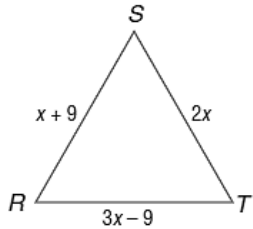


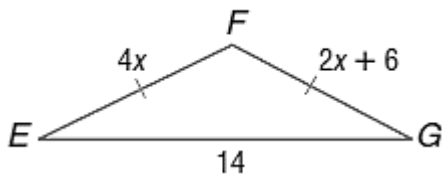
2016 Geometry Midterm Review

Directions: This review consists of problems that could be on your midterm. Make sure you complete each problem and **show your work**.

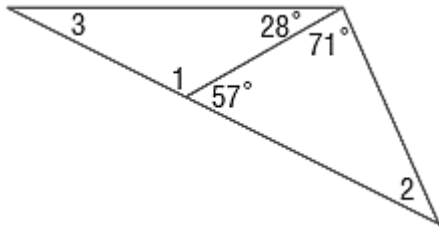
1. For equilateral $\triangle RST$, find the variable and the side lengths. All units are in inches.



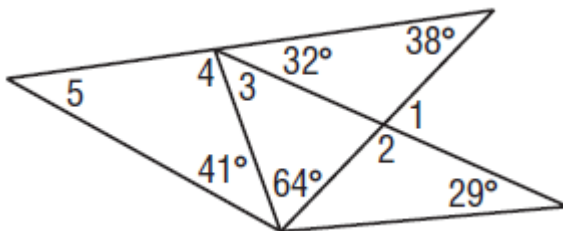
2. For isosceles $\triangle RST$, find the variable and the side lengths. All units are in centimeters.



3. Find the missing angle measures, $m\angle 1$ and $m\angle 2$.



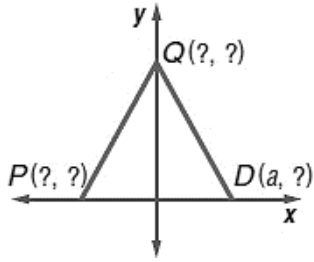
4. Find the missing angle measures.



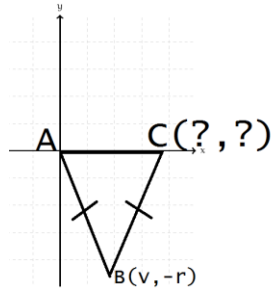
5. Find the missing angle measures.



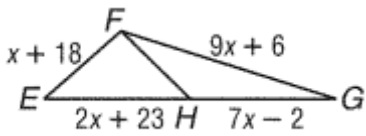
6. What are the missing coordinates of the isosceles triangle?



7. What are the missing coordinates of this isosceles triangle?



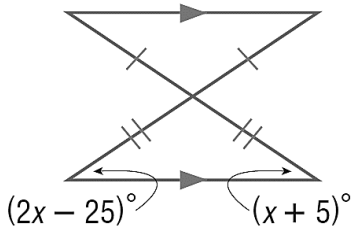
8. If FH is a median of $\triangle EFG$, find the perimeter of $\triangle EFG$, then state 3 true things about this figure.



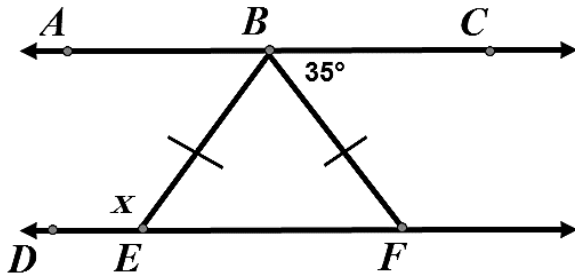
P = _____

- 1) _____
- 2) _____
- 3) _____

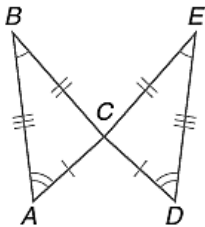
9. Find x.



