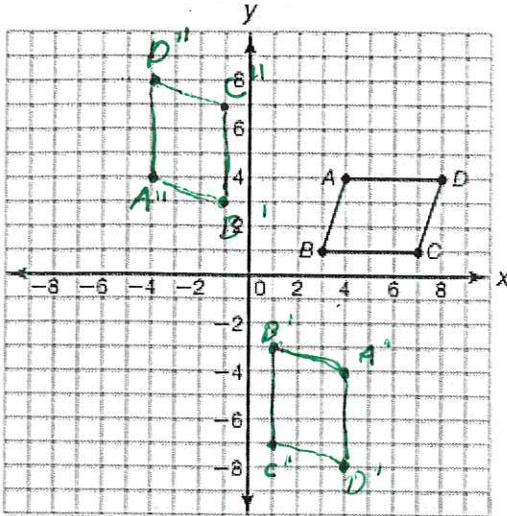


## Review - Chapter 13

1. Analyze parallelogram ABCD.



$$A(4, 4)$$

$$B(1, 3)$$

$$180^\circ(x, y) \rightarrow (-x, -y)$$

$$90^\circ(x, y) \rightarrow (-y, x)$$

$$270^\circ(x, y) \rightarrow (y, -x)$$

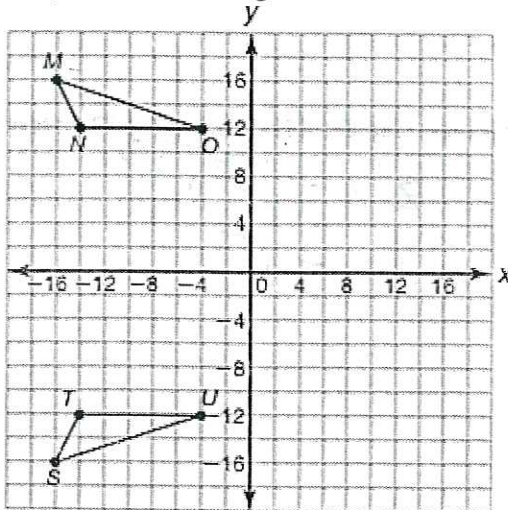
- a. Rotate parallelogram ABCD about the origin  $270^\circ$  counterclockwise. Graph and label the image as  $A'B'C'D'$ . Identify the vertex coordinates of image  $A'B'C'D'$ .

$$A'(4, -4), B'(1, -3), C'(1, -7), D'(4, -8)$$

- b. Rotate parallelogram ABCD about the origin  $90^\circ$  counterclockwise. Graph and label the image as  $A''B''C''D''$ . Identify the vertex coordinates of image  $A''B''C''D''$ .

$$A''(-4, 4), B''(-1, 3), C''(-1, 7), D''(-4, 8)$$

2. Analyze the two triangles shown.



- a. Determine the transformation used to create triangle STU.

$\triangle MNO$  was reflected over the x-axis to create  $\triangle STU$ .

- b. Write a triangle congruence statement for the triangles shown.

$$\triangle MNO \cong \triangle STU$$

- c. Identify the congruent angles and congruent sides of the triangles.

$$\angle M \cong \angle S$$

$$\angle N \cong \angle T$$

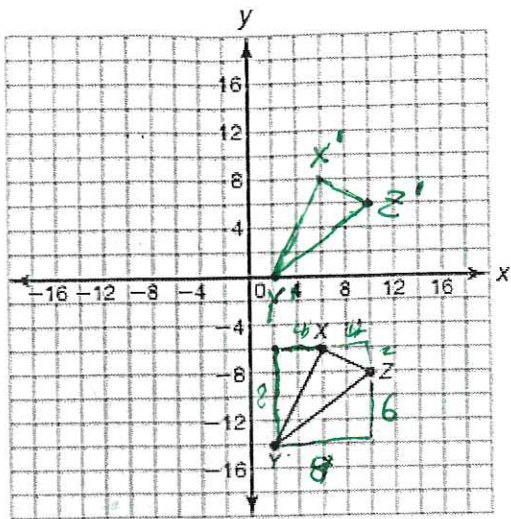
$$\angle O \cong \angle U$$

$$\overline{MN} \cong \overline{ST}$$

$$\overline{NO} \cong \overline{TU}$$

$$\overline{OM} \cong \overline{US}$$

3. Analyze triangle XYZ.



$$\sqrt{a^2 + b^2 + c^2}$$

$$\sqrt{a^2 + b^2} = c$$

a. Calculate the length of each line segment forming the sides of triangle XYZ.

$$XY = \sqrt{4^2 + 8^2}$$

$$= \sqrt{16 + 64}$$

$$= \sqrt{80}$$

$$YZ = \sqrt{8^2 + 6^2}$$

$$= \sqrt{64 + 36}$$

$$= \sqrt{100}$$

$$= 10$$

$$ZX = \sqrt{4^2 + 2^2}$$

$$= \sqrt{16 + 4}$$

$$= \sqrt{20}$$

b. Translate triangle XYZ up 14 units to form triangle X'Y'Z'. Graph the image. Use the SSS Congruence Theorem to determine if the triangles are congruent. Explain your reasoning.

