



**NEW ENGLAND  
COMMON ASSESSMENT PROGRAM**

**Released Items  
2012**

**Grade 8  
Mathematics**

# Mathematics

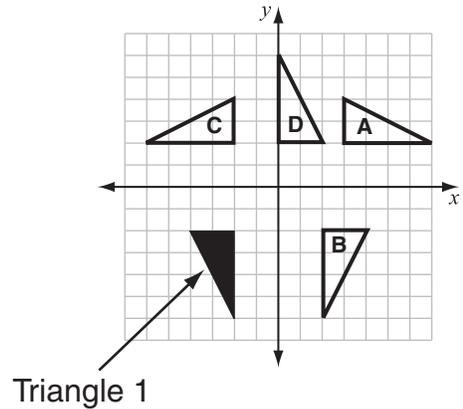


Items with this symbol were selected from Session One—no calculators or other mathematics tools allowed.



- 1 Vera's lunch cost \$9.00. She left a tip worth 15% of the cost of her lunch. What is the total amount, including the tip, Vera paid for her lunch?
- A. \$ 9.15
  - B. \$ 9.35
  - C. \$10.15
  - D. \$10.35
- 2 The measure of each of the smaller angles of a parallelogram is  $30^\circ$ . What is the measure of each of the larger angles?
- A.  $30^\circ$
  - B.  $60^\circ$
  - C.  $150^\circ$
  - D.  $165^\circ$

- 3 Look at this diagram.



Which triangle is the image of Triangle 1 after it is rotated 90 degrees clockwise about the origin?

- A. Triangle A
  - B. Triangle B
  - C. Triangle C
  - D. Triangle D
- 4 A round clock on a classroom wall has a diameter of 12 inches. What is the approximate area of the clock?
- A. 38 square inches
  - B. 113 square inches
  - C. 226 square inches
  - D. 452 square inches

- 5 Look at this pattern.

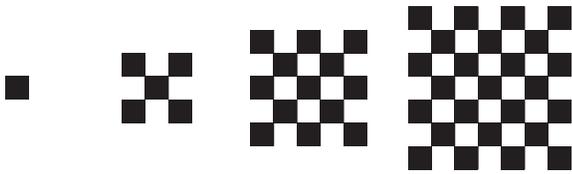


Figure 1    Figure 2    Figure 3    Figure 4

If the pattern continues, how many black tiles will be in Figure 7?

- A. 36
- B. 41
- C. 81
- D. 85



- 6 What is the value of the expression below when  $x = \frac{1}{2}$  and  $y = 5$ ?

$$10x(y - 2)^2$$

- A. 45
- B. 30
- C. 21
- D. 5

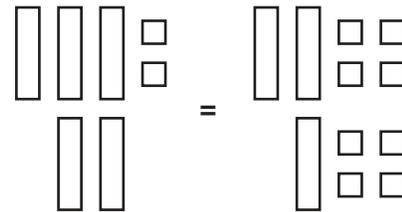
- 7 A cart loaded with 12 boxes weighs a total of 200 pounds.

- The empty cart weighs 25 pounds.
- Each box weighs  $x$  pounds.

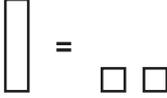
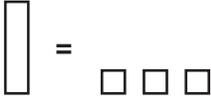
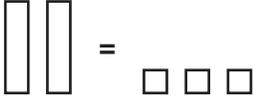
Which equation can be used to find the weight of one box?

- A.  $12x + 25 = 200$
- B.  $12 + 25x = 200$
- C.  $12x + 25x = 200$
- D.  $12 + 25 + x = 200$

- 8 Sam used algebra tiles to make this model of an equation.

