



Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Benchmark Examination Grade 6

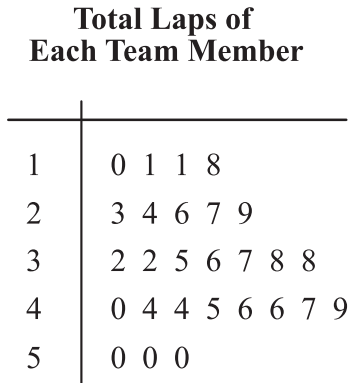
**February and March 2006
Administration**

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Arkansas Department of Education

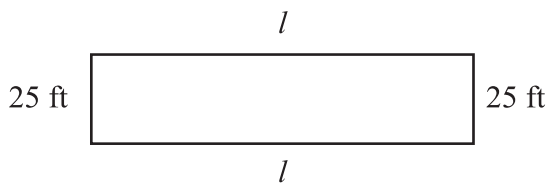
CALCULATOR NOT PERMITTED — ITEMS 1–8

1. All members of the swim team have to swim laps. The number of laps completed by each team member is represented in the stem-and-leaf plot below.



How many members are on the swim team?

- A. 22
 - * B. 27
 - C. 32
 - D. 50
2. Miss Durham asked her students to write an algebraic expression that would find the perimeter of the rectangle below.



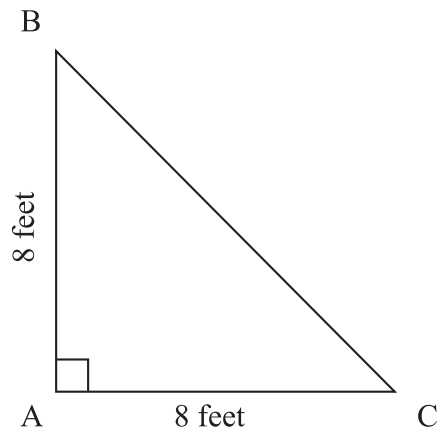
Which expression is correct?

- A. $25 \times l$
- * B. $2(l) + 2(25)$
- C. $2(25) \times 2(l)$
- D. $(2 + l) \times (2 + 25)$

3. Which mixed number below is equivalent to the improper fraction $\frac{56}{9}$?

- A. $5\frac{6}{9}$
- B. $6\frac{2}{56}$
- * C. $6\frac{2}{9}$
- D. $9\frac{47}{56}$

Use the figure below to answer question 4.



4. What is the area of triangle ABC above?
- A. 16 square feet
 - B. 27 square feet
 - * C. 32 square feet
 - D. 64 square feet

5. Use your ruler to measure the pencil below to the nearest $\frac{1}{8}$ of an inch.



How long is the pencil from the eraser tip to the tip of the lead?

- A. $5\frac{1}{8}$ inches
- * B. $5\frac{3}{8}$ inches
- C. $5\frac{5}{8}$ inches
- D. $5\frac{7}{8}$ inches

6. Ben needs to buy 75 feet of rope for a tree swing. The hardware store sells rope by the yard only. How many yards of rope should Ben buy?

- * A. 25 yards
- B. 36 yards
- C. 39 yards
- D. 63 yards

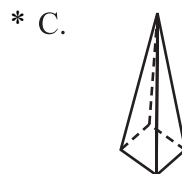
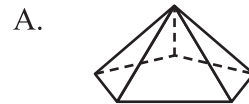
7. Each week, Mrs. Coleman puts the names of her 27 students in a shoebox and picks one name at random to be the class helper. If there are 12 boys and 15 girls in the class, what is the probability that Mrs. Coleman will pick a boy's name?

