

**1** Daniel owns a swimming pool cleaning service. He charges a flat fee of \$75 per month which includes two cleanings per month. Additional cleanings are available for \$25 each. Which of these equations represents the cost per month,  $C$ , to a customer whose pool is cleaned  $x$  times per month?

$C = 25 + 75x$

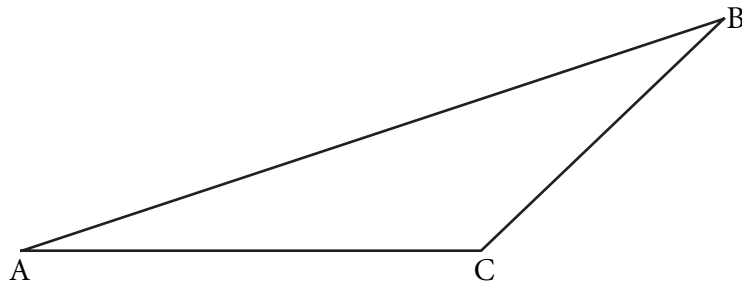
$C = 25(x - 2) + 75$

$C = 75(2) + 25x$

$C = (25 + 75)x + 2$

**2** Use your punch-out ruler and protractor to help you solve this problem.

Study the triangle below.



**Part A** Measure the length of each side of triangle ABC to the nearest tenth of a centimeter. On the lines below, record the length of each side.