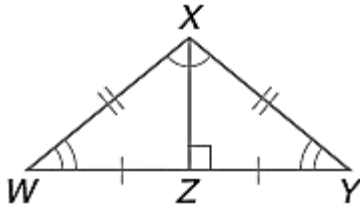
10. In the figure below, B is on \overline{AC} , E is on \overline{DF} , \overline{AC} is parallel to \overline{DF} , and \overline{BE} is congruent to \overline{BF} . Name the legs of the isosceles triangle, name the base angles and vertex angle of the isosceles triangle, and provide an example of an exterior angle. What is the measure of $\angle DEB$ and $\angle EBF$?



11. Identify the triangle $\triangle CAB$ is congruent to, then name all corresponding parts. There should be 6 pairs.



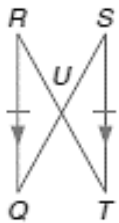
12. Identify the triangle $\triangle XZW$ is congruent to, then name all corresponding parts. There should be 6 pairs.



13. Write a two-column proof.

Given: $\overline{RQ} \cong \overline{ST}$ and $\overline{RQ} \parallel \overline{ST}$

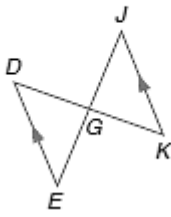
Prove: $\triangle RUQ \cong \triangle TUS$



14. Write a two-column proof.

Given: $\overline{DE} \parallel \overline{JK}$, \overline{DK} bisects \overline{JE} .

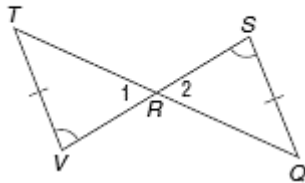
Prove: $\triangle EGD \cong \triangle JGK$



15. Write a two-column proof.

Given: $\angle V \cong \angle S$, $\overline{TV} \cong \overline{QS}$

Prove: $\overline{VR} \cong \overline{SR}$



16.



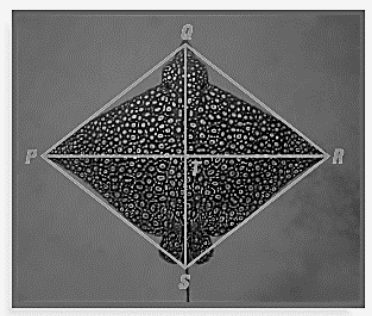
ARCHITECTURE You are designing the window shown in the photo. You want to make $\triangle DRA$ congruent to $\triangle DRG$. You design the window so that $\overline{DR} \perp \overline{AG}$ and $\overline{RA} \cong \overline{RG}$. Can you conclude that $\triangle DRA \cong \triangle DRG$?



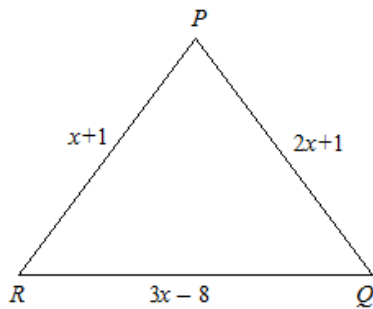
17. Write a two column proof using the stingray below.

GIVEN $\triangleright \overline{QS} \perp \overline{RP}, \overline{PT} \cong \overline{RT}$

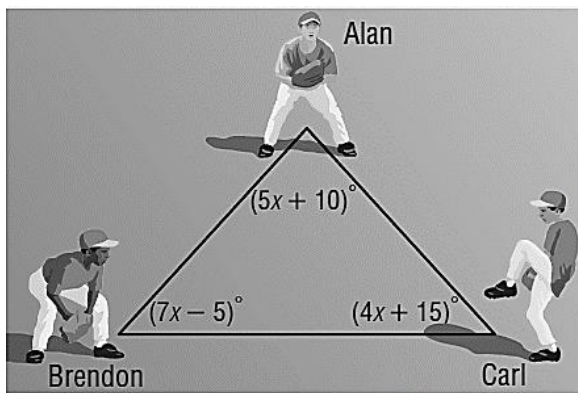
PROVE $\triangleright \overline{PS} \cong \overline{RS}$



