

Grade 5 Math Authentic OAT Questions

Number, Number Sense and Operations

1. Peggy sold a total of 6,198 vanilla and chocolate ice cream cones during the carnival. About half the cones she sold were vanilla.

Which estimate is reasonable for the number of chocolate ice cream cones sold?

- A. 2,500
 - B. 3,000
 - C. 3,500
 - D. 6,000
2. Maria found the same pair of shoes on sale at three different stores. All the stores have the same original price. The first store has the shoes on sale for $\frac{1}{3}$ off. The second store has them on sale for 20% off. The third store has them on sale for one-fourth off.

On a separate piece of paper, determine which store has the best sale for the shoes. Explain your answer, using pictures, numbers or words. (2 points)

3. The diagram shows how far it is from Anna's home to her school, from her school to the library, and from the library to her home.



Each school day, Anna rides her bike from her home to her school. After school, she rides to the library and then home. On Saturday, Anna rides her bike from home to the library and back home. She does not ride her bike on Sunday. Anna's mother says that her daughter rides about 30 miles every week between her home, the school and the library.

On a separate piece of paper, use estimation to determine whether Anna's mother has made a reasonable estimate. Show or explain your work. (4 points)

4. Simplify: $9 \div 3 + 6 \times 5$

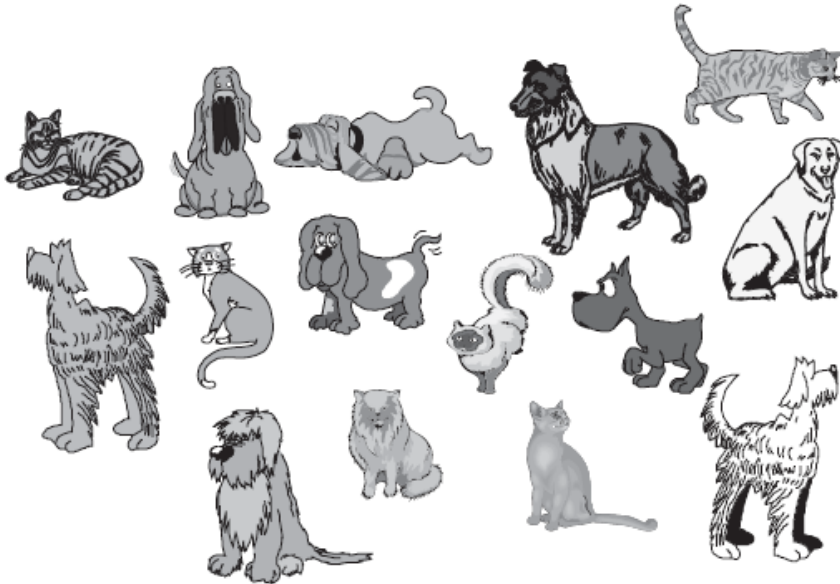
- A. 5
- B. 6
- C. 33
- D. 45

5. There are 2,382 paintings in an art museum. The museum has 124 rooms.

Which is a reasonable estimate for the number of paintings in each room?

- A. 10
- B. 20
- C. 30
- D. 200

6. John saw 6 cats and 9 dogs in the veterinarian's waiting room.



What is the ratio of cats to dogs?

- A. 6:9
- B. 6:15
- C. 9:6
- D. 9:15

7. Russell bought $2\frac{1}{8}$ pounds of turkey and $3\frac{3}{4}$ pounds of roast beef to make sandwiches.

Which estimate is reasonable for the amount of meat he bought?

- A. 4 pounds
 - B. 5 pounds
 - C. 6 pounds
 - D. 7 pounds
8. Marco is simplifying fractions.

Which fraction should he use to simplify $\frac{9}{12}$ to lowest terms?

- A. $\frac{2}{2}$
- B. $\frac{3}{3}$
- C. $\frac{9}{9}$
- D. $\frac{12}{12}$

9. Shelly's photo album has 6 sections. Each section has 16 pages. Each page has 5 pictures. To find the total number of pictures in the album, Shelly needs to multiply $6 \times 16 \times 5$.

Which other expression represents the total number of pictures in the album?

- A. $(6 \times 16) + (6 \times 5)$
- B. $(6 + 16) + 5$
- C. $(6 + 5) + (16 + 5)$
- D. $6 \times 5 \times 16$

10. Simplify: $5 + 2 \times 3 - 1$

- A. 0
- B. 10
- C. 14
- D. 20

11. Pam is using a mix to make both pancakes and waffles. The ingredients for the two recipes are shown.

Pancakes	Waffles
$2\frac{1}{2}$ cups of mix	$2\frac{3}{4}$ cups of mix
$1\frac{1}{4}$ cups of milk	$1\frac{1}{2}$ cups of milk
1 tbs of oil	2 tbs of oil
2 eggs	2 eggs

On a separate piece of paper, find the total number of cups of mix that Pam will need to use. Use picture, numbers or words to justify your answer.

Pam has 3 cups of milk. Explain whether or not she has enough milk to make both recipes. Use pictures, numbers or words to justify your answer. (4 points)

12. Wes recorded temperatures for four days.

Friday	Saturday	Sunday	Monday
-15°F	-22°F	-9°F	-13°F

Which list shows these temperatures in order from coldest to warmest?

- A. -15°F , -22°F , -9°F , -13°F
- B. -9°F , -13°F , -15°F , -22°F
- C. -13°F , -9°F , -22°F , -15°F
- D. -22°F , -15°F , -13°F , -9°F

13. Which list has three equivalent numbers?

A. $\frac{1}{4}$, 0.4, 40%

B. $\frac{1}{2}$, 0.25, 25%

C. $\frac{3}{5}$, 0.6, 60%

D. $\frac{6}{8}$, 0.68, 68%

14. Colleen ran a race in 27.28 seconds.

What is her time rounded to the nearest tenth of a second?

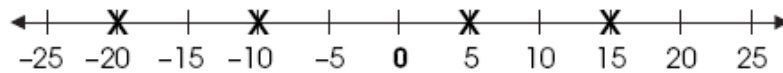
A. 27.0 seconds

B. 27.2 seconds

C. 27.3 seconds

D. 28.0 seconds

15. Four numbers are marked with an X on this number line.



Which marked number is the least?

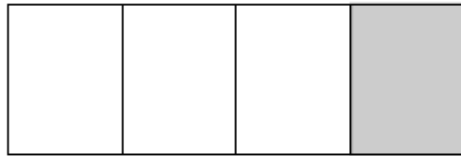
A. -20

B. -10

C. 5

D. 15

16. Part of this rectangle is shaded.



Which number represents the shaded part of the rectangle?

- A. 25%
 - B. 0.3
 - C. $\frac{1}{3}$
 - D. 75%
17. Which fraction is equivalent to 40%?