- A. 1 : 12
- B. 12 : 15
- * C. 12 : 27
- D. 15 : 27

8. Mr. Creech gave his class the following clues to describe a mystery 3-dimensional geometric shape.

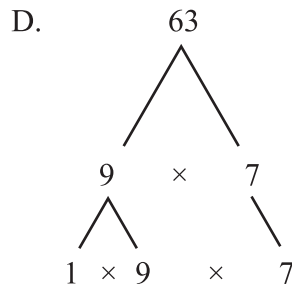
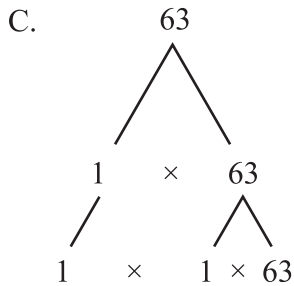
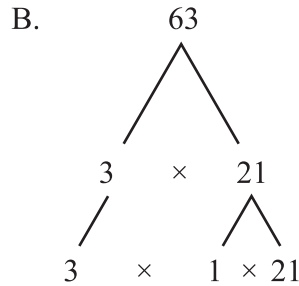
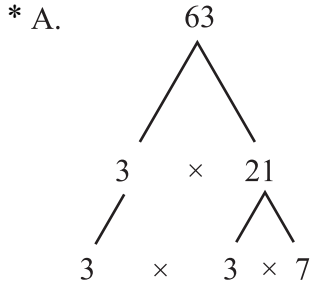
It is a solid geometric shape.
It has a total of 5 faces.
It has a total of 5 vertices.

Which of the following figures could be the mystery geometric shape?



CALCULATOR PERMITTED — ITEMS 9–40

9. Mr. Jones placed the following factor trees on the board. Which factor tree shows the prime factorization of 63?



10. Kayla is making a cube out of toothpicks and marshmallows. She is using one marshmallow at each vertex to hold her cube together. How many marshmallows will Kayla need?

- A. 6
 * B. 8
 C. 12
 D. 20

11. Marilyn needs 2 cups of milk in order to make 1 batch of cupcakes. She needs to make 4 batches for a bake sale at her school. How many quarts of milk will Marilyn use?

- * A. 2
 B. 4
 C. 6
 D. 8

12. Zoe and Joseph both entered their names in a contest to win a year's pass to the science museum. A total of 150 people entered the contest. What is the probability that either Zoe or Joseph will win the contest?

- A. 1 out of 2
 B. 1 out of 150
 C. 2 out of 148
 * D. 2 out of 150

13. Which of the following situations describes a variable (a quantity that changes)?

- * A. the cost of different sodas
 B. the degrees in a right angle
 C. the number of pennies in a dollar
 D. the distance around the Earth at the equator

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14. Pam created the function table (or input-output table) below.

x	y
4	16
6	24
8	32
10	40

According to Pam's function table, what will be the value of y when the value of x is 14?

- A. 26
 B. 46
 C. 48
 * D. 56
15. Wade has a small loaf of bread that measures $\frac{1}{4}$ meter in length. He slices a 2-centimeter piece of bread to eat. What is the length of the loaf, in centimeters, after Wade's slice is removed?
- A. 2 cm
 B. 9 cm
 * C. 23 cm
 D. 25 cm
16. Martha earned \$12.00 per hour babysitting. If n represents her total salary, which expression represents the number of hours she worked?
- A. $n + 12$
 B. $n - 12$
 C. $n \times 12$
 * D. $n \div 12$

17. The sixth-grade math teachers purchased some new calculators for the school.

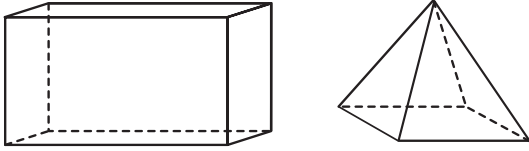
- Mr. Ellis gave three-fourths of his students new calculators.
- Ms. Bivens gave 4 of her 28 students new calculators.
- Mrs. Farrell gave 12 of her 24 students new calculators.
- Mr. Summers gave one-third of his students new calculators.

Which teacher gave the **greatest** fraction of students new calculators?

- * A. Mr. Ellis
 B. Ms. Bivens
 C. Mrs. Farrell
 D. Mr. Summers
18. Coach Jesse wants to purchase new goggles for 22 members of his swim team. Each pair of goggles costs \$4.76. What is the estimated amount of money Coach Jesse will need?
- * A. \$100.00
 B. \$ 90.00
 C. \$ 80.00
 D. \$ 5.00
19. Orlando's math teacher shows him his grades below.
- 95 85 84 95 82 87
- What is the mean of Orlando's grades?
- A. 84
 B. 87
 * C. 88
 D. 95

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20. Compare the two polyhedrons (or solids) below.



How many more faces does the prism have than the pyramid?