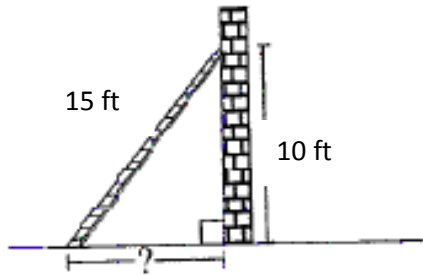
18. Find x , PQ , QR , and RP if $\triangle PQR$ is an isosceles triangle with $\overline{PQ} \cong \overline{QR}$.



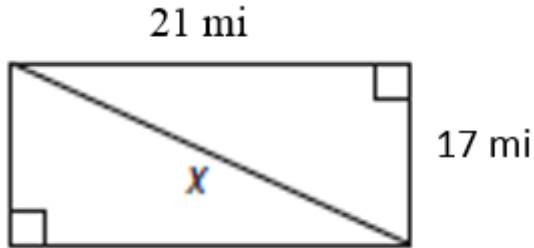
19. **BASEBALL** Alan, Brendon, and Carl were standing in a triangular formation shown. They were throwing the baseball to warm up for the game. Find the value of x , the measure of each angle and then conclude what two people must throw the farthest distance.



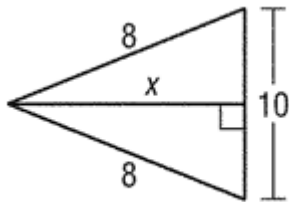
20. A ladder is 15ft long and reaches 10 feet up a wall, as shown in the picture. How many feet is the bottom of the base of the wall?



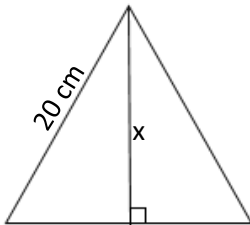
21. Find the value of x .



22. Find x .

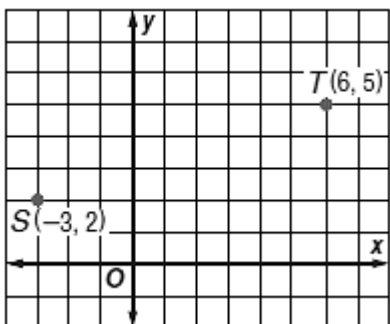


23. Find x if the triangle is an equilateral triangle whose sides are 20 cm long.



24. Find the slope, distance, and midpoint between each set of points.

A) points S and T.

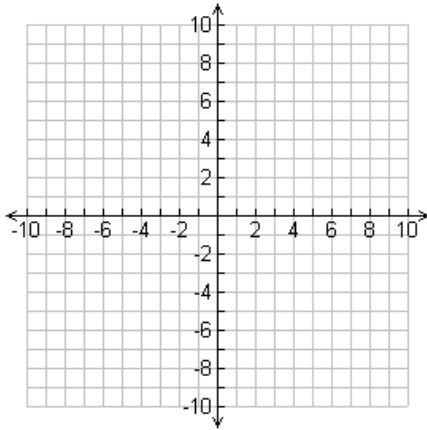


Distance: _____

Midpoint: _____

Slope: _____

b) G(2,6), H(-1,4)

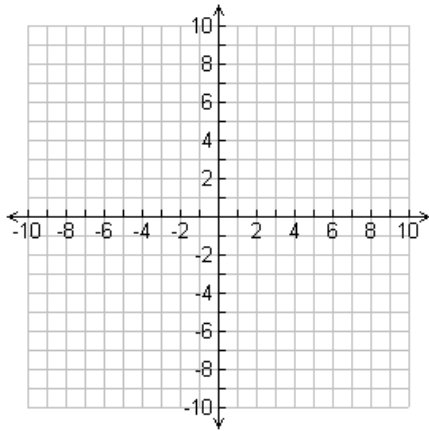


Distance: _____

Midpoint: _____

Slope: _____

c) J(7,10), K(-4,5)