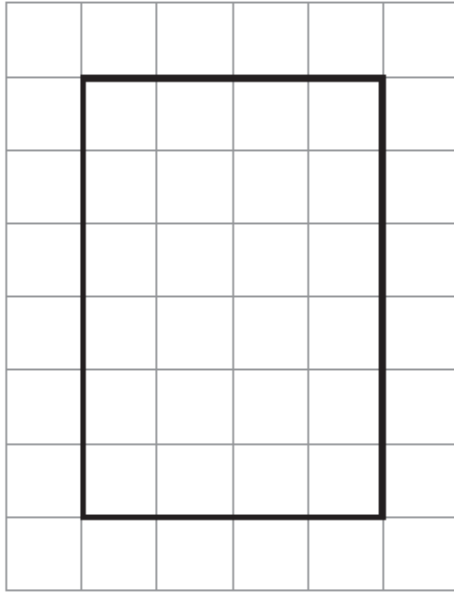
- A. $\frac{1}{5}$
- B. $\frac{2}{5}$
- C. $\frac{3}{5}$
- D. $\frac{4}{5}$

18. A class needs 64 brownies for a bake sale. Mike brings 28 brownies.

On a separate piece of paper, write two number sentences using different operations to find the number of brownies the class still needs for the bake sale. (2 points)

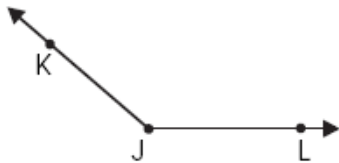
Measurement Standard

1. Joe is putting a low fence around all four sides of a rectangular flower bed. The flower bed is 4 feet wide and 6 feet long.



Each section of fencing is 2 feet long. How many sections of fencing will Joe need?

- A. 10 sections
 - B. 20 sections
 - C. 24 sections
 - D. 40 sections
2. Angle KJL is shown.



Use your protractor to find the measure of angle KJL.

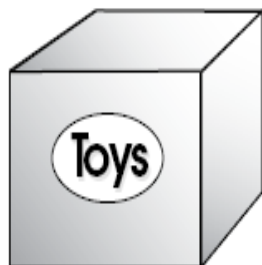
- A. 60°
- B. 80°
- C. 140°
- D. 160°

3. Bob covered a floor with carpet.

Which unit of measure describes how much carpet he used?

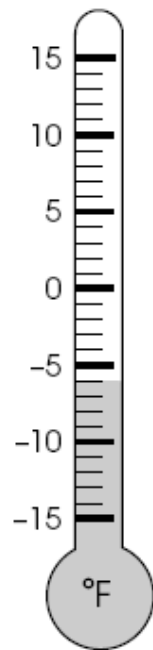
- A. inches
- B. feet
- C. square feet
- D. cubic inches

4. Justin keeps his toys in a box like the one shown.



On a separate piece of paper, explain the difference between the volume and the surface area of the box. (2 points)

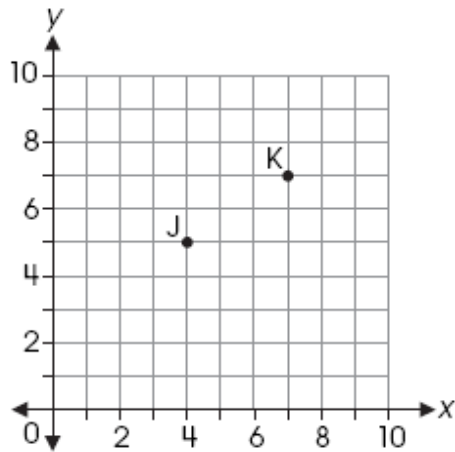
5. Mary checked the outside temperature.



What temperature is shown on the thermometer?

- A. -6°F
 - B. -4°F
 - C. 4°F
 - D. 6°F
6. A pickup truck weighs 3 tons.
- How many pounds does the truck weigh?
- A. 600 pounds
 - B. 2,000 pounds
 - C. 3,000 pounds
 - D. 6,000 pounds

7. Point J and point K are shown on the grid.



What is the direction from point J to point K along the grid lines?

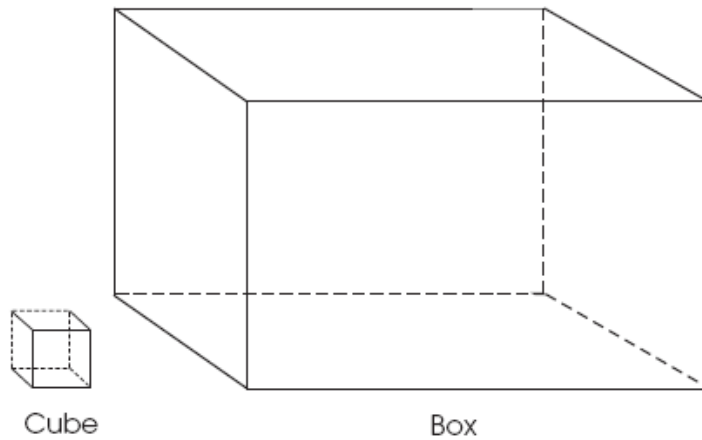
- A. 3 units right and 2 units up
 - B. 3 units right and 3 units up
 - C. 4 units right and 3 units up
 - D. 4 units right and 2 units up
8. Peter's goal is to read 5 hours every school week. He reads every evening during the school week and records his time in the chart shown.

Peter's Reading Time

Day	Time Read
Monday	30 minutes
Tuesday	1 hour 15 minutes
Wednesday	1 hour 5 minutes
Thursday	40 minutes
Friday	?

On a separate piece of paper, determine how much time Peter should read on Friday to meet his goal. Show or explain how you found your answer. (2 points)

9. Carlos wants to know how many small cubes will fit in the box.



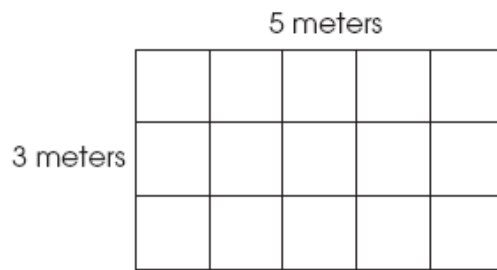
Which measurement of the box is Carlos finding when he fills it with cubes?

- A. the area of the box
 - B. the length of the box
 - C. the surface area of the box
 - D. the volume of the box
10. After swim practice, each of the 30 swim team members gets 8 ounces of juice. The coach brought 2 gallons of juice to practice.