- * A. 1
 - B. 2
 - C. 3
 - D. 4
21. Mark is baking cookies and can only find the $\frac{1}{2}$ -cup measuring tool in the kitchen. The recipe calls for $3\frac{1}{2}$ cups of flour. How many times will Mark need to fill the measuring cup to get the correct amount of flour?
- * A. 7
 - B. 6
 - C. 5
 - D. 4
22. Lynn wants to cover a bulletin board with paper. The length of the bulletin board is a little longer than 2 yardsticks, and the width is about the length of 1 yardstick. What is the estimated total area of the bulletin board, in square feet?
- A. 3 square feet
 - B. 4 square feet
 - C. 6 square feet
 - * D. 18 square feet

23. A national safety committee ranked each of the following brands of roller blades for safety and quality.

Roller Blades Ratings (Ratings on a Scale of 1–10, 10 being the best)		
Brand	Overall Safety	Overall Quality
Down Hill	9	6
Super Fast	5	7
Too Cool	7	8
Ride On	8	9

According to the data above, which brand of roller blades provides the **best** overall safety and quality?

- A. Down Hill
 - B. Super Fast
 - C. Too Cool
 - * D. Ride On
24. Jorge’s mom buys one 12-pack of juice, 1 gallon of milk, and 2 loaves of bread at the prices given in the table below.

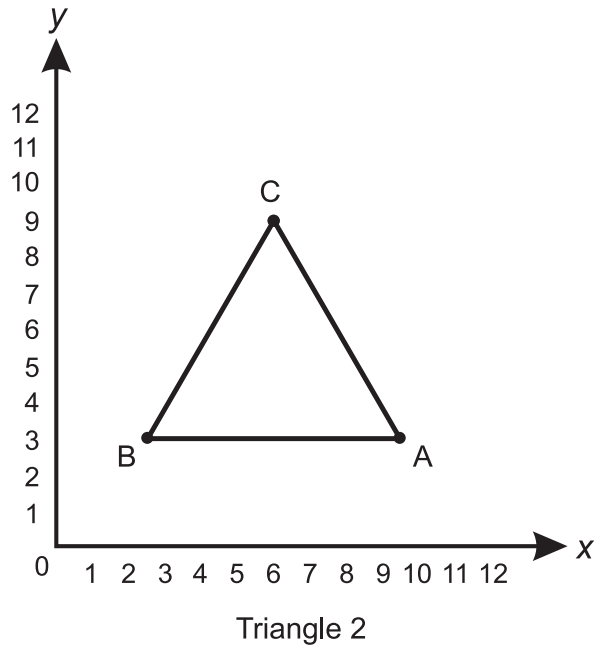
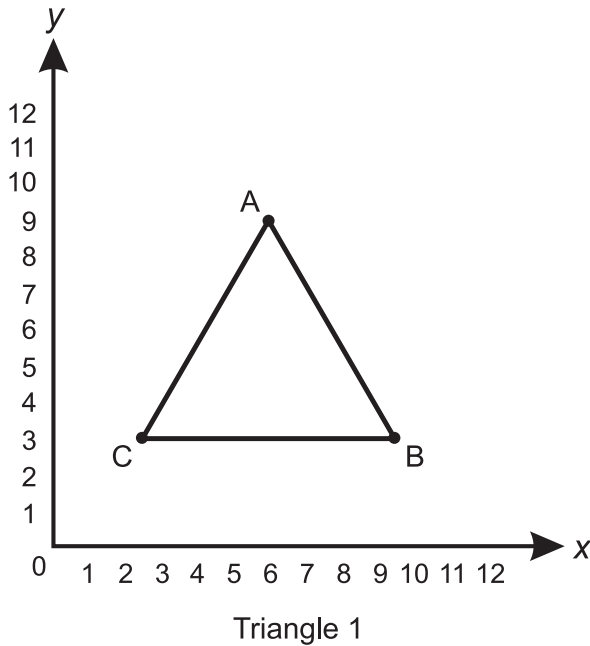
Grocery Items	Price
12-pack of juice	2 for \$5.50
milk	\$2.85 per gallon
bread	\$1.49 per loaf

What is the total cost (before taxes) of these items?