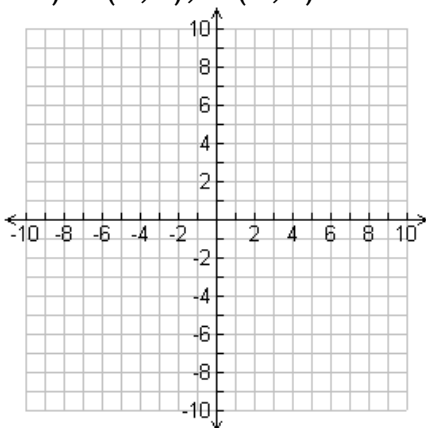


Distance: _____

Midpoint: _____

Slope: _____

d) D(0,2), E(4,5)

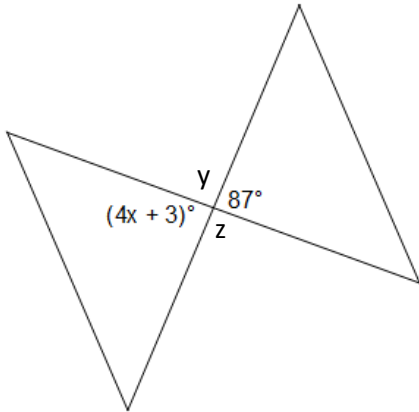


Distance: _____

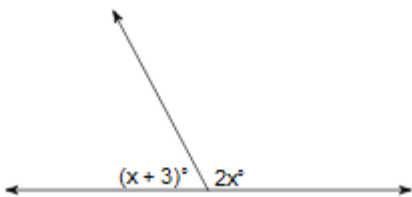
Midpoint: _____

Slope: _____

25. Find the value of x , y , and z .



26. What is the degree measure of the larger of the two angles?



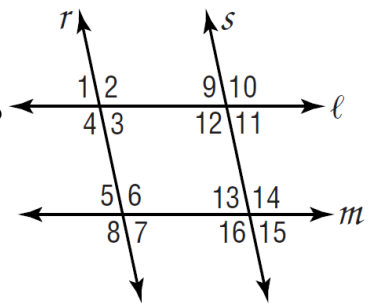
27. a) Given $l \parallel m$, name the relationship that makes $\angle 10 \cong \angle 16$?

b) Given $r \parallel s$, name the relationship that makes $\angle 3 + \angle 12 = 180^\circ$?

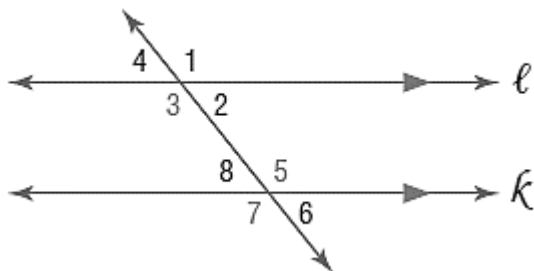
c) If $\angle 11 \cong \angle 15$, what 2 lines are parallel?

d) If $\angle 2 \cong \angle 6$, what 2 lines are parallel?

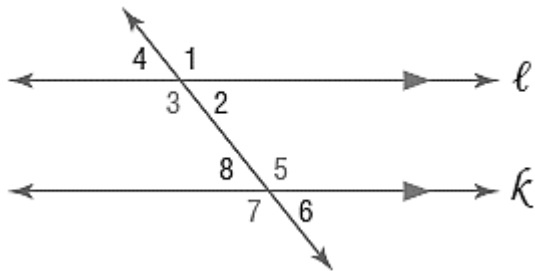
e) If $\angle 9 \cong \angle 13$, what 2 lines are parallel?



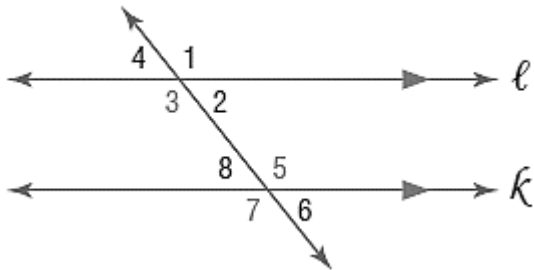
28. Find x so that lines l and k are parallel, given $\angle 2 = 27x + 2$ and $\angle 5 = 18x - 2$.