On a separate piece of paper, determine whether the coach brought enough juice for each team member to get 8 ounces. Show work to support your answer. (2 points)

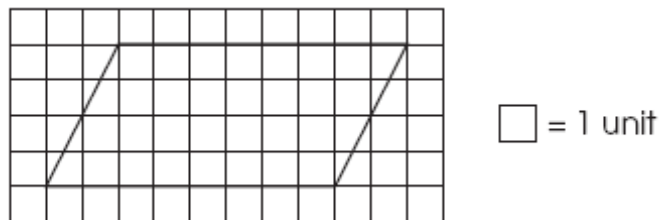
11. Carla hiked for $2\frac{1}{2}$ hours. How many minutes did she hike?
- A. 30 minutes
 - B. 60 minutes
 - C. 120 minutes
 - D. 150 minutes

12. The dimensions of Mike's garden are shown.



Which expression shows how Mike could find the number of square meters in his garden?

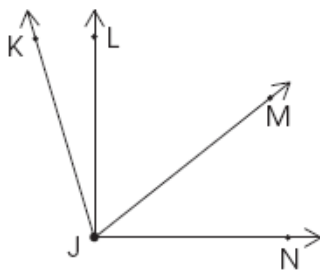
- A. $3 + 5$
 - B. 3×5
 - C. $3 + 5 + 3 + 5$
 - D. $3 \times 5 \times 3 \times 5$
13. A parallelogram is shown on the grid.



Which expression represents the area of this parallelogram?

- A. $6 + 6 + 4 + 4$
- B. $8 + 8 + 4 + 4$
- C. $6 \cdot 4$
- D. $8 \cdot 4$

14. Han compared the angles on this diagram.



Which angle appears to be greater than 90° ?

- A. $\angle LJN$
 - B. $\angle MJN$
 - C. $\angle KJM$
 - D. $\angle KJN$
15. Julia ran a 6-kilometer race on a 400-meter oval track.

How many laps around the track did Julia run?

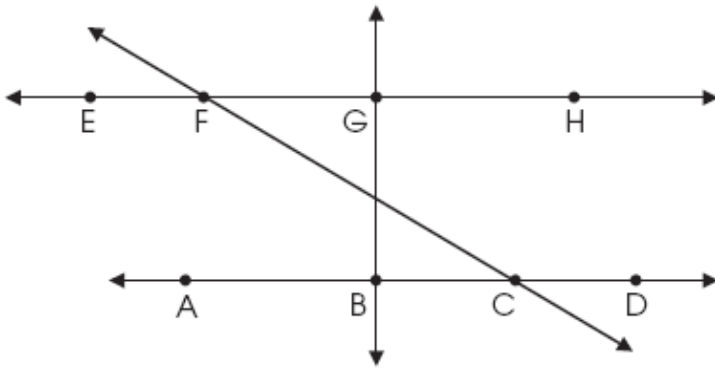
- A. 0.15 lap
 - B. 1.5 laps
 - C. 15 laps
 - D. 150 laps
16. A florist sells roses in bunches of 12. He sold four bunches and has 36 roses left at the end of the day.

Which expression represents the number of roses he had at the beginning of the day?

- A. $4 + 12 + 36$
- B. $4 \times 12 + 36$
- C. $4 + 12 - 36$
- D. $4 \times 12 - 36$

Geometry and Spatial Sense Standard

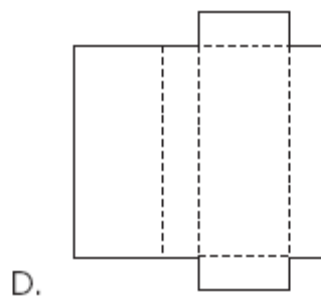
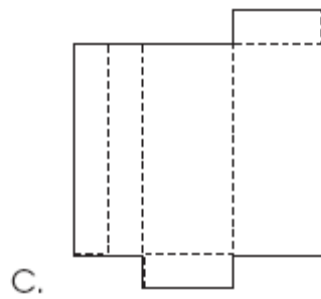
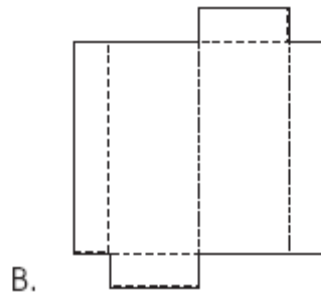
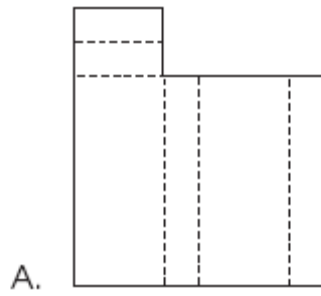
1. Four lines are drawn as shown.



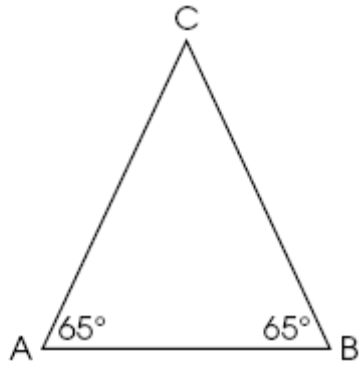
Which statement appears to be true of the two lines that intersect at point G?

- A. They are rays.
- B. They are skew.
- C. They are parallel.
- D. They are perpendicular.

2. Which figure shows the net for a rectangular prism?



3. Triangle ABC is shown.



What is the measure of angle C?

- A. 50°
 - B. 65°
 - C. 90°
 - D. 180°
4. Malcolm needed to measure the distance across a circular tablecloth. He folded the tablecloth in half as shown.

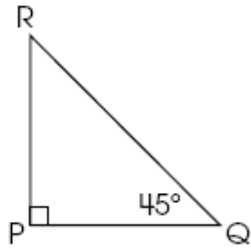


Malcolm measured the length of a folded side.

Which part of the circular tablecloth did Malcolm measure?

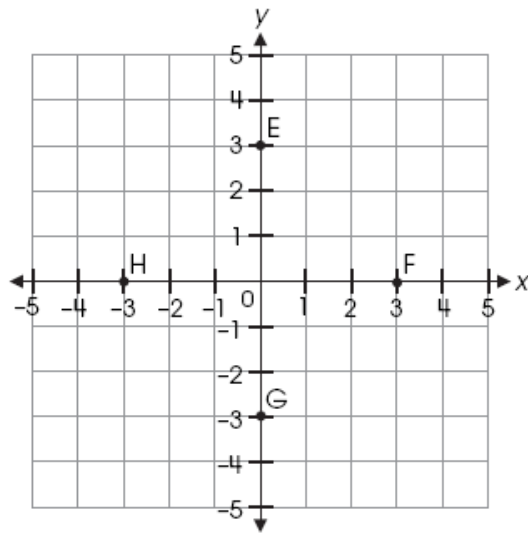
- A. center
- B. circumference
- C. diameter
- D. radius

5. Triangle PQR is a right triangle.



What is the measure of angle R?