- A. \$ 7.09
- * B. \$ 8.58
- C. \$11.33
- D. \$16.83

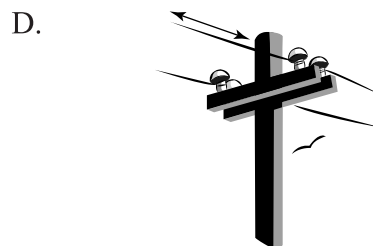
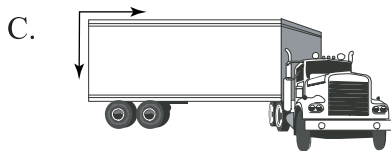
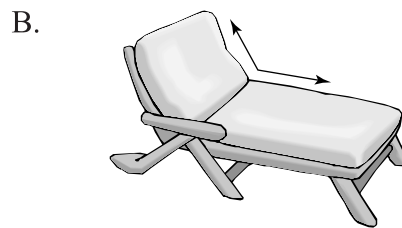
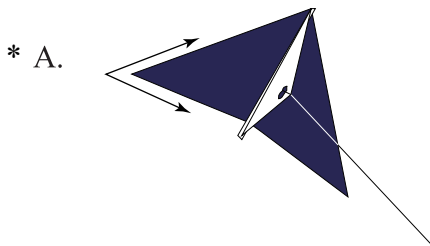
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25. Which of the choices **best** describes the change made to Triangle 1 that results in Triangle 2? Use your pattern block triangle to help.



- * A. rotation (turn)
- B. reflection (flip)
- C. translation (slide)
- D. dilation (grow or shrink)

26. Miss Vinson asked her students to search for an example of an acute angle outside of their homes. Which of the following is a correct example?



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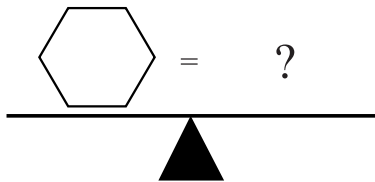
27. Tommy’s math class is compiling information for the chart below as a way of studying the process of measuring.

Determining the Best Way to Measure		
Object to Be Measured	Type of Measure	Size of Unit
length of a television commercial	time	small
amount of land on a ranch	area	large
distance from Hot Springs to West Memphis	length	large
amount of liquid medication for a child	?	?

What is the type of measure and size of the unit that is appropriate for measuring the amount of liquid medication for a child?

- A. area, large
- B. mass, large
- C. length, small
- * D. capacity, small

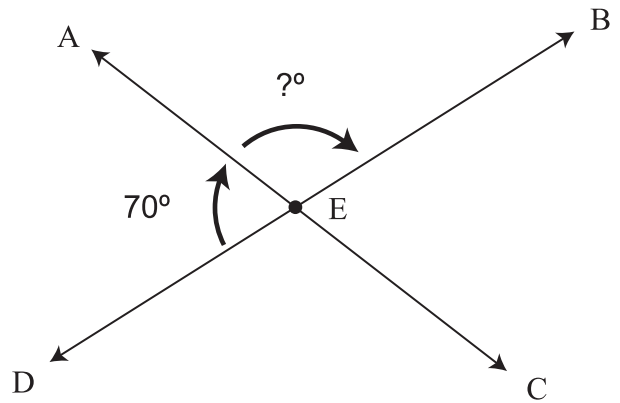
Use the figure below to answer question 28.



28. Which of the following would balance the scale above? Use your pattern blocks to help you.

- A.
- B.
- * C.
- D.

29. José drew the intersecting lines shown below.



What is the angle measure of $\angle AEB$?

- A. 20°
- B. 70°
- * C. 110°
- D. 140°

30. Kara feeds her pet fish every 3 days and walks the family dog on all even-numbered days.

September						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

If on the first day of September Kara feeds her fish, how many times during the month will Kara both feed her fish and walk the dog on the same day?

- * A. 5
 - B. 10
 - C. 15
 - D. 25
31. Mr. Underwood wrote the equation below to help him determine the number of kites that he had in his toy store before he sold 16 of them.

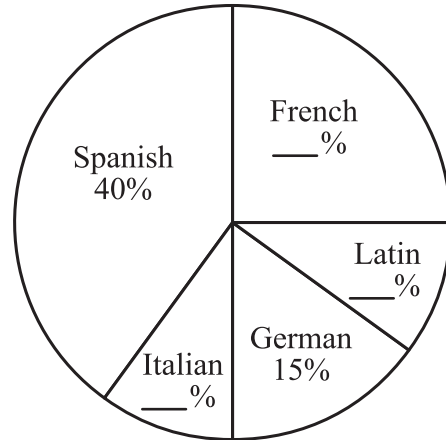
$$k - 16 = 10$$

Solve the equation to determine the original number of kites (k) in the toy store.