29. Find x so that lines l and k are parallel, given $\angle 4 = 17x$ and $\angle 6 = -5 + 18x$.



30. Name all the relationships that allow us to say l is parallel to k .



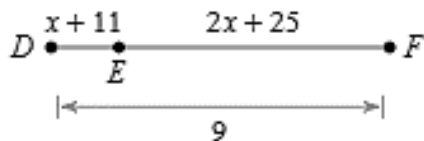
$\angle 1 \cong \angle 7$ proves $l \parallel k$ because _____

$\angle 2 \cong \angle 8$ proves $l \parallel k$ because _____

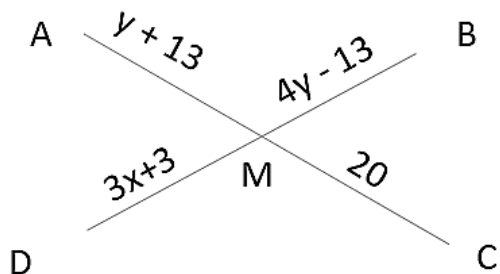
$\angle 3 \cong \angle 7$ proves $l \parallel k$ because _____

$\angle 3 + \angle 8 = 180$ proves $l \parallel k$ because _____

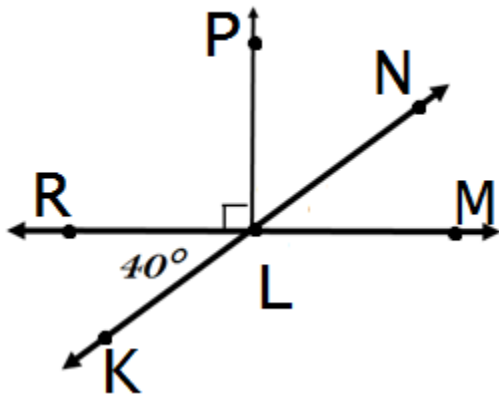
31. Find x , then the length of EF . Show your work, geometry and justify your set up!



32. AC and BD bisect each other at point M . Find x , y , and BM . Show your work, geometry and justify your set up!



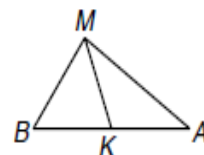
33. Find all the missing angle measures.



- $m\angle NLM =$ _____
- $m\angle NLP =$ _____
- $m\angle MLK =$ _____
- $m\angle NLR =$ _____
- $m\angle PLM =$ _____

34. Given the following triangle with angle bisector MK state if the following statements are true or false.

- a. $m\angle MKA = 90^\circ$
- b. $\overline{BK} \cong \overline{AK}$
- c. $m\angle BMK = m\angle AMK$
- d. $\triangle BMA$ is isosceles with vertex angle M.

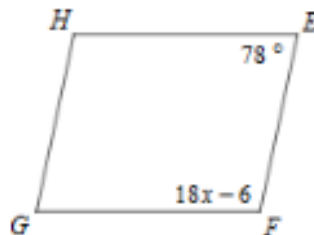


35. Given that the following are parallelograms, find x.

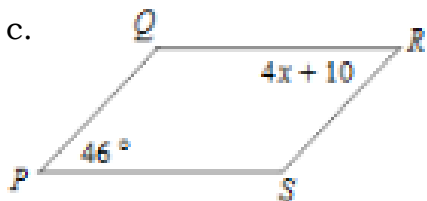
a.



b.



c.

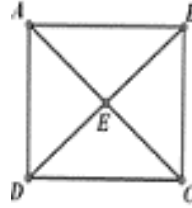


36.

a. Suppose $VWXY$ is a rectangle and $XV = 4x - 9$ and $WY = x + 3$, find x and WM .