AB = \_\_\_\_\_ centimeters

BC = \_\_\_\_\_ centimeters

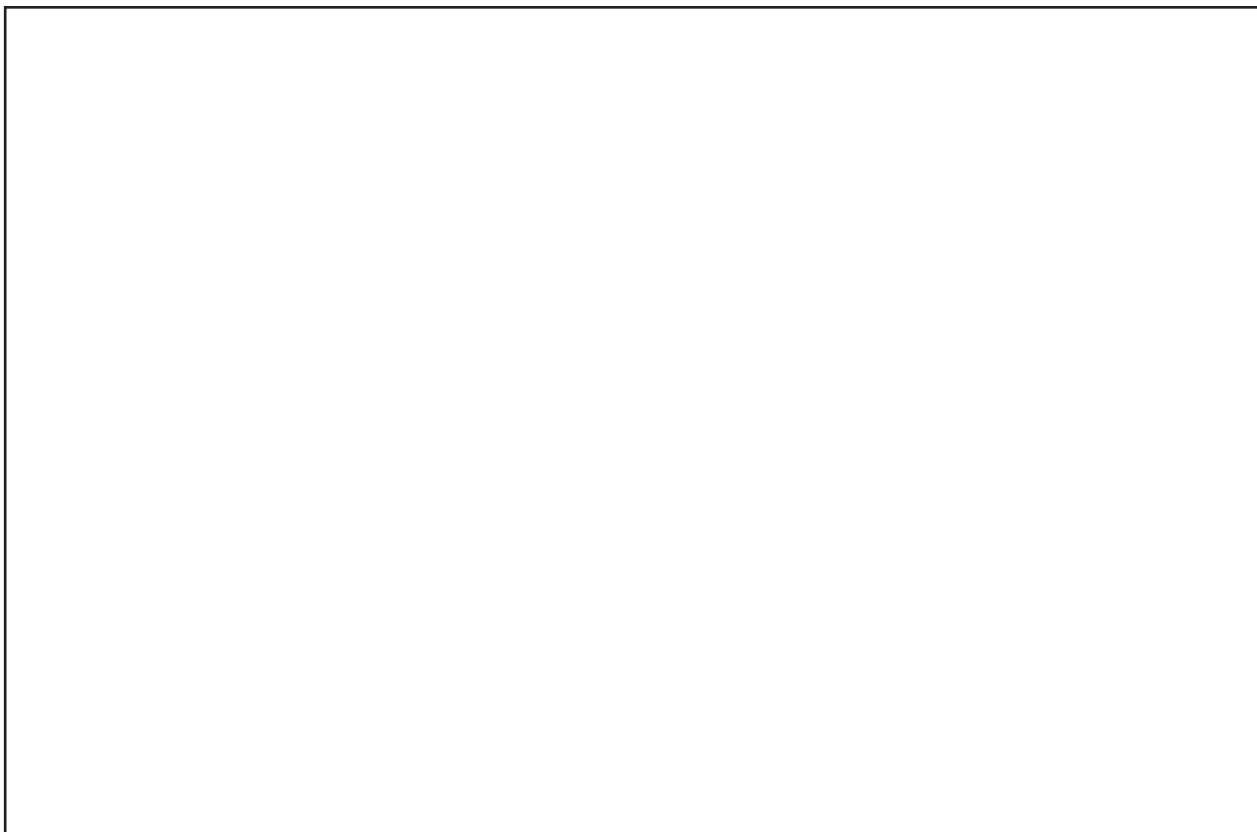
AC = \_\_\_\_\_ centimeters

**Part B** Measure angle B and angle C to the nearest degree. On the lines below, record the measurement of each angle.

$m\angle B =$  \_\_\_\_\_ degrees

$m\angle C =$  \_\_\_\_\_ degrees

**Part C** In the space below, draw a triangle that is larger than, but similar to, Triangle ABC. The scale factor between the sides of Triangle ABC and the new triangle should be 1.5.



**Part D** On the lines below, explain how you know the new triangle is similar to triangle ABC.

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**Rubric**

**Exemplary Response:**

3 Points

**Part A**

- $AB = 9.7 \text{ cm}$        $BC = 4.5 \text{ cm}$        $AC = 6.0 \text{ cm}$

AND

**Part B**

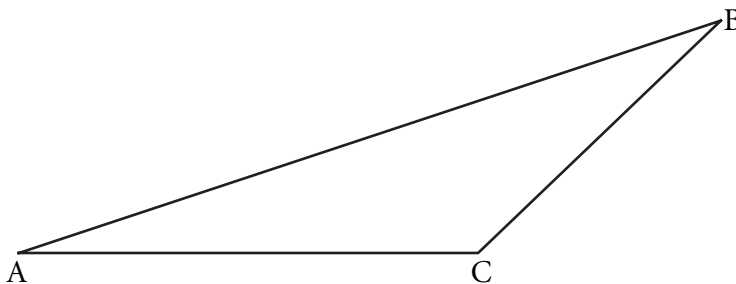
- $m\angle B = 26^\circ$        $m\angle C = 136^\circ$

**NOTE:** Allow variation of  $\pm 0.5 \text{ cm}$  for linear measures and  $\pm 3^\circ$  for angle measures.

AND

**Part C**

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**NOTE:** Allow variation of  $\pm 0.75 \text{ cm}$  for linear measures and  $\pm 3^\circ$  for angle measures.

AND

**Part D**

- The triangles are similar by the Angle-Angle Similarity theorem, because, although the lengths of the sides are different, the angles have the same measures.

**OR**

- The triangles are similar by the Side-Side-Side Similarity theorem because the side lengths were enlarged by the same factor, so the sides remain in the same proportion.

**OR**

- The triangles are similar by the Side-Angle-Side Similarity theorem because I first drew angle A with the same measure as in the original figure, then I drew AB and AC enlarged by the same factor so the sides remain in the same proportion.

**NOTE:** Give full credit for a response that includes proper reasoning without giving the name of the theorem being used (AA, SSS, SAS, etc.)

**Score Points:**

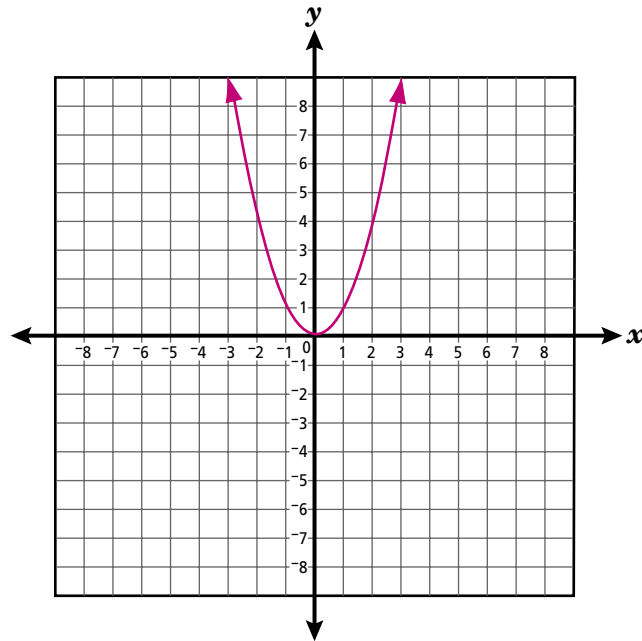
Apply 3-point holistic rubric.