- A. $k = 6$
- B. $k = 10$
- C. $k = 16$
- * D. $k = 26$

32. The incomplete circle graph below shows the percentage of sixth-grade students who selected a foreign language.

Foreign Language Classes



If the same percentage of sixth-grade students selected Latin and Italian classes, what percentage of sixth-grade students selected Latin for their foreign language class?

- * A. 10%
 - B. 15%
 - C. 25%
 - D. 45%
33. Mr. Thomas asked his students to rewrite the equation below and to use a variable instead of the box in their equation.

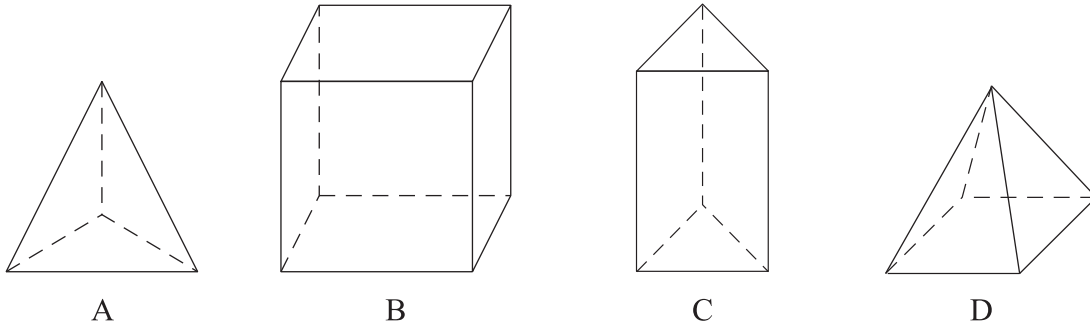
$$(2 + \square) \times 5 = 25$$

Which equation would be correct?

- A. $(n \times 2) + 5 = 25$
- B. $(n \times 5) + 2 = 25$
- C. $(5 + 2) \times n = 25$
- * D. $5 \times (n + 2) = 25$

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34. Which of the geometric figures below illustrates a rectangular-based pyramid?



- A. Figure A
- B. Figure B
- C. Figure C
- * D. Figure D

35. What is the mode of the test scores listed below?

97 85 100 97 82 75

- A. 89
- B. 91
- * C. 97
- D. 100

36. The rectangle below has a perimeter of 30 cm.

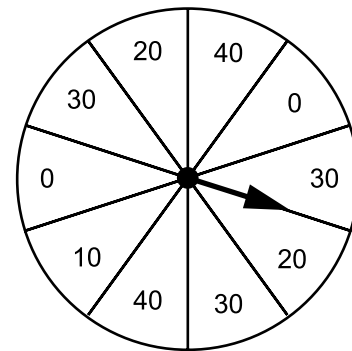


10 cm

What is its area?

- A. 30 cm^2
- * B. 50 cm^2
- C. 300 cm^2
- D. 500 cm^2

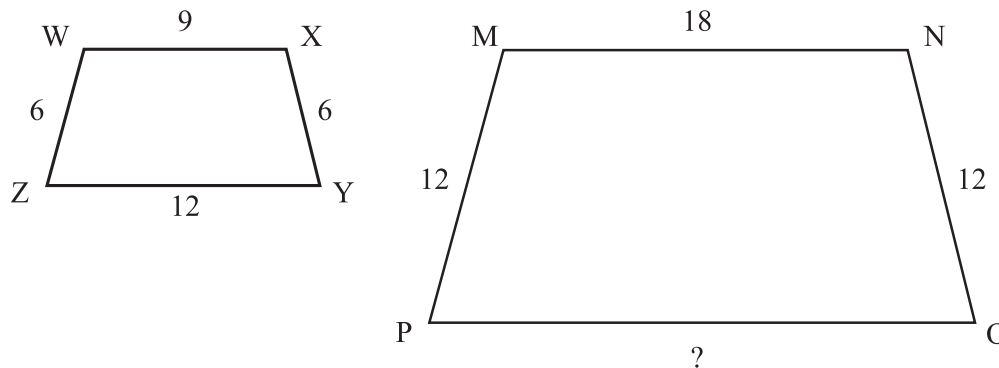
37. On the spinner below, what is the theoretical probability (expected outcome) of spinning 30?



- A. $\frac{1}{10}$
- B. $\frac{1}{6}$
- * C. $\frac{3}{10}$
- D. $\frac{3}{5}$

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- 38.** Margaret enlarged trapezoid WXYZ, making a similar trapezoid MNOP, so that line segment MN is 18 inches.