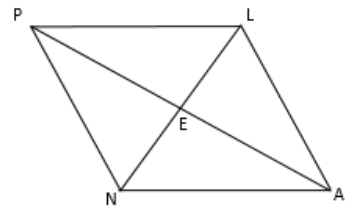


b. Suppose $ABCD$ is a square and $AC = 9y - 8$ and $BD = 7y + 8$. Find y and AC .



37. Use rhombus $PLAN$ to write the correct geometric statement (if needed) and justification.

- $AL \cong PL$ because : _____
- $\angle NEA = 90$ because : _____
- $EA \cong$ _____ because : _____
- $NA \parallel$ _____ because : _____
- $\angle NPE \cong$ _____ because : _____
- $\angle PLA \cong$ _____ because : _____
- $\angle LNA \cong$ _____ because : _____
- $\angle LEA = 90$ because : _____



38. Use rectangle RECT to write the correct geometric statement (if needed) and justification.

a.) $RC \cong TE$ because : _____

b.) $\angle TCE = 90$ because : _____

c.) $EA \cong$ _____ because : _____

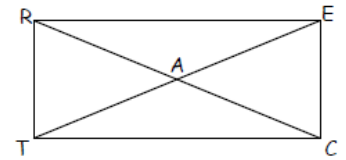
d.) $RE \parallel$ _____ because : _____

e.) $\angle TRA \cong \angle RTA$ because : _____

f.) $\angle RAE \cong$ _____ because : _____

g.) $\angle RTE \cong \angle TEC$ because : _____

h.) $\angle TCR +$ _____ $= 90$ because : _____

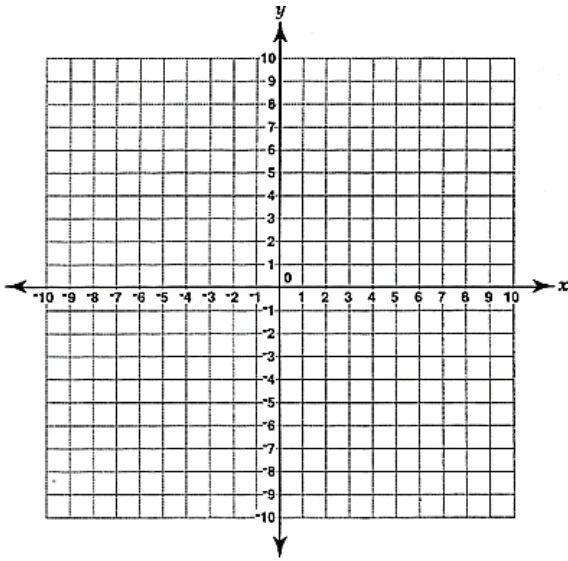


39. a. $ABCD$ is a rectangle with $B(5, -3)$, $C(5, -6)$, and $D(9, -3)$. Find the coordinates of A .

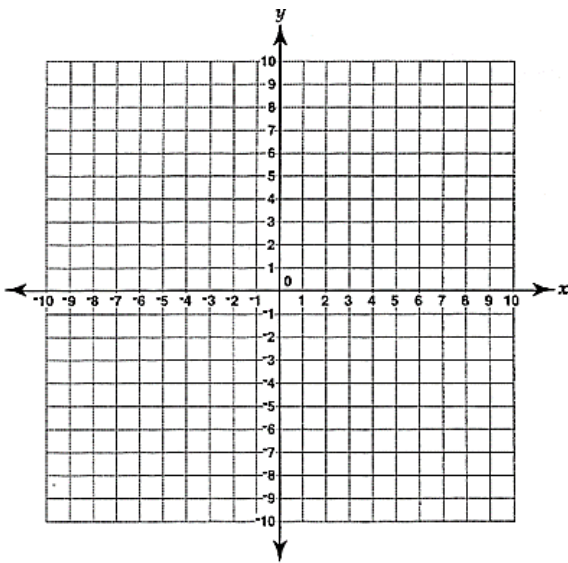
b. $ABCD$ is a rectangle with $B(10, 7)$, $C(10, 4)$, and $D(8, 4)$. Find the coordinates of A .