$$X'Y' = \sqrt{4^2 + 8^2}$$

$$= \sqrt{80}$$

$$Y'Z' = \sqrt{8^2 + 6^2}$$

$$= 10$$

$$Z'X' = \sqrt{4^2 + 2^2}$$

$$= \sqrt{20}$$

$$XY = X'Y' = \sqrt{80}$$

$$YZ = Y'Z' = 10$$

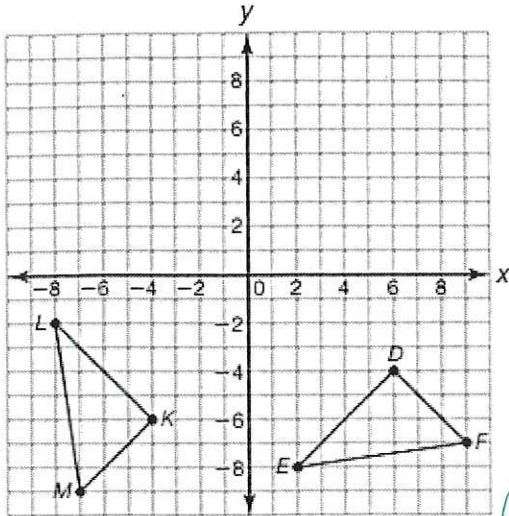
$$ZX = Z'X' = \sqrt{20}$$

Thus, The triangle XYZ is congruent to triangle X'Y'Z' by SSS Congruence Theorem



4. Use the SAS Congruence Theorem and a protractor to determine if triangle DEF is congruent to triangle KLM.

Explain your reasoning.



$$DE = \sqrt{4^2 + 4^2} = \sqrt{32}$$

$$EF = \sqrt{7^2 + 1^2} = \sqrt{50}$$

$$DF = \sqrt{3^2 + 3^2} = \sqrt{18}$$

$$KL = \sqrt{32}$$

$$LM = \sqrt{50}$$

$$KM = \sqrt{18}$$

$$m\angle K = 90^\circ$$

$$m\angle L = 40^\circ$$

$$m\angle M = 50^\circ$$

$$m\angle D = 90^\circ$$

$$m\angle E = 40^\circ$$

$$m\angle F = 50^\circ$$

Example answer:

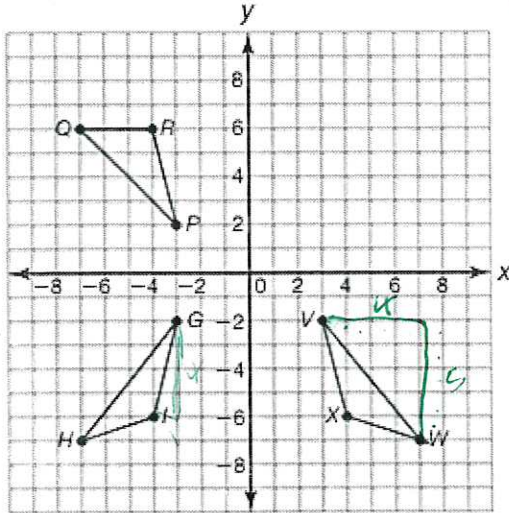
$$DE = \sqrt{32} = KL$$

$$m\angle E = m\angle L = 40^\circ$$

$$EF = LM = \sqrt{50}$$

Thus,  $\triangle DEF \cong \triangle KLM$  by SAS Congruence Theorem.

5. Analyze the triangles shown.



$$m\overline{DE} = m\overline{KL} = \sqrt{32}$$

$$W(7, -7) \sqrt{4^2 + 5^2}$$

$$V(3, -2)$$

a. Use the ASA Congruence Theorem and a protractor to determine if triangle GHI is congruent to triangle PQR.

$$QR = 3$$

$$RP = \sqrt{17}$$

$$QP = \sqrt{32}$$

$$m\angle Q = 45^\circ$$

$$m\angle R = 105^\circ$$

$$m\angle P = 30^\circ$$

$$HI = \sqrt{10}$$

$$IG = \sqrt{17}$$

$$HG = \sqrt{41}$$

$$m\angle H = 35^\circ$$

$$m\angle I = 120^\circ$$

$$m\angle G = 25^\circ$$

Example answer:

$$QR = 3, HI = \sqrt{10}$$

$$QR \neq HI$$

Thus, triangle GHI is not congruent to triangle PQR

b. Use the AAS Congruence Theorem and a protractor to determine if triangle GHI is congruent to triangle VWX.

$$WX = \sqrt{10}$$

$$XV = \sqrt{17}$$

$$WV = \sqrt{41}$$

$$m\angle W = 35^\circ$$

$$m\angle X = 120^\circ$$

$$m\angle V = 25^\circ$$

Example answer:

$$m\angle G = m\angle V = 25^\circ$$

$$m\angle H = m\angle W = 35^\circ$$

$$HI = WX = \sqrt{10}$$

Thus, triangle GHI is congruent to triangle VWX by AAS Congruence Theorem.