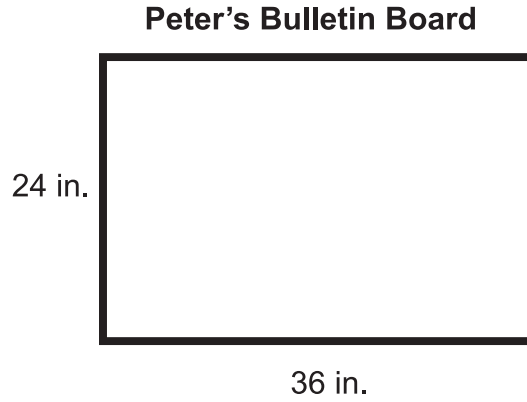
What is the length of line segment PO?

- A. 18
 - * B. 24
 - C. 33
 - D. 42
-
- 39.** Four groups of students visited the Arkansas Museum of Discovery.
- $$4n = 36$$
- Solve for n in the equation above to determine the number of students in each group.
- A. 4
 - * B. 9
 - C. 32
 - D. 36
- 40.** Hank is building a rectangular pen for his puppy. The length of the pen will be 10 feet. He has a total of 36 feet of fencing material to use. What is the width of the pen?
- * A. 8 feet
 - B. 10 feet
 - C. 16 feet
 - D. 20 feet

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MATHEMATICS OPEN-RESPONSE ITEM A

- A. Peter wants to cover a bulletin board with some postcards he collected while on vacation. His bulletin board is shown below.



1. What is the area of Peter's bulletin board? Show all your work and/or explain your answer. **Be sure to label your unit of measure.**
2. Peter collected 50 postcards, each measuring 4 inches \times 6 inches. How many of his postcards can Peter fit on his bulletin board without overlapping any? Show all your work and/or explain your answer.

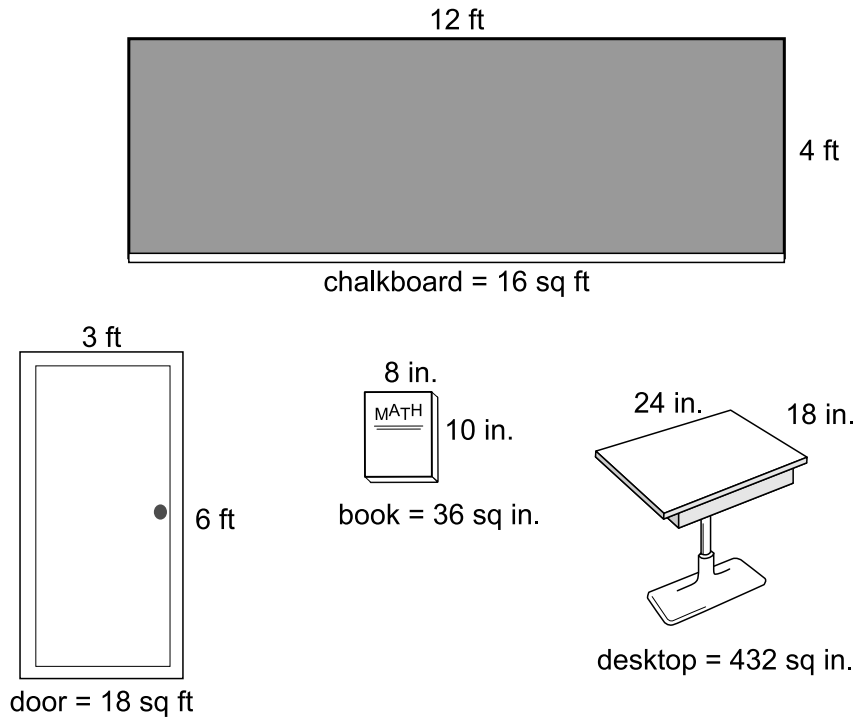
BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM A

SCORE	DESCRIPTION
4	The student earns 4 points. Correct units of "Square Inches" or "Square Feet" are used in Part 1. The response contains no incorrect work.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point or some minimal understanding is shown: Ex. $4 \times 6 = 24 =$ area of card only (NOT # of postcards). Ex. Response in Part 1: "864 sq. in. or 72 sq. ft."
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" assigned for the item.)

