Ch.6 - 7 – System of Equations and Congruence

Study Guide

Name ____ PER_______ DATE________________

ACED2 - *Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*

1. Ross is picking out a pumpkin to buy at the local pumpkin farm. Each pumpkin costs \$5.00 plus \$0.35 per pound. Which equation represents the price of a pumpkin, *p*, that is *x* pounds?

A. $5x + 0.35 = p$

B. $5 + 0.35x = p$

C. $0.35p + x = 5$

D. $0.35x + p = 5$

2. At a gym, Teresa exercises by walking on a treadmill and riding a bicycle.

- She burns 180 calories per hour on the treadmill.
- She burns 300 calories per hour on the bicycle.
- Teresa spends 1 hour walking on the treadmill and riding the bicycle.

Write an equation that can be used to determine *T*, the total number of calories Teresa burns during that hour, where *m* is the number of minutes she spends walking on the treadmill. Explain how you found your answer.

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AREIC6 - *Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.*

3. Which system has no solution? How do you know?

A. $\begin{cases} 2x + y = -4 \\ x + 2y = 4 \end{cases}$

C. $\begin{cases} 2x + y = -4 \\ 2x + y = 4 \end{cases}$

B. $\begin{cases} 2x + y = -4 \\ x + 2y = -4 \end{cases}$

D. $\begin{cases} 2x + y = -4 \\ 2x + y = -4 \end{cases}$

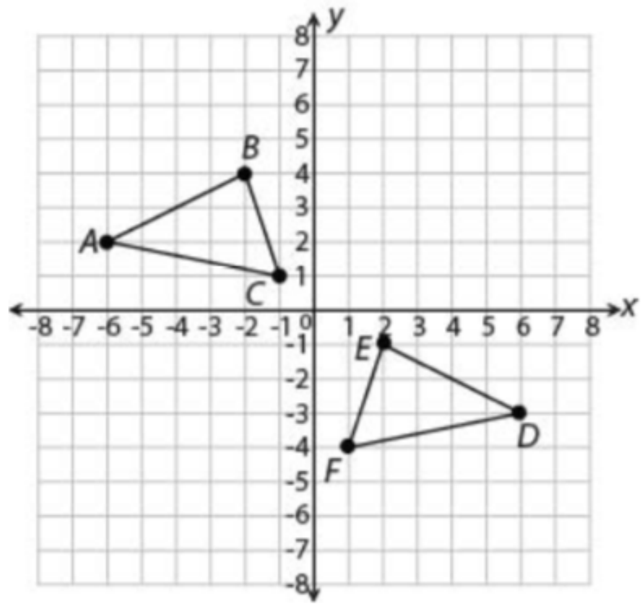
4. Haddasah and Devon went shopping together. Haddasah bought 6 oranges and 5 lemons for \$5.67. Devon bought 3 oranges and 7 lemons for \$4.32. Their purchases can be modeled by a system of equations.

A. Write a system of equations that represents this situation. Define the variables.

B. Solve the system of equations algebraically for the variables defined in Part A.
Explain how you solved the system of equations.

GCO7 - Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

5. In the figure below, $\triangle ABC$ has been transformed by a series of rigid motions to produce $\triangle DEF$.



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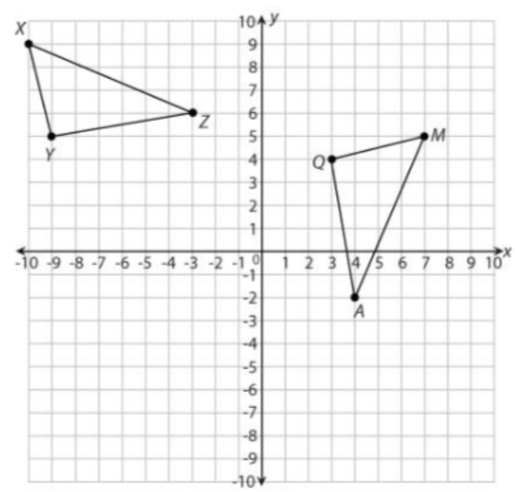
6. Look at the triangles shown below.



