOPIC 6-b: The Rule of Pythagoras: Finding the Length of the Hypotenuse

## How Would You Describe a Dead Skunk?

Round each answer to the nearest tenth (if necessary). Find each answer at the bottom of the page and cross out the letter above it. When you finish, the answer to the title question will remain.

12 in.

С

1 Find the length of the hypotenuse of each right triangle.

B

Α



D	E	S	Α	X	D	Т	Ν	0	I	S	Ν	Т	Α	С	К	Т	Ε
5.4 i	29. yd	15. m	8 T	13.2 m	12.5 m	16.7 in.	41 ft	12.2 cm	6.1 m i	13.9 ft	42.5 ft	127.3 f	28.7 <b>y</b> d	14.4 ft	17.0 in.	129.8 ff	25 in.

TOPIC **6-b:** The Rule of Pythagoras: Finding the Length of the Hypotenuse

D-74

# Cryptic Quiz

**1.** What is the opposite of a professional eater?

8.8	19.6	18.5	8.8	10.9	8.8	3.3	9.8	70.7	1.4	70.7	14.5	
<b>2.</b> Ho	W WO	uld yo	u des	cribe a	a job i	n the	Acme	Mitter	n Co.	shippi	ng de	partment?
22.4	16.1	19.2	5	19.6	6	68	6	8	16.1	9.2	70.7	6.3
3. W	hat ca	n be r	ight b	ut nev	er wro	ong?						
8.8	19.6	7.4	8.8	19.6	6	8	70.7					
Fo dia (if ap	or each agram a necess opears,	exercis at the ri sary) ar write th	se, find ght.) R nd find ne lette	the mis cound yo it in the or of the	ssing le our ans code. exerci	ength. swer to Each t se abo	(Refer to the ne time the ove it.	to the earest te e answe	enth er		<u> </u>	b
H	a = 9, <i>i</i>	b = 4,	C =				E	<i>a</i> = 5	0, <i>b</i> =	= 50, <i>c</i>	=	
0	a = 8, ,	b = 14	, C = _				B	a = _		, <i>L</i>	b = 20,	<i>c</i> = 30
<b>S</b> 4	a =		_, b=	= 3, <i>c</i> =	= 7		$\heartsuit$	<i>a</i> = 6	, b = _		, (	c = 11
M	a =		_, b=	= 5, <i>c</i> =	= 12		$\bigotimes$	a = 1	, <i>b</i> =	1, <i>c</i> =		
<b>G</b> a	9 =		_, b =	= 8, <i>c</i> =	= 10		$\otimes$	a = _	-	, l	b = 16,	<i>c</i> = 25
© á	a = 5, <i>i</i>	b =		, C =	= 6		A	<i>a</i> = 2	, b = _	<u> </u>	, (	c = 9
R	a = 4, <i>i</i>	b =		, C =	= 15		Ŀ	a = _		, l	b = 15,	<i>c</i> = 17
	a = 12,	, b = _		, C	= 13		N	<i>a</i> = 1	0, <i>b</i> =	:	,	<i>c</i> = 22
MIDDL © Crea	E SCHOO tive Publi	OL MATH cations	WITH PI	ZZAZZ! B	OOK D	D	-75	F	inding th	TOPIC 6 e Length	6-c: The R of a Side	Rule of Pythagoras: of a Right Triangle

### What Relation **Is** a Doorstep to a Doormat?

Round each answer to the nearest tenth (if necessary). Cross out the box containing each answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

14 m

For each right triangle, find the length of the side that is not given. 1

В







7 in. 12 in. 18 m 18 m

Yuki just bought a bigscreen TV set. The screen has a diagonal measure of 40 in. If the screen is 32 in. wide. how high is it?



- A 25-foot ladder is leaned against a wall. If 3) the base of the ladder is 7 ft from the wall, how high up the wall will the ladder reach?
- Asrossearsvaarmeter 4 river, the current carried him 30 m downstream. How far did he swim?



@ The mast of a sailing ship is 20 ft tall. A rope is stretched 26 ft from the top of the mast to a cleat on the deck of the ship. How far is the cleat from the base of the mast?