Standard: 5.1.A Measurement

# CSAP Grade 10

## Mathematics

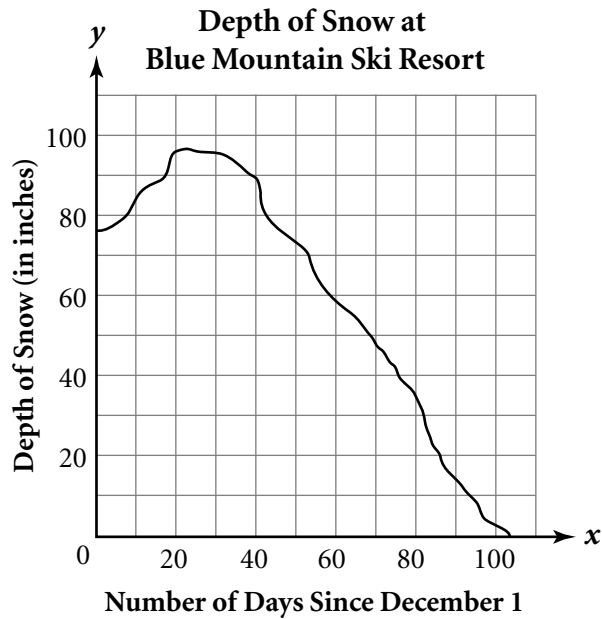
- 3** Study the graph of  $y = x^2$ , shown below.



If the graph is moved up 3 units, what equation will it represent?

- $y = x^2 + 3$
- $y = (x + 3)^2$
- $y = (x - 3)^2$
- $y = x^2 - 3$

- 4** The graph below shows the depth of snow at Blue Mountain Ski Resort last winter.



**Part A** On the lines below, explain what the  $y$ -intercept of the graph represents.

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**Part B** On the lines below, explain what the  $x$ -intercept of the graph represents.

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**Rubric**

**Exemplary Response:**

2 Points

***Part A***

- The  $y$ -intercept represents the depth of the snow on December 1.

**AND**

***Part B***

- The  $x$ -intercept represents the number of days after December 1 that all the snow has melted.

**OR**

- The  $x$ -intercept represents the number of days after December 1 that the snow level reaches zero.

**Score Points:**

Apply 2-point holistic rubric.