If $\overline{XY} \cong \overline{MQ}$, $\overline{XZ} \cong \overline{MA}$, and $\overline{YZ} \cong \overline{QA}$, which rigid motions can be used to map $\triangle XYZ$ onto $\triangle MQA$?

A. a translation according to the rule $(x, y) \rightarrow (x+5, y+2)$ followed by a rotation of 90° counterclockwise about the origin

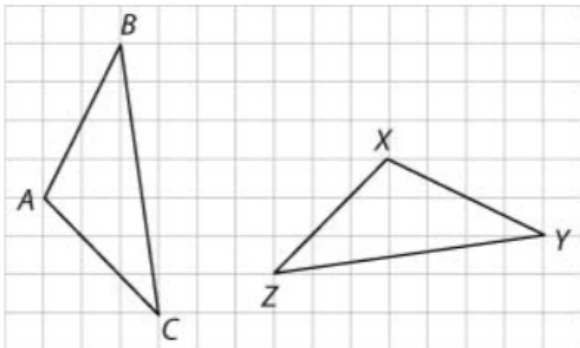
B. a rotation of 270° counterclockwise about the origin followed by a translation according to the rule $(x, y) \rightarrow (x-2, y-5)$

C. a rotation of 270° counterclockwise about the origin followed by a translation according to the rule $(x, y) \rightarrow (x-5, y-2)$

D. a translation according to the rule $(x, y) \rightarrow (x+2, y+5)$ followed by a rotation of 90° counterclockwise about the origin

GCO8 - Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

7. $\triangle ABC$ was transformed to create $\triangle XYZ$, both shown below. Kelly thinks that the transformation was a rigid motion, but she is not certain.



Knowing which of these would allow her to use the SAS congruency postulate to prove that a rigid motion occurred?

A. $\angle A \cong \angle X$, $\angle B \cong \angle Y$, $\angle C \cong \angle Z$

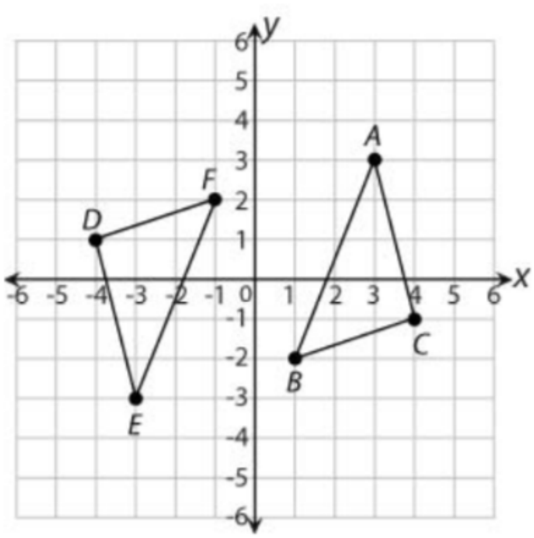
B. $\overline{AB} \cong \overline{XY}$, $\overline{BC} \cong \overline{YZ}$, $\angle C \cong \angle Z$

C. $\overline{AB} \cong \overline{XY}$, $\overline{BC} \cong \overline{YZ}$, $\angle A \cong \angle X$

D. $\overline{AB} \cong \overline{XY}$, $\overline{AC} \cong \overline{XZ}$, $\angle A \cong \angle X$

8.

Look at the triangles shown below.



ΔABC is rotated 180° about the origin. Which conclusion is correct?

A. $\triangle ABC \cong \triangle EDF$, because $\angle BAC \cong \angle DEF, \overline{AB} \cong \overline{ED}, \angle ABC \cong \angle EDF$.

B. $\triangle ABC$ is similar but not congruent to $\triangle EFD$, because $\angle BAC \cong \angle FED, \overline{AB} \cong \overline{EF}, \angle ABC \cong \angle EFD$.

C. $\triangle ABC$ is similar but not congruent to $\triangle EDF$, because $\angle BAC \cong \angle DEF, \overline{AB} \cong \overline{ED}, \angle ABC \cong \angle EDF$.

D. $\triangle ABC \cong \triangle EFD$, because $\angle BAC \cong \angle FED, \overline{AB} \cong \overline{EF}, \angle ABC \cong \angle EFD$.