40. Given the set of vertices, determine if it is a parallelogram or not. If it is a parallelogram, determine whether it is a rectangle. Explain why or why not.

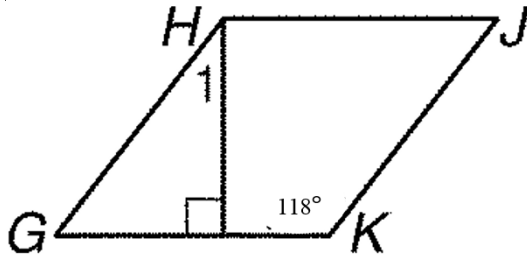
a. $A(-1, -5), B(-3, 0), C(2, 2), D(4, -3)$



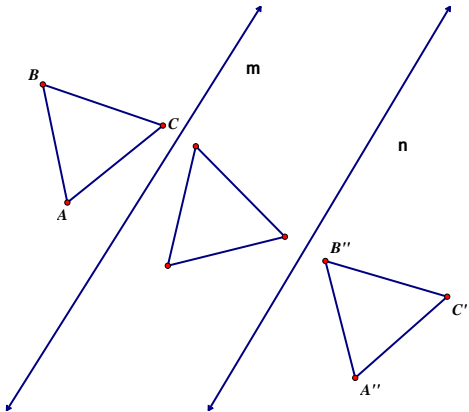
b. $B(-9, 1), E(2, 3), F(12, -2), G(1, -4)$



41. For the parallelogram below, find $m < 1$ if $m < K = 118^\circ$.

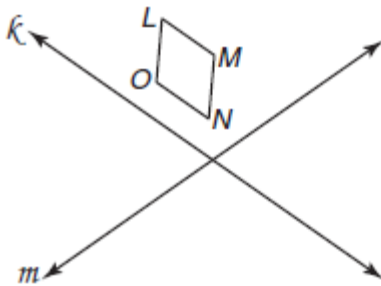


42. If $m \parallel n$ and triangle ABC is reflected over line m first, then line n, what transformation would occur from $\triangle ABC$ to $\triangle A''B''C''$?



- a. reflection
- b. dilation
- c. rotation
- d. translation

43. If LMNO is reflected over line k first, then line m, what transformation would occur from LMNO to $L''M''N''O''$?



- a. reflection
- b. dilation
- c. rotation
- d. translation

44. Given point $A(6, -1)$, find its image if it is reflected across the x-axis, the y-axis, $y = x$, $y = -x$

45. Given the point (x, y) , write the image point if it is reflected across the x-axis, the y-axis, $y = x$, $y = -x$

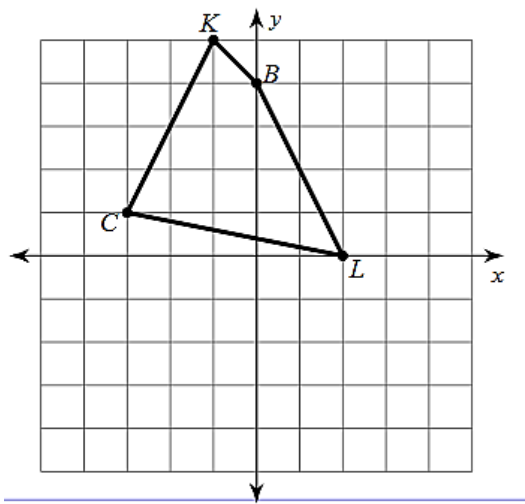
46. What is the original point of $Y'(-2, 4)$ under the translation $(x,y) \rightarrow (x + 5, y)$?

