

Math
Spring 2021
Grade 7
Released Items

1.

Consider these two equations.

$$4x + 5 = 58$$

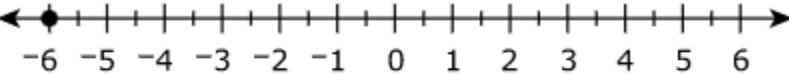
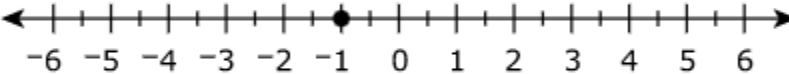
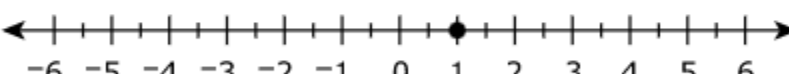
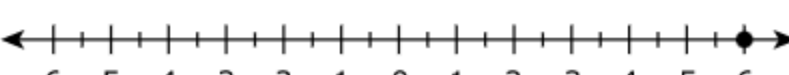
$$4(y + 5) = 58$$

Which statement about the solutions to these equations is true?

- A. $x = 13.25$ and $y = 9.5$
- B. $x = 15.75$ and $y = 9.5$
- C. $x = 13.25$ and $y = 19.5$
- D. $x = 15.75$ and $y = 19.5$

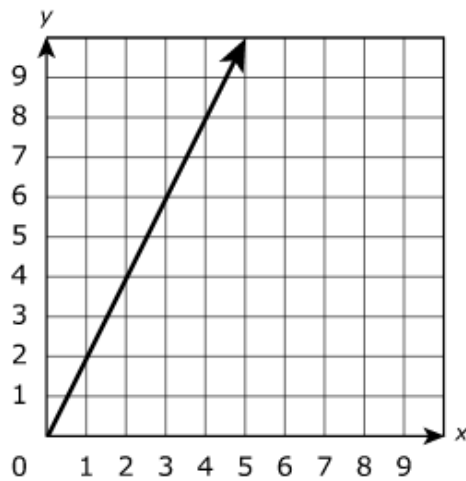
2.

Which number line shows a point representing the solution of $2.5 + (-3.5)$?

- A.  A number line from -6 to 6 with tick marks every 0.5 units. A solid black dot is placed at -5.5.
- B.  A number line from -6 to 6 with tick marks every 0.5 units. A solid black dot is placed at -1.
- C.  A number line from -6 to 6 with tick marks every 0.5 units. A solid black dot is placed at 1.
- D.  A number line from -6 to 6 with tick marks every 0.5 units. A solid black dot is placed at 6.

3.

This graph shows a proportional relationship containing the points (3, 6) and (4, 8).



VH142035

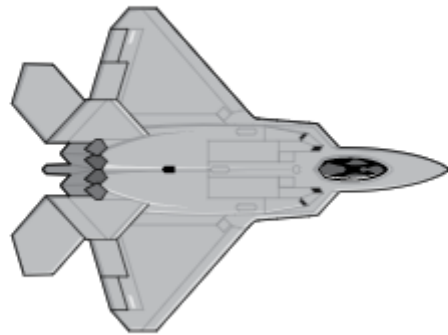
What is the constant of proportionality?

Enter your answer in the box.

4.

A scale model of an airplane is 45 centimeters long. The length of the actual airplane is 30 meters long.

VH077691



Scale model

Part A

Which statement about the scale for the model airplane is true?

- A. The scale is 2 centimeters equal 3 meters.
- B. The scale is 3 centimeters equal 2 meters.
- C. The scale is 3 centimeters equal 5 meters.
- D. The scale is 5 centimeters equal 3 meters.

4. (Continues from previous page)

VH077691

Part B

The total width of the actual airplane is 24 meters.

What is the total width of the scale model, in centimeters?

Enter your answer in the box.

5.

M700337

Part A

Which set of measurements, in degrees or centimeters (cm), could be used to form a unique triangle?

- A. 45° , 45° , 90°
- B. 60° , 60° , 60°
- C. 5 cm, 6 cm, 11 cm
- D. 8 cm, 15 cm, 17 cm

Part B

Which set of measurements, in degrees or centimeters (cm), could **not** be used to form a triangle?

- A. 10° , 150° , 20°
- B. 40° , 60° , 100°
- C. 6 cm, 10 cm, 5 cm
- D. 11.2 cm, 12.1 cm, 15.6 cm

6.

M700306

The dimensions of the base of a right rectangular pyramid are 8 inches and 12 inches. The height of the pyramid is 6 inches. A plane slices the pyramid parallel to its base. Which two-dimensional figure can be created from the slicing of the pyramid by the plane?