С

F

6) Each side of an equilateral triangle measures 12 cm. Find the height, h. of the triangle.



Two jets left an airport at the same time. One traveled east at 300 miles per hour. The other traveled south at 400 miles per hour. How far apart were the jets at the end of an hour?

PL	DO		AS		OR		MA		TE		AM		RU		PF	
85.4 m	12 c	m	9.8	cm	24	in.	500	) mi	26	6 in.	5.3	s cm	10	.4 cm	520 mi	i
ON	AR		UN		PA		TH		IN		AT		ER		AN	
25.5 in.	9.4	in.	17.8	3 m	16.	6 ft	87.	1 m	9.7	7 in.	2	4 ft	18	3.5 ft	8.3 ft	

7

TOPIC 6-c: The Rule of Pythagoras: Finding the Length of a Side of a Right Triangle

**D-76** 

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#### What Does a BONE SPECIALIST Need to Get His Practice Started?

Evaluate each formula below for the given values of the variables. Find each answer at the left and cross out the letter next to it. When you finish, the answer to the title question will remain.



		(1)  d = rt	where <b>d</b> is the distance traveled by an object moving at speed <b>r</b> in time <b>t</b> . Find <b>d</b> if
			r = 32 m/sec, t = 8 secm
,		(2) <b>E</b> = <b>IR</b>	where E is the voltage in an electric circuit with current $\blacksquare$ and resistance <b>R</b> . Find <b>E</b> if
ш	49		1= 2.5 amperes, R = 60 ohmsv
¥	145	(3) $V = 9.8t$	where v is the speed in meters per second of a free- falling object after <i>t</i> seconds. Find v if
C	120		<i>t</i> = 5 secm/sec
۷	1,160	(4) $S = (n-2)180$	where <b>S</b> is the sum of the measures of the angles of a polygon with n sides. Find <b>S</b> if
—	150		<i>n</i> = 8°
Ω	490	(5) $A = 6e^2$	where <b>A</b> is the surface area of a cube with edge <b>e</b> . Find <b>A</b> if
ш	172		<i>e</i> = 12 cm cm2
0	1,080	$6  V = hw^2$	where <b>V</b> is the volume of a prism with a square base of side w and with height <b>h</b> . Find V if
£	520		h = 10  cm, w = 7  cm. cm <sup>3</sup>
_	68	$\begin{array}{c} \hline \hline$	where <i>L</i> is the approximate length of a skid in feet for a car traveling at s miles per hour. Find <i>L</i> if
Ш	256		<i>s</i> = 60 mi/hft
В	74	8 F= 1.8C+ 32	where F is the Fahrenheit temperature equivalent to
A	924		$C = 20^{\circ}$ . $^{\circ}F$
⊢	164	$9 B = \frac{4(220 - y)}{5}$	where B is the recommended maximum heart rate
S	864	Č (	y = 15. beats/sec

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### **\*\*\* Test of Genius \*\*\***

1) Identical cubes are stacked in the corner of a room as shown. How many cubes are there altogether?



2) Make this equation correct by changing the position of only one digit.

101 - 102 = 1

- 3 Ms. Smucker went to a store, spent half of her money and then \$10 more. She went to a second store, spent half of her remaining money and then \$10 more. But she then had no money left. How much money did she have to begin with?
- 4 If 8 widgets equal 4 curlicues and 2 curlicues equal 3 goofups, then 16 widgets equal how many goofups?
- 5 Draw the figure below without lifting your pencil from the page or tracing over a line previously drawn.



(6) Steven has 9 gold coins that are identical in appearance. However, one coin is counterfeit and weighs slightly less than the others. Using a balance scale, how can he find the counterfeit coin in just two weighings?



7 In the following addition problem, the letters A, B, and C stand for three different digits. What digit should replace each letter?

- 8 The teacher noticed there were fewer than 100 students on the playground. When she counted them by 2s, there was 1 student left over. In fact, when she counted them by 3s, 4s, 5s, or 6s, there was always 1 student left over. How many students were on the playground?
- 9 In the Hope family there are seven sisters, and each sister has one brother. Including Mr. and Mrs. Hope, how many are in the family?



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TOPIC 7-b: Test of Genius

**D-78**