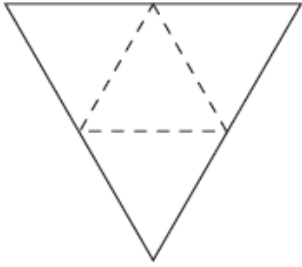
- A. 30°
 - B. 45°
 - C. 75°
 - D. 90°
6. Four points are shown on the coordinate plane.



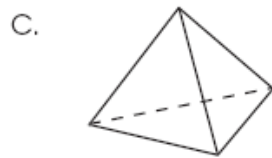
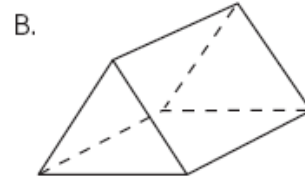
Which point is located at (0, -3)?

- A. E
- B. F
- C. G
- D. H

7. A net of a three-dimensional shape is shown.



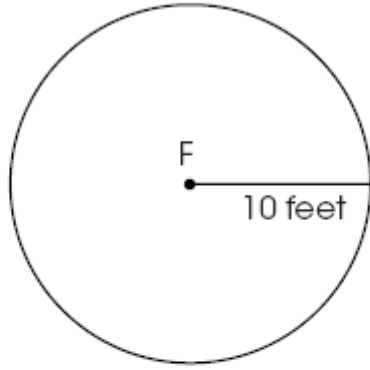
Which three-dimensional shape can be made from the net?



π

8. On a separate piece of paper, draw an obtuse angle. Use your protractor give the measure of the obtuse angle. (2 points)

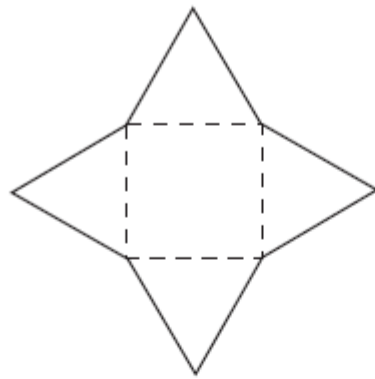
9. Point F is the center of the circle shown.



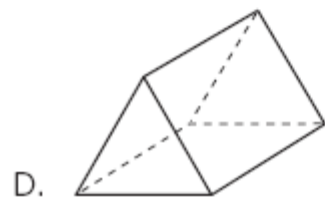
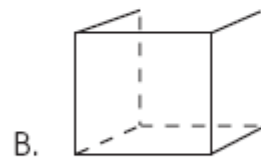
What is the diameter of this circle?

- A. 10 feet
- B. 20 feet
- C. 30 feet
- D. 100 feet

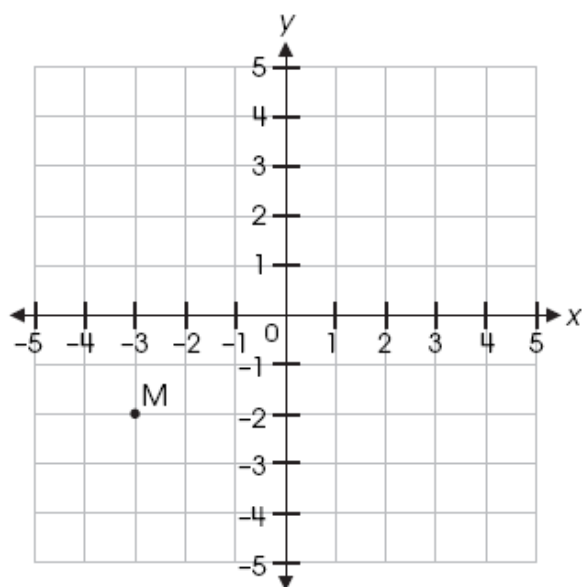
10. Darran made this net of a shape.



Which three-dimensional shape can he make from the net?



11. Point M is shown on the coordinate grid.



Which ordered pair represents point M?

- A. $(-3, -2)$
 - B. $(-3, 2)$
 - C. $(3, -2)$
 - D. $(3, 2)$
12. A rectangle is shown.

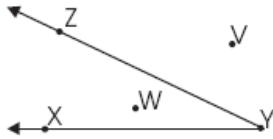


What is the sum of the interior angles of this figure?

- A. 90°
- B. 180°
- C. 270°
- D. 360°

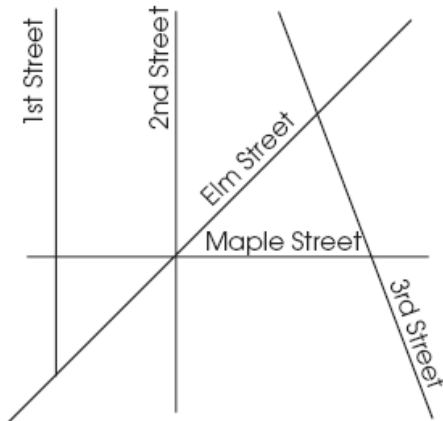
13. A circular table has a circumference of 18 feet.
What is a reasonable approximation for the diameter of the table?
- A. 6 feet
 - B. 9 feet
 - C. 12 feet
 - D. 21 feet

14. Angle XYZ is shown.



Which point lies in the interior of angle XYZ?

- A. point V
 - B. point W
 - C. point X
 - D. point Y
15. A street map is shown.

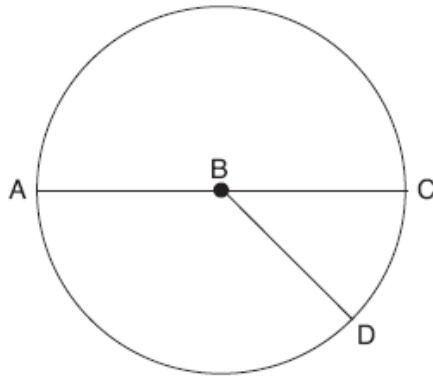


Susan lives on 1st Street. Her friend Allison lives on a street that is parallel to 1st Street.

On which street could Allison live?

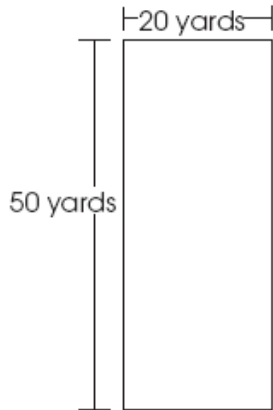
- A. 3rd Street
- B. Elm Street
- C. 2nd Street
- D. Maple Street

16. A circle is shown.



Which statement about the circle is true?

- A. The diameter is \overline{AB} .
 - B. The diameter is \overline{AC} .
 - C. The only radius is \overline{BD} .
 - D. The radius is two times the length of \overline{BC} .
17. Joel's field is 20 yards wide and 50 yards long, as shown.



