

North Carolina Grade 6 Sample Open Response Test Solutions

1. Alexandra is making gift baskets to sell at the fair. The table shows the number Use prime factorization to determine the greatest number of baskets Alexandra can make so that each basket has the same number of a given item and all the items are used. How many of each item will be in each basket? Explain your results.

15 silk flowers	12 candles
24 decorative soaps	42 peppermints

Solution

Prime factorization:

$$15 = 3 \times 5$$

$$12 = 3 \times 2^2$$

$$24 = 3 \times 2^3$$

$$42 = 3 \times 2 \times 7$$

The most gift baskets Alexandra can make is 3, because 3 is the greatest common factor for each number. Each gift basket will have 5 silk flowers, 8 decorative soaps, 14 peppermints, and 4 candles.

Course 1, Lesson 4-3

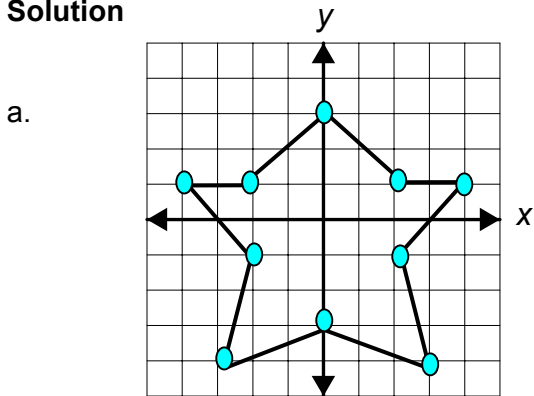
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2. Teresa created a puzzle for her brother Omar. She used the following ordered pairs as clues to the puzzle. Omar needs to plot the points in order and then connect the points in that same order.

$(0, 3)$; $(2, 1)$; $(4, 1)$; $(2, -1)$; $(3, -4)$; $(0, -3)$; $(-3, -4)$; $(-2, -1)$; $(-4, 1)$; $(-2, 1)$; $(0, 3)$

- a. Plot the points on a coordinate graph. What is the solution to Teresa's puzzle?
- b. Which coordinates are in Quadrant III? Explain your reasoning.
- c. Create a polygon on a coordinate plane using at least 6 different ordered pairs. Record the ordered pairs for your picture.

Solution



The picture is a five-pointed star.

- b. The points that are in Quadrant III are $(-3, -4)$ and $(-2, -1)$ because both the x - and y -coordinates in both ordered pairs are negative.
- c. Sample ordered pairs are $(0, 2)$; $(4, 0)$; $(4, -2)$; $(0, -2)$; $(-4, 0)$; and $(-4, 2)$.

Course 1, Lesson 12-2.

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3. Write each number in the list below in decimal form and then order the decimals from least to greatest.

$$\frac{1}{2}, -2, 7\frac{1}{4}, 0.6, -2\frac{1}{5}, 7.4$$

SOLUTION

Decimal Form
$\frac{1}{2} = 0.5$
$-2 = -2.0$
$7\frac{1}{4} = 7.25$
$0.6 = 0.6$
$-2\frac{1}{5} = -2.2$
$7.4 = 7.4$

Ordered from least to greatest

$$\underline{-2.2}, \underline{-2.0}, \underline{0.5}, \underline{0.6}, \underline{7.25}, \underline{7.4}$$

Course 1, Lessons 3-1, 4-4, and 9-2

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4. Jerry rolls a number cube. What is the probability that he will get a 5? Use this probability to predict the number of times Jerry will get a 5 if he rolls the number cube 300 times.

SOLUTION

$$\text{probability} \approx \frac{\text{number of ways event can occur}}{\text{total number of possible outcomes}} = \frac{1}{6}$$

$$300 \times \left(\frac{1}{6}\right) = 50 \text{ times}$$

Course 1, Lessons 11-2 and 11-3

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5. Daniel created an input-output machine. Listed below are the results for 5 different entries.

Input	Output
-2	-11
0	-5
2	1
4	7
6	13

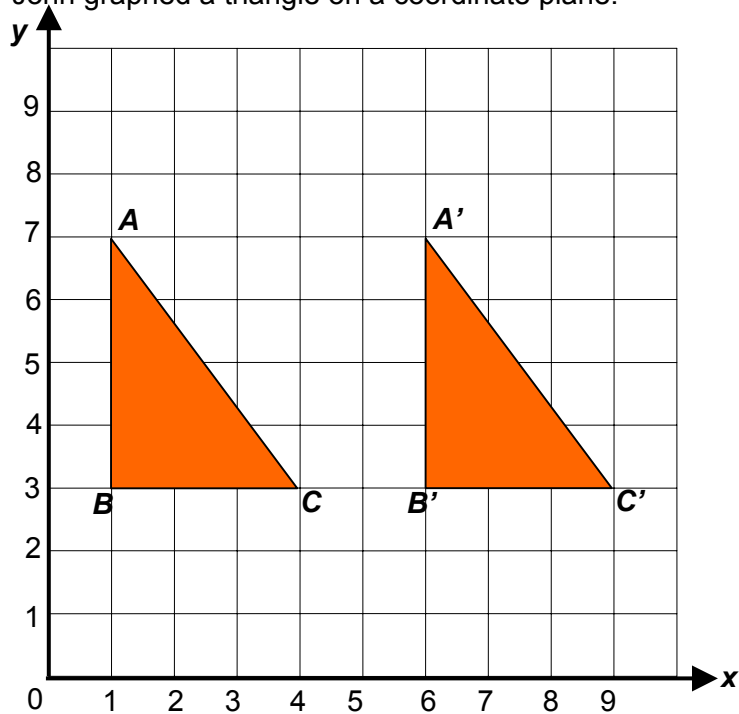
- What is the rule for this table? Write the algebraic rule for this table.
- Using your rule, if the number -10 was input into this machine, what would be the numerical output?
- Is the relationship in this table a linear or nonlinear relationship? Explain your reasoning.

Solution

- The rule for this table is $y = 3x - 5$.
- The output would be -35 .
- The relationship is linear because if the function was graphed, it would be a straight line.

Course 1, Lesson 12-1

6. John graphed a triangle on a coordinate plane.



He then translated the triangle 5 units to the right. Draw the translated triangle on the coordinate grid and give the new coordinates.

Solution

The coordinates for the translated triangle are $A' = (6, 7)$, $B' = (6, 3)$, and $C' = (9, 3)$ and should be drawn on the same grid as the original triangle.

Course 1, Lesson 12-3