Standard: 2.4.A Patterns, Functions, and Algebra



**5** Which of the following shows the numbers in order from least to greatest?

$5.7 \times 10^3, 3.9 \times 10^{-2}, 1.8 \times 10^3, 8.2 \times 10^{-2}$

$8.2 \times 10^{-2}, 3.9 \times 10^{-2}, 1.8 \times 10^3, 5.7 \times 10^3$

$1.8 \times 10^3, 3.9 \times 10^{-2}, 5.7 \times 10^3, 8.2 \times 10^{-2}$

$3.9 \times 10^{-2}, 8.2 \times 10^{-2}, 1.8 \times 10^3, 5.7 \times 10^3$

# CSAP Grade 10

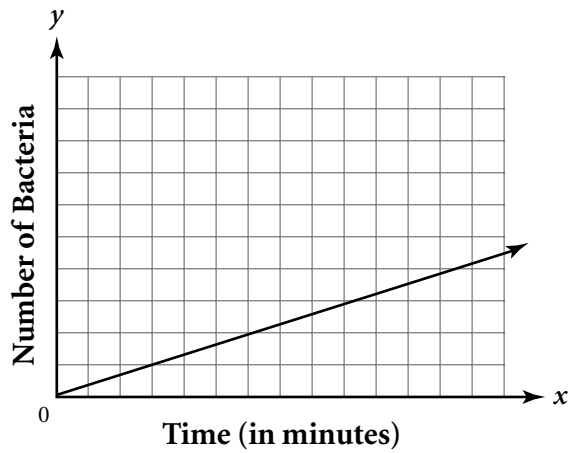
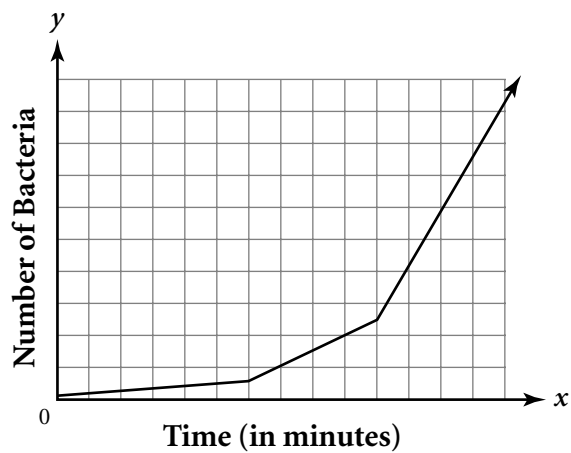
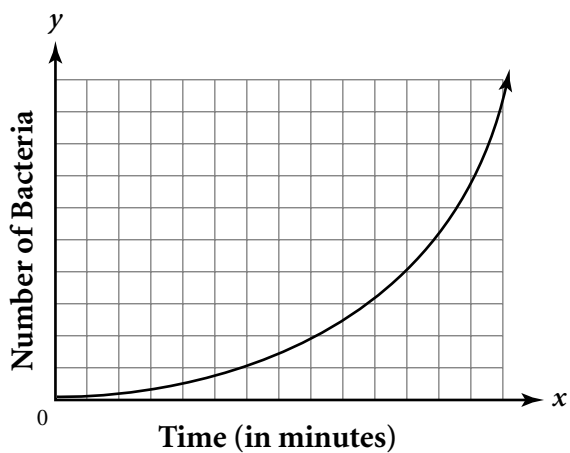
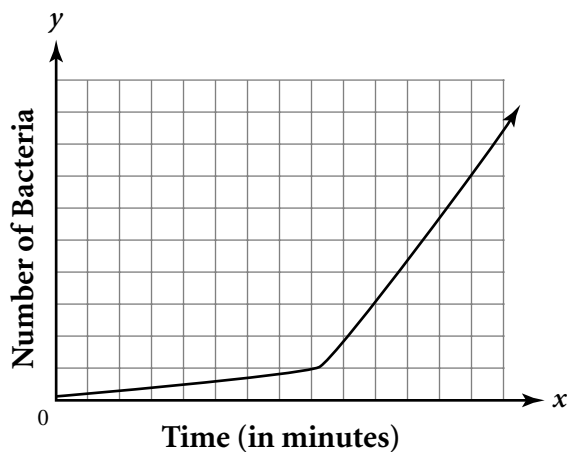
## Mathematics

- 6** The table shows the number of bacteria present at 30 minute intervals during a science experiment.

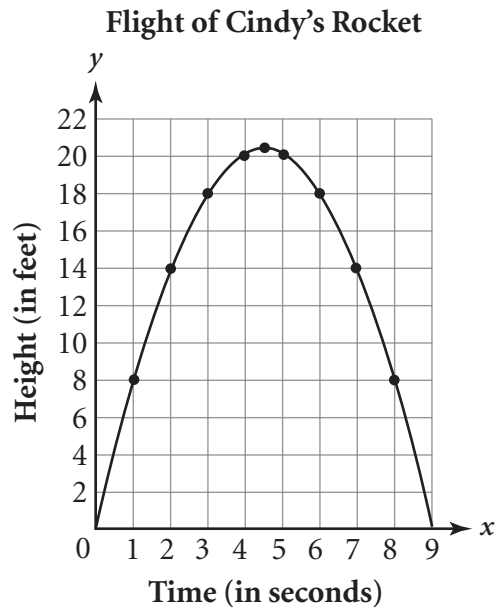
Number of Bacteria Over Time

| Time (in minutes) | Number of Bacteria |
|-------------------|--------------------|
| 0                 | 3                  |
| 30                | 6                  |
| 60                | 12                 |
| 90                | 24                 |
| 120               | 48                 |
| 150               | 96                 |
| 180               | 192                |
| 210               | 384                |

Which of these graphs best shows the relationship between time and the number of bacteria present?