47. What is the point of X' if $X(2, 5)$ is under the translation $(x,y) \rightarrow (x - 1, y + 2)$?

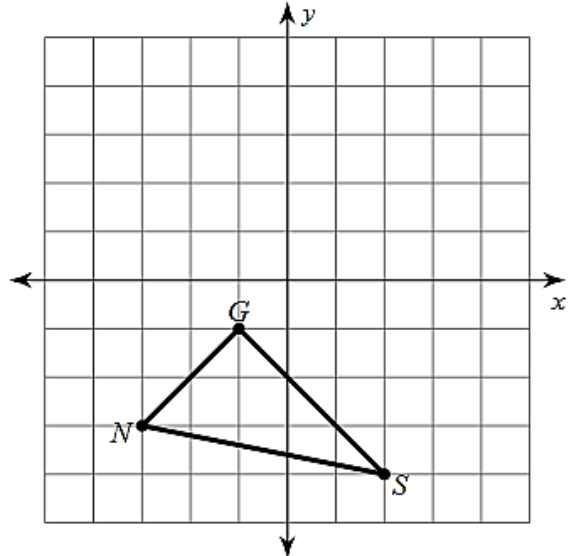
48. Symmetry: How many lines of symmetry does a(n)

- a. Square have? _____
- b. Rectangle have? _____
- c. Isosceles Triangle have? _____

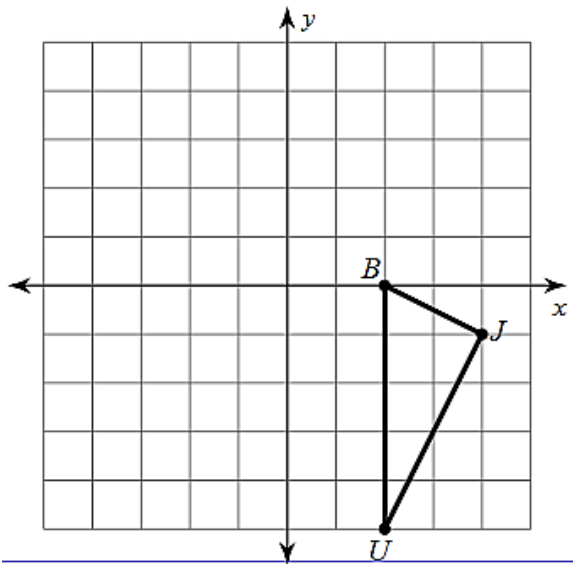
49. Graph the image of the figure with a reflection across $y = 2$



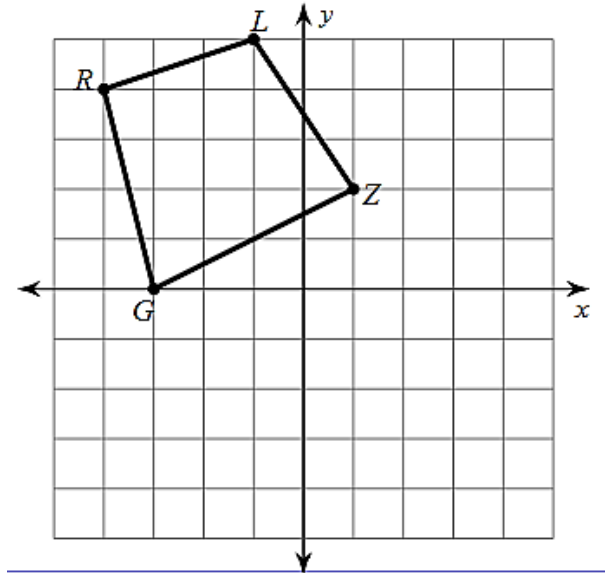
50. Graph the image of the figure with a reflection across $y = x$



51. Graph the image of the figure with a rotation 90° counterclockwise about the origin.



52. Graph the image of the figure with a rotation 90° clockwise about the origin.



53. Identify each statement as true or false.

a) The diagonals of a parallelogram are always congruent.

b) A parallelogram is always a square.

c) The diagonals of a rectangle sometimes bisect each other.

d) The diagonals of a rectangle always bisect the angles.

e) The diagonals of a square are never perpendicular bisectors of each other.

f) A rhombus is always a rectangle.

g) A square is never a rectangle.

h) A square is always a rhombus.

i) Opposite angles in a parallelogram are always congruent.