MATHEMATICS OPEN-RESPONSE ITEM B

B. Roberto calculated the area of four flat surfaces found in his classroom.



1. How many of Roberto’s calculations are incorrect?
2. Using words, numbers, and/or pictures, explain what is wrong with Roberto’s calculation(s).
3. What are the correct answer(s) that Roberto should have given? Show all your work and/or explain your answer. **Be sure to label your unit of measure.**

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

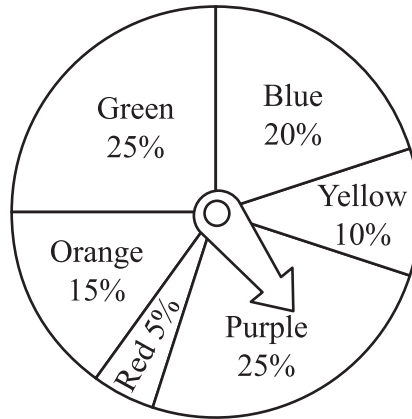
RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM B

SCORE	DESCRIPTION
4	
3	
2	(See Solution and Scoring)
1	
0	
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

MATHEMATICS OPEN-RESPONSE ITEM C

C. Juan is playing a probability game with his sister, Carla, using the spinner shown below.

Probability Game Spinner



- To win the game, Carla needs to spin blue. What ratio represents the probability that Carla will spin blue on her next turn? Show all your work and/or explain your answer.
- To play another probability game, each player chooses 3 colors from the spinner. A player receives a point if the spinner lands on one of his or her colors. What 3 colors should Carla select to have the **best** chance of winning? Show all your work and/or explain your answer.

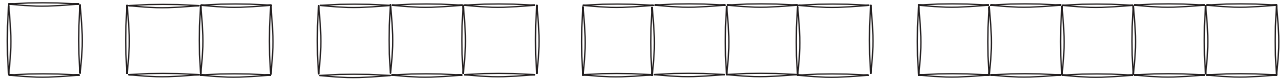
BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM C

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3–3 ½ points.
2	The student earns 2–2 ½ points or 2 correct answers: Ex. Part 1: 1/5. Part 2: blue, purple, green.
1	The student earns ½–1 ½ points or some minimal understanding is shown: Ex. .20 only in Part 1 with no other credit. Ex. 1 color correct and none incorrect with some explanation and no other credit. Ex. 2 colors correct and none incorrect with missing or no incorrect explanation and no other credit.
0	The student earns 0 points. No understanding is shown: Ex. 1 correct color in Part 2 with no explanation.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

MATHEMATICS OPEN-RESPONSE ITEM D

- D.** Miss Walker’s students made the square patterns below with toothpicks. The toothpicks were identical, and their ends touched to form the corners of the squares.



1. In the table below, what is the number of toothpicks needed for A and B? Show all your work and/or explain your answer.

Toothpicks Needed for Various Numbers of Squares						
# of squares in the row	1	2	3	4	5	n
# of toothpicks needed	4	7	10	(A)	(B)	?

2. Describe the rule (or pattern) for determining the number of toothpicks needed to form a row of n squares.
3. How many toothpicks will be needed to form a row of 25 squares? Explain how you found your answer.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM D

SCORE	DESCRIPTION
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3–3 ½ points.
2	The student earns 2–2 ½ points.
1	The student earns ½–1 ½ points or some minimal understanding is shown: Ex. 13 or 16 only in Part 1. Ex. Correct answer(s) to Part 1 given in some other part.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)

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MATHEMATICS OPEN-RESPONSE ITEM E

- E. Mrs. Waters gave her class 50 math problems. She told her students to complete 20% of the problems the first night, 50% of the **remaining** problems the second night, and the remainder of the problems on the third night.
1. How many math problems did Mrs. Waters’s students have to complete each of the three nights? Show all of your work or explain your answer.
 2. Lisa, one of Mrs. Waters’s students, needs to complete her math problems in two nights. She completed 15 problems on the first night. What percentage of the total problems assigned does she need to complete on the second night? Show all of your work or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

RUBRIC FOR MATHEMATICS OPEN-RESPONSE ITEM E

SCORE	DESCRIPTION
4	The student earns 5 points. The response contains no incorrect work.
3	The student earns 4–4 ½ points.
2	The student earns 2 ½–3 ½ points or Part 2 is completely correct.
1	The student earns ½–2 points or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank – No Response. A score of “B” will be reported as “NA.” (No attempt to answer the item. Score of “0” assigned for the item.)