- 7 The graph below shows the height of Cindy's model rocket during the course of its flight.



Which of these equations can be used to find the height of the rocket at any time during its flight?

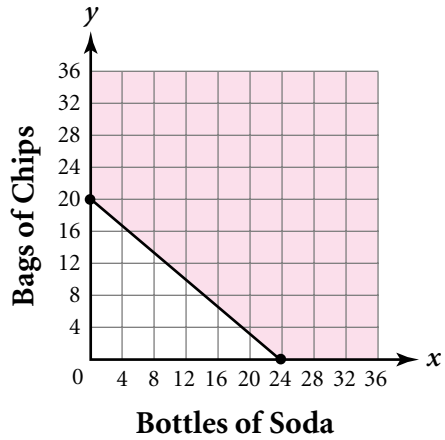
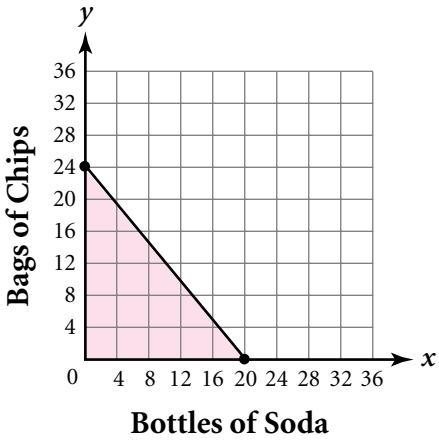
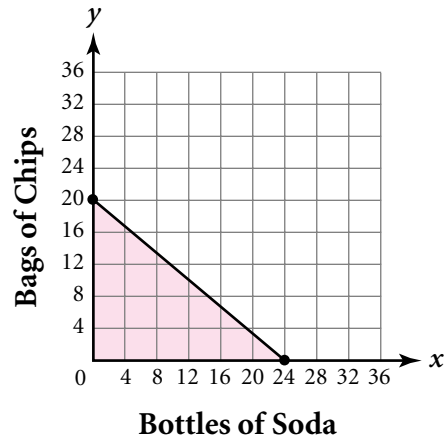
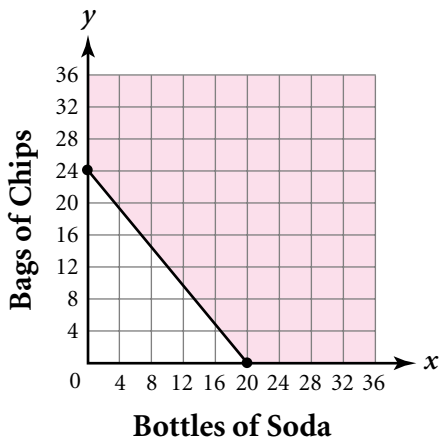
- $y = 9x$
- $y = x^2 - 81$
- $y = -x^2 + 9x$
- $y = 9 - 9x^2$

# CSAP Grade 10

## Mathematics

8

Laura needs to buy chips and soda for the guests at her party. Each large bag of chips costs \$2.40 and each large bottle of soda costs \$2.00. She has \$48.00 to spend. Which graph represents the number of bags of chips and bottles of soda that Laura can buy?



- 9** Tara plays a game using 2 bags of game pieces. One bag has 6 blue game pieces and 6 red game pieces. The other bag has ten game pieces numbered 1 through 10. On her turn, Tara must draw one game piece from each bag. What is the probability that she draws a red game piece and an even-numbered game piece?