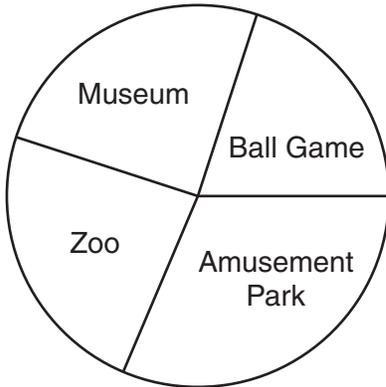


Based on Sam's equation, which statement is true?

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

- 9 The students in an eighth-grade class voted for a class trip. Each student voted once. This circle graph shows the results.

**Eighth-Grade Class Trip**

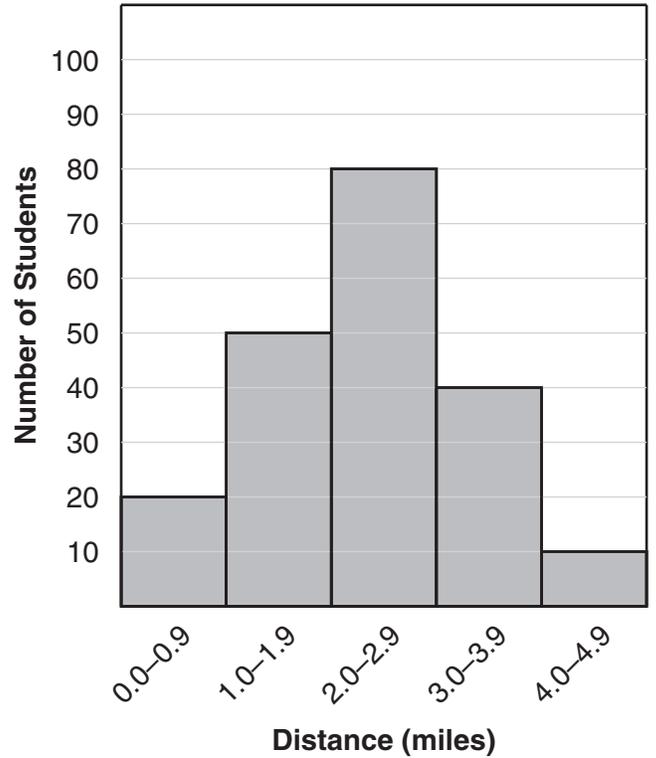


A total of 150 students in the eighth-grade class voted. What is the best estimate of the number of students who voted for the ball game?

- A. 10
- B. 30
- C. 50
- D. 80

- 10 This histogram shows the distances, to the nearest tenth of a mile, 8th-grade students live from Pennsville School.

**Distances from Pennsville School**



What fraction of 8th-grade students lives less than 3 miles from Pennsville School?

- A.  $\frac{2}{5}$
- B.  $\frac{3}{5}$
- C.  $\frac{3}{4}$
- D.  $\frac{19}{20}$

11 Seth buys  $x$  packages and  $y$  boxes of pencils.

- Each package contains 2 pencils.
- Each box contains 6 pencils.

Write an expression that represents the total number of pencils Seth buys.

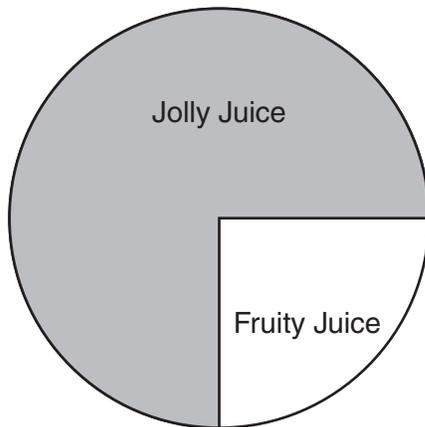
12 This table shows the results of a survey in which people tasted three brands of juice and selected the brand they liked best.

**Juice Survey Results**

Brand	Percent of People Who Liked It Best
Jolly Juice	60%
Lucy Juice	20%
Fruity Juice	20%

The Jolly Juice Company used this circle graph to show that 3 times as many people liked Jolly Juice best as liked Fruity Juice best.