- A. square
- B. rectangle
- C. scalene triangle
- D. isosceles triangle

7.

M700038

The manager of a movie theater wanted to collect information about the ages of people seeing a new movie.

Part A

The manager surveyed 75 randomly selected people who saw the movie one day. The table shows the results of the survey.

People at Movie

Age	Number of People
Younger Than 20 Years Old	45
20 Years Old or Older	30

Based on the results of the survey, how many of the 335 people who saw the movie that day would be expected to be younger than 20 years old?

Enter your answer in the box.

Part B

Each day for three days, the manager surveyed a different sample of 75 people who saw the movie. This list shows the number of people surveyed on each of the days who were younger than 20 years old.

- Friday: 38
- Saturday: 30
- Sunday: 47

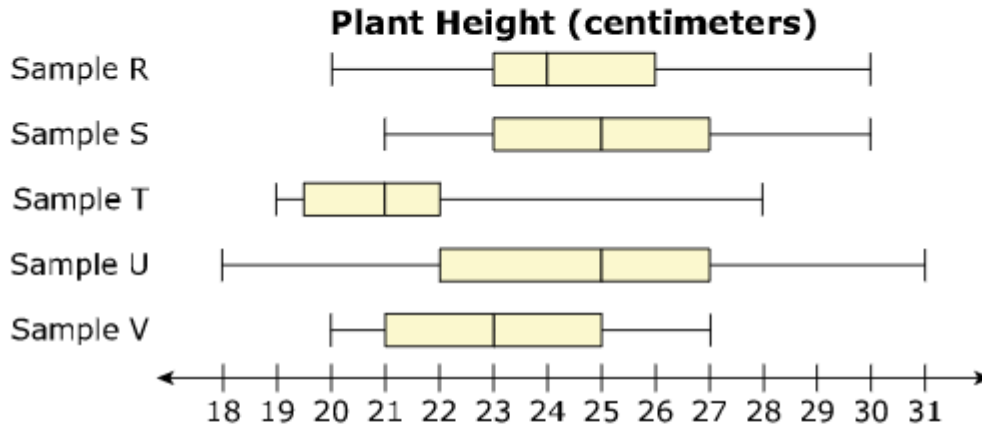
Which conclusion is best supported by the results of these surveys?

- A. The greatest number of people saw the movie on Sunday.
- B. People younger than 20 tend to watch movies on Friday, Saturday, and Sunday.
- C. About $\frac{1}{2}$ of the people who saw the movie that weekend were younger than 20 years old.
- D. The total number of people who saw the movie on Friday, Saturday, and Sunday was 115.

8.

M21017

A scientist is studying the effect of different types of soil on the height of plants. All plants were of the same type and were planted at the same time. The scientist randomly selected 50 plants grown in each of 5 different soil types and recorded the heights of the plants in centimeters. The box plots for the soil samples are shown.



Which box plot suggests that the median of the population differs substantially from the median of the population for Sample R?

- A. Sample S
- B. Sample T
- C. Sample U
- D. Sample V

9.

M20832P

The owner of a sports stadium decides to give prizes to people who attend a game. When people enter the stadium, each person will receive a hat or a key ring. The probability of a person receiving each prize is listed.

- 0.9 for a key ring
- $\frac{1}{10}$ for a hat

Which statement about the probabilities shown is true?

- A. A person is likely to receive a hat because the probability is close to 1.
- B. A person is unlikely to receive a hat because the probability is close to 1.
- C. A person is likely to receive a key ring because the probability is close to 1.
- D. A person is unlikely to receive a key ring because the probability is close to 1.

10.

M25264

An expression is shown.

$$\frac{5}{6}m + 12 - \frac{2}{3}m - 6$$

A student wrote the steps she used to determine an expression equivalent to the expression shown.

Step 1: $\frac{5}{6}m + 12 - \frac{2}{3}m - 6$

Step 2: $\frac{5}{6}m - \frac{2}{3}m + 12 - 6$

Step 3: $\left(\frac{5}{6}\right)\left(-\frac{2}{3}\right)m + 12 - 6$

Step 4: $-\frac{10}{18}m + 6$

- In which step did the student make her first error?
- Explain your response.
- Write the correct expression for this step.
- Explain your response.

Enter your answers and your explanations in the space provided.



▼ Math symbols

+	-	×	÷
±	-	·	/
=	≠	$\frac{\square}{\square}$	$\frac{\square}{\square}$
y^x	$\sqrt{\quad}$	$\sqrt[3]{\quad}$	x_i
π	()	°
·			

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