- $\frac{1}{2}$
- $\frac{1}{4}$
- $\frac{1}{30}$
- $\frac{1}{60}$

**10** Edgar earned the following scores on his first 10 science tests.

73, 86, 91, 87, 88, 79, 82, 93, 90, 86

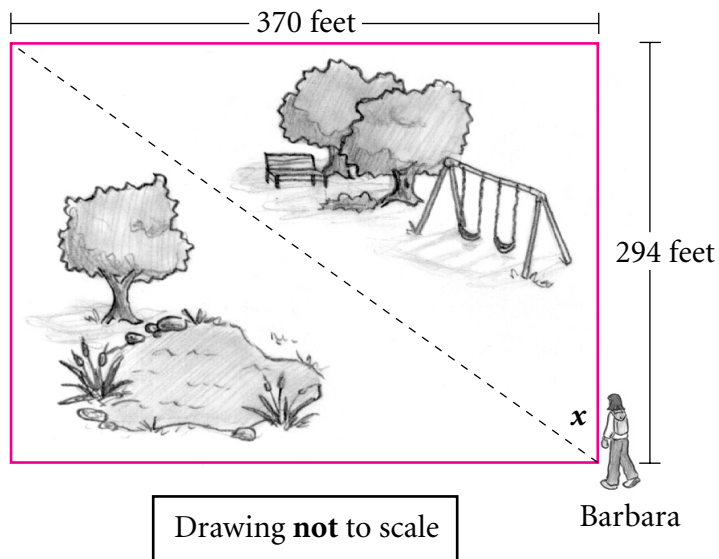
Which of these will be affected if Edgar earns a score of 50 on his next test?

- mean, median, and mode
- mean and median
- mean only
- median only

# CSAP Grade 10

## Mathematics

- 11** Barbara went for a walk in the city park. To cut across the rectangular park, she chose the path shown by the dotted line in the drawing below.



At what angle,  $x$ , did Barbara cut across the park? Round the answer to the nearest tenth of a degree.

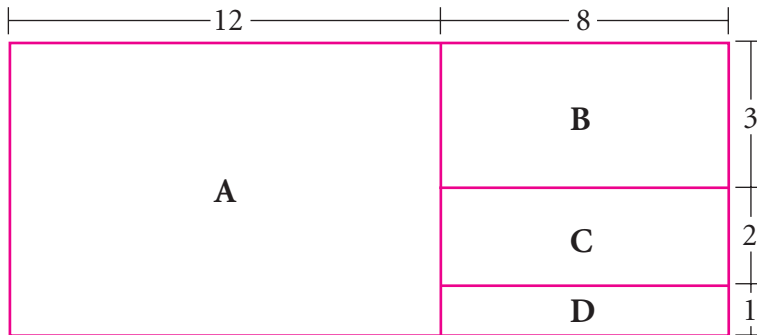
- 37.4
- 38.5
- 51.5
- 52.6



# CSAP Grade 10

## Mathematics

- 12** Cindy tossed a coin onto the playing board shown below.



What is the probability the coin will land in region C? In the space below, show and explain your thinking and write your answer on the line.

Probability \_\_\_\_\_

**Rubric**

**Exemplary Response:**

2 Points

- $\frac{2}{15}$

**OR**

- $\frac{16}{120}$

**AND**

- The area of region C is 16 square units ( $8 \times 2$ ). The entire board has an area of 120 square units ( $6 \times [12 + 8]$ ). Therefore, region C covers 16 out of 120 square units, or  $\frac{2}{15}$  of the total area of the board. This means that the coin will land in region C an average of 2 out of every 15 tosses.

**OR**

- Other valid response indicating that the fractional area of region C represents the probability that a coin will land in region C.

**Score Points:**

Apply 2-point holistic rubric.

Standard: 3.5.E Data Analysis, Probability, and Statistics

**13** Juan has a bag containing 3 red, 2 blue, and 5 green marbles. He removes one marble from the bag, sets it aside, and draws another marble. What is the probability that he draws a red marble followed by a blue marble?

$\frac{2}{9}$

$\frac{2}{10}$

$\frac{3}{10}$

$\frac{1}{15}$