He wants to divide his field into two congruent rectangular fields, one for corn and the other for strawberries.

On a separate piece of paper, determine the length and the width of the two new fields.

Explain how you know that the two new fields are congruent. (2 points)

Data Analysis and Probability Standard

1. Ms. Benitez's class recorded the temperature for several mornings at 9:00 a.m. The temperatures the class recorded are shown.

61°, 63°, 62°, 65°, 66°, 61°, 60°

What is the mode of the data the class collected?

- A. 60°
 - B. 61°
 - C. 62°
 - D. 65°
2. Gregg has four shirts and three pairs of pants. His shirts are red, green, white, and yellow. His pants are navy, black and tan.
- On a separate piece of paper, list all the different shirt and pants combinations that Gregg can wear. (2 points)

3. Which group of numbers has the greatest median?

- A. 2, 5, 5, 5, 6
- B. 2, 3, 7, 9, 10
- C. 4, 4, 6, 6, 7
- D. 3, 5, 8, 9, 9

4. Janet has a box of 30 cards. There are 15 blue cards and 15 green cards in the box. Janet pulls out a card, records the color and returns the card to the box. After pulling 10 times, she has recorded 6 blue cards and 4 green cards.

Which statement describes whether this result is reasonable?

- A. It is reasonable because both 6 and 4 are close to 5.
- B. It is reasonable because 6 is more than 4.
- C. It is not reasonable because she will always get 5 blue cards and 5 green cards.
- D. It is not reasonable because she did not pick enough cards.

5. Beverly writes each letter of her name on a separate index card, as shown.

B **E** **V** **E** **R** **L** **Y**

She puts all the cards in a bag. She randomly pulls out one card.

What is the probability that the card is an "E"?

- A. $\frac{1}{2}$
- B. $\frac{2}{5}$
- C. $\frac{1}{7}$
- D. $\frac{2}{7}$
6. Mike surveys his class to find each student's favorite dessert and records his data as shown.

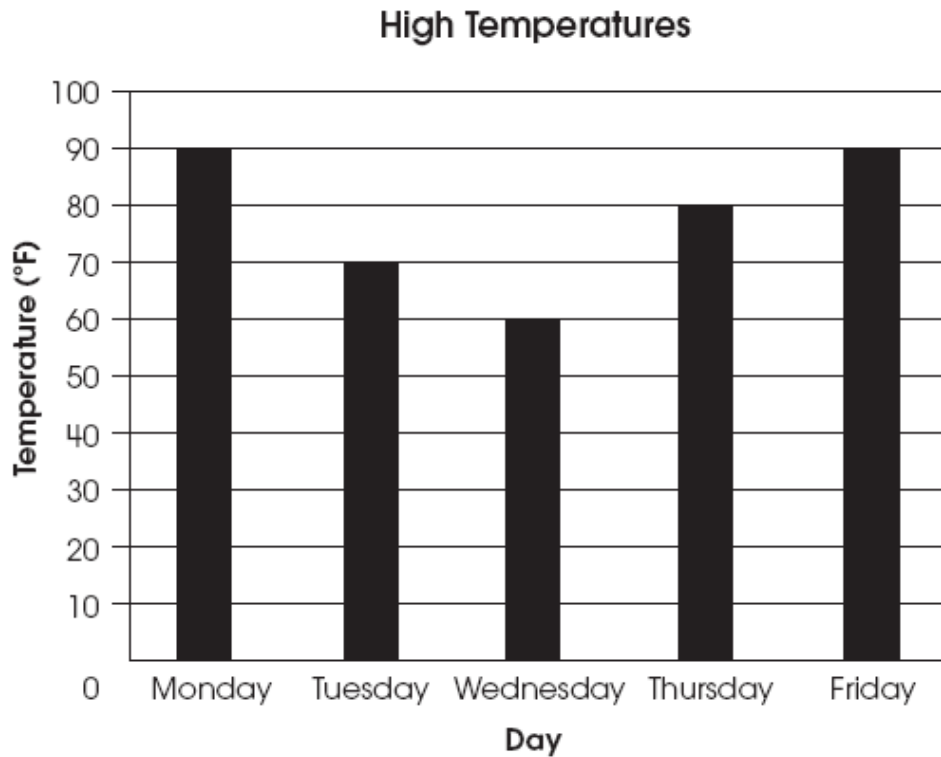
Desserts

Student	Favorite Dessert
Oscar	Ice Cream
Jasmine	Brownies
Ashley	Ice Cream
Marcus	Ice Cream
James	Brownies
Cody	Cookies
Jessica	Cookies
Courtney	Ice Cream
Kayla	Brownies
Taylor	Cup Cakes
Antonio	Ice Cream
Mike	Brownies

On a separate sheet of paper, construct a frequency table to summarize the data. Be sure to include labels. (2 points)

7. Mr. Reid wants to know which dessert the students in his class like best. Which data would **not** be shown in a graph of desserts the students like?
- A. the price of the desserts
 - B. the dessert students like best
 - C. the number of students surveyed
 - D. the dessert students like second best

8. This graph shows the high temperatures over five days in one week.



What is the range of the temperatures?

- A. 0 degrees
- B. 20 degrees
- C. 30 degrees
- D. 90 degrees

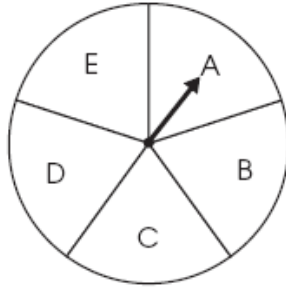
9. This table shows the low temperature for five days.

Low Temperatures

Day	Temperature (°Celsius)
Monday	4°C
Tuesday	4°C
Wednesday	8°C
Thursday	5°C
Friday	4°C

On a separate piece of paper, calculate the mean of the low temperatures. Explain what the mean indicates about these low temperatures. (2 points)