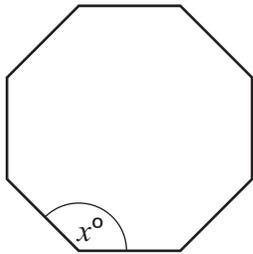
**Juice Survey Results**



Explain why the circle graph is misleading.



- 13 Look at this regular octagon.

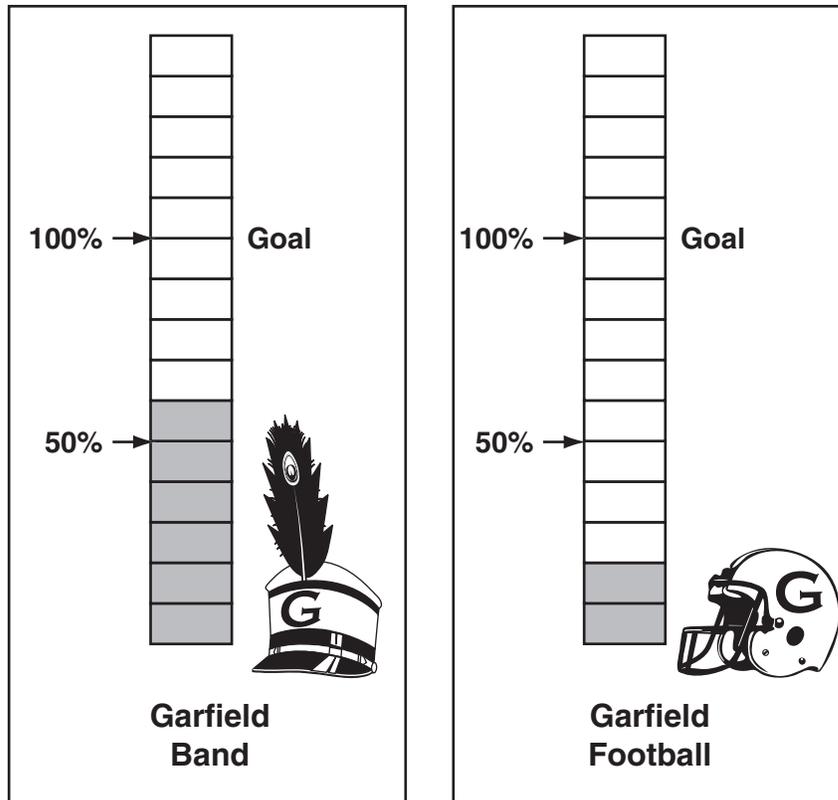


What is the value of  $x$ ? Show your work or explain how you know.

- 14 A carpenter needs 14 feet of wood to build a frame for each window in a house. The carpenter also needs 17 feet of wood to build a frame for each doorway in the house. The house has  $w$  windows and  $d$  doorways.
- How much wood, in feet, does the carpenter need to build frames for a house with 8 windows and 10 doorways?
  - Write an algebraic expression, in terms of  $w$  and  $d$ , to represent the total number of feet of wood the carpenter needs to build frames for  $w$  windows and  $d$  doorways in the house.



- 15 At Garfield High School, the band was raising money for new uniforms. At the same time, the football team was raising money for lights for the field. The number of shaded-gray bars in each of these posters represents the amount of money the group had raised toward its goal after one month.



The band's goal is to raise \$5000.

- a. The six shaded-gray bars represent the amount the band had raised after one month. How much money, in dollars, did the band raise after one month?

At the time the posters were made, the two groups had raised the same amount of money in dollars.

- b. What was the goal, in dollars, of the football team? Show your work or explain how you know.

By the end of the fund-raisers, band members had raised a total of 130% of their goal. They used \$5000 to buy uniforms. The band members gave the remaining money to the football team.

- c. How many bars can be shaded gray on the football poster to represent the amount of money the band gave to the football team? Show your work or explain how you know.