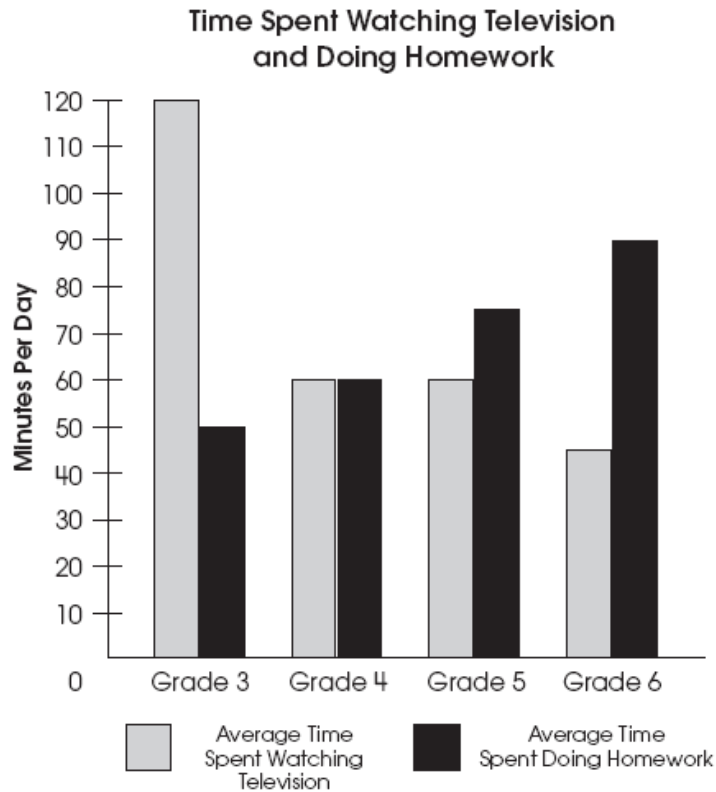
10. Tara will spin the spinner shown 100 times. She predicts the number of times the spinner will land on the letter A.



Which prediction is reasonable for the number of times the spinner will land on A?

- A. 3
- B. 23
- C. 53
- D. 93

11. The double bar graph shows the average amount of time students in four different grades spend watching television and doing homework each night.



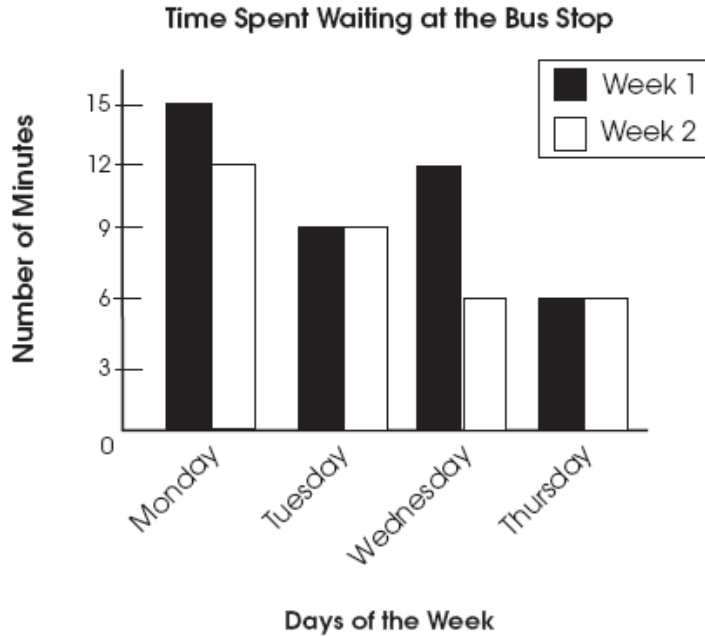
Which grade spends the most time on homework each night?

- A. grade 3
 - B. grade 4
 - C. grade 5
 - D. grade 6
12. Troy is playing a game with a numbered cube and a coin. The cube is numbered from 1 to 6 and the coin has a heads side and a tails side. On each turn, the numbered cube is rolled and the coin is flipped.

How many outcomes are possible?

- A. 2
- B. 6
- C. 8
- D. 12

13. Shelly recorded the amount of time she spent waiting at the bus stop on several days over two weeks.



How much more time did Shelly spend waiting at the bus stop during Week 1 than Week 2?

- A. Shelly waited the same amount of time in both weeks.
- B. Shelly waited 3 more minutes in Week 1.
- C. Shelly waited 6 more minutes in Week 1.
- D. Shelly waited 9 more minutes in Week 1.

14. Samantha has different-colored buttons in a bag. The probabilities of picking each color are shown in the table.

Button Color	Probability
black	$\frac{6}{15}$
red	$\frac{2}{15}$
white	$\frac{4}{15}$
yellow	$\frac{3}{15}$

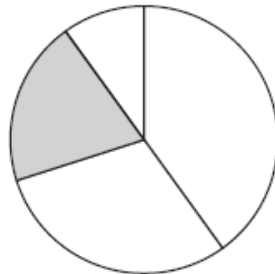
Samantha picks a button without looking in the bag.

Which color is she least likely to pick from the bag?

- A. black
 - B. red
 - C. white
 - D. yellow
15. Jim created a table of the different types of music in his CD collection.

Music Types	Percentage of CDs
rock	40
oldies	30
country	20
classical	10

He started to create the circle graph shown to represent these data.



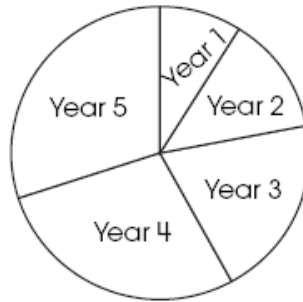
What type of music does the shaded section represent?

- A. rock
- B. oldies
- C. country
- D. classical

16. The height of a maple tree is recorded for each of 5 years in the table shown.

Year	1	2	3	4	5
Tree Height (in feet)	4	6	9	13	14

Chris displays the data in the circle graph shown.



On a separate piece, explain why Chris' circle graph is not an appropriate way to display the data.

Create an appropriate graph to display the data shown in the table. Be sure to give your graph a title, labels and a scale.

Explain why your graph is a better way to display the data. (4 points)

Patterns, Functions, and Algebra Standard

1. Roberto had \$20. He bought a soccer ball that cost m dollars. He now has less than \$5 left.

Which inequality represents this situation?

- A. $20 - m < 5$
- B. $20 - m > 5$
- C. $m - 20 < 5$
- D. $m - 20 > 5$

2. Grant does 20 sit-ups each day.

Which expression represents the total number of sit-ups that Grant will do in n days?

- A. $n + 20$
- B. $n - 20$
- C. $n \times 20$
- D. $n \div 20$

3. Amber made the input-output table shown.

Input	Output
2	12
5	27
8	42
10	52

Which rule explains how to get the output number from the input number?

- A. add 5, multiply by 2
- B. add 10
- C. multiply by 5, add 2
- D. multiply by 6

4. Ethan rakes leaves to earn money. He uses the information in the table shown to find how long he takes to rake lawns of different sizes.

Size of Lawn (square feet)	Time to Rake (minutes)
200	40
250	50
300	60
350	70
400	80

On a separate piece of paper, write a rule that tells how the amount of time Ethan needs to rake a lawn is related to the number of square feet in the lawn.

One of Ethan's neighbors has a 150-square-foot lawn. Use the table or your rule to explain how long it will take Ethan to rake the lawn. Show or explain your work.

Use the table or your rule to tell what size lawn Ethan can rake in 65 minutes. Show or explain your work. (4 points)

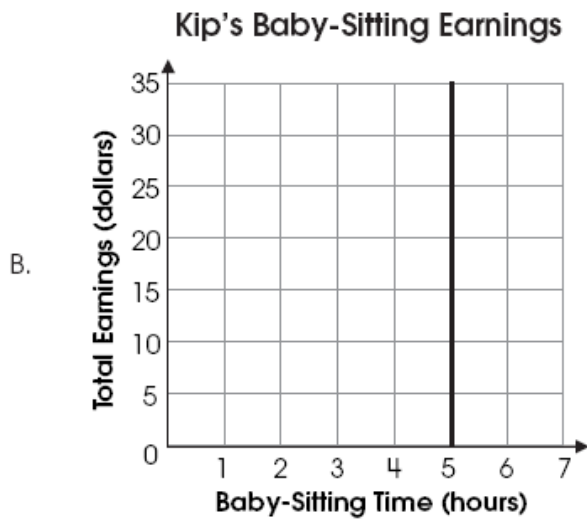
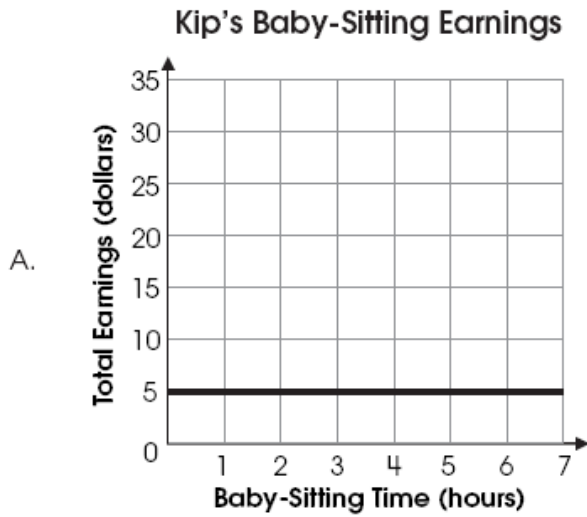
5. Ryan is painting faces at the fair. It takes him 10 minutes to set up his materials. Each face takes 6 minutes to paint. Ryan wants to know how many faces (f) he can paint in 60 minutes.

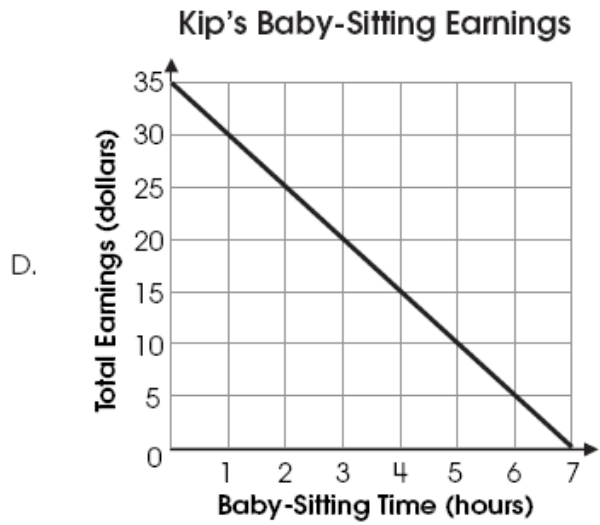
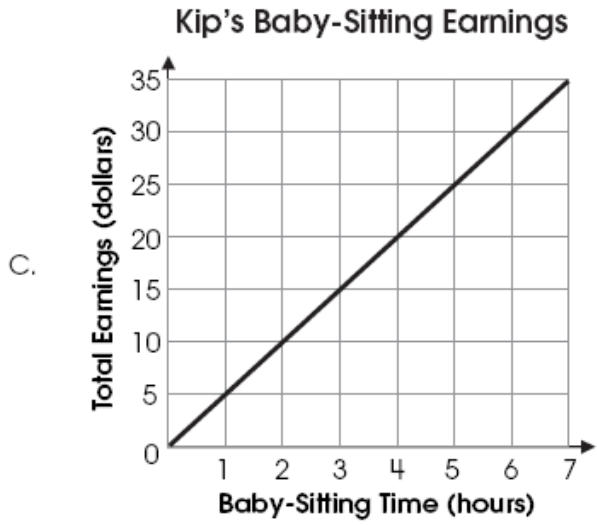
Which equation represents this situation?

- A. $6f + 10 = 60$
- B. $10f + 6 = 60$
- C. $6f - 10 = 60$
- D. $10f - 6 = 60$

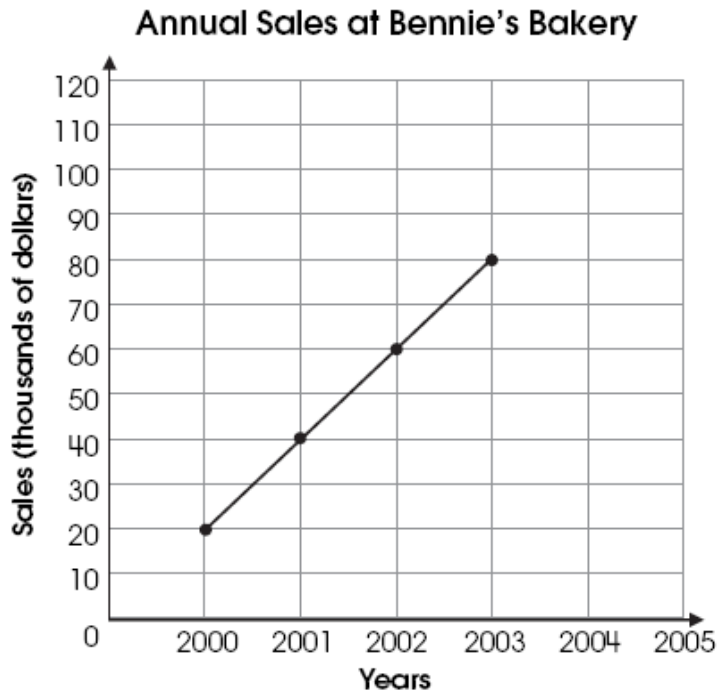
6. Kip earns \$5 an hour baby-sitting.

Which graph represents the amount of money he earns over time?





7. This graph shows annual sales at Bennie's Bakery during its first four years of business.



According to the graph, which prediction is reasonable for the annual sales in 2004?

- A. \$ 80,000
 - B. \$ 90,000
 - C. \$100,000
 - D. \$120,000
8. Which problem situation is represented by the equation: $10 + 5x = 25$?
- A. Bob has \$25. He started with \$10. Each of his 5 friends gave him the same amount of money (x). How much money did each friend give Bob?
 - B. Bob has \$25. He started with \$10. Each of his 3 friends gave him the same amount of money (x). How much money did each friend give Bob?
 - C. Bob has \$10. He gave each of his 5 friends the same amount of money (x). How many friends have \$25?
 - D. Bob has \$25. He gave each of his 15 friends the same amount of money (x). How much money did Bob give to each friend?

9. Robert earned \$4 each hour doing chores for his neighbors. He also earned \$20 working for his mother. Altogether, Robert earned \$80.

On a separate piece of paper, write an equation that shows this situation. Use your equation to find the number of hours Robert worked doing chores for his neighbors. (2 points)

10. A pattern is shown.



Which figure is next in this pattern?



11. A cheese pizza costs \$7. Each topping has an additional cost. This table shows the cost of a cheese pizza with additional toppings.

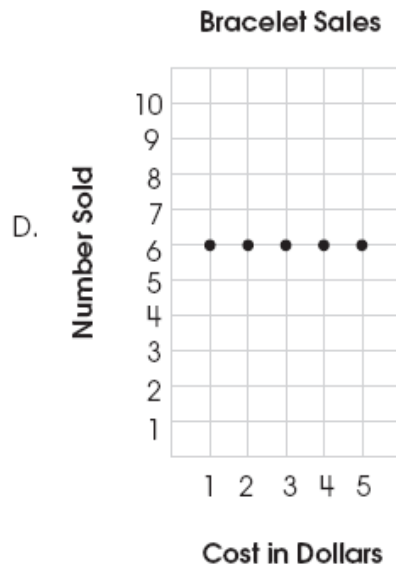
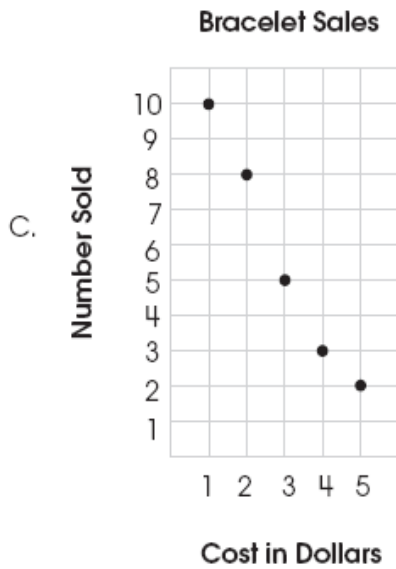
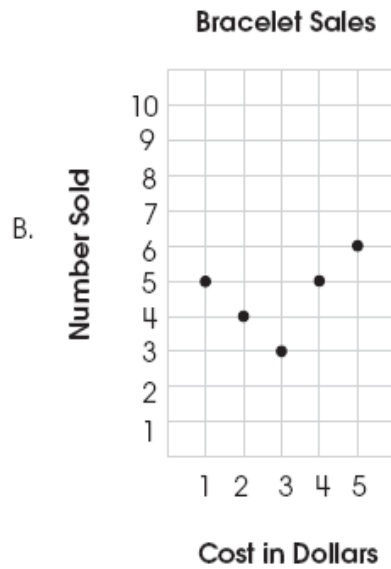
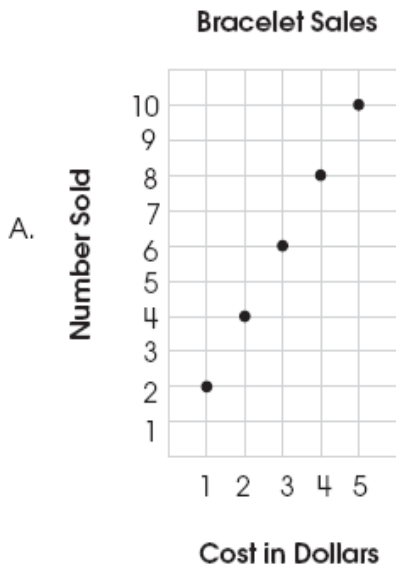
Number of Toppings (n)	Total Cost of the Pizza (c)
1	\$9
2	\$11
3	\$13
4	\$15

Which equation represents this situation?

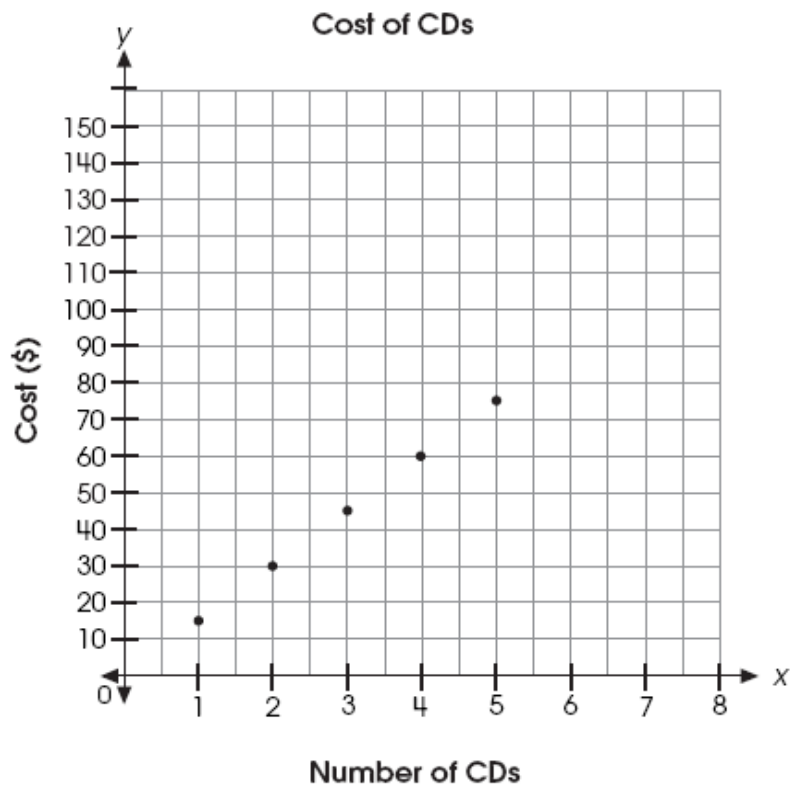
- A. $c = n + 2$
- B. $c = n + 8$
- C. $c = 7 + (n + 2)$
- D. $c = 7 + (n \times 2)$

12. Chelsea made bracelets and sold them at craft fairs. She found that most people would pay up to \$3.00 for a bracelet. When the price went above \$3.00, her sales dropped.

Which graph might show Chelsea's sales as her prices went up?



13. The graph shows the cost of different numbers of CDs.



What is a reasonable prediction for the number of CDs that can be purchased for \$105?

- A. 5
- B. 6
- C. 7
- D. 8