

Final Exam Review

Name _____

_____ Hr. _____

Final Exam Information:

- The Final Exam consists of a Multiple-Choice Section and an Open-Response Section.
- You *may not* use notes of any kind on the Final Exam.
- This Exam Review is designed to *help* prepare you for the exam.
- In addition to successfully completing the exam review, you will need to study your notes.
- Being well-prepared for the exam is of utmost importance!
- All six parts of the Exam Review are required.

You will NOT be provided with these formulas on your exam.
Be sure to know the formulas below for your exam.

$$\text{Slope } m = \frac{y_2 - y_1}{x_2 - x_1}$$

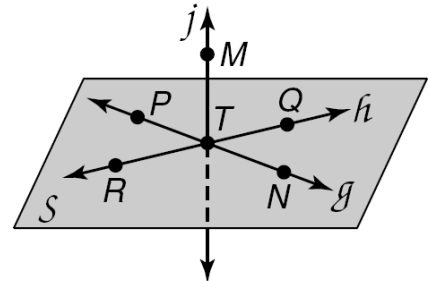
$$\text{Midpoint } \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\text{Distance } d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Unit 1

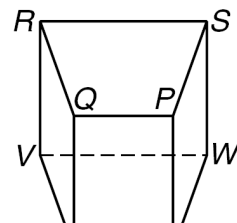
For Questions 1-4, use the figure at the right.

1. What is another name for \overleftrightarrow{RQ} ?
2. What is another name for line g ?
3. Name three noncollinear points.
4. Name three collinear points.



For Questions #5-7, use the figure at the right.

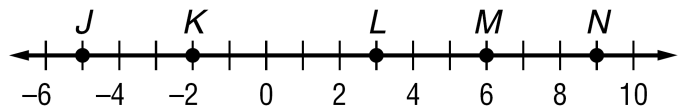
5. Name three coplanar points.



6. Name the intersection of planes RSP and PTW .
7. Name the segment that is parallel to SW

8. Use the number line to find the measure.

a) JL



b) KN

9. Suppose A , B , and C are collinear, B is between A and C , $AB = 4x$, $BC = 5x$, and $AC = 36$.

a) Draw and label the figure.

b) Find x .

c) Find BC .

10. Suppose S is the midpoint of \overline{RT} , $RS = 4x - 5$, and $ST = 11 + 2x$.

a) Draw and label the figure.

b) Find x .

c) Find ST .

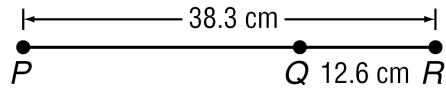
11. Suppose Q is the midpoint of \overline{PR} , $QR = 6 - 3x$, and $PR = 14x + 2$.

a) Draw and label a figure that satisfies the given information.

b) Find x .

c) Find PR .

12. Find the length of \overline{PQ} .



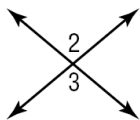
13. Find the distance between $Z(-1, 3)$ and $M(8, -7)$.

14. Find the coordinates of the midpoint of a segment having endpoints $A(0, 0)$ and $D(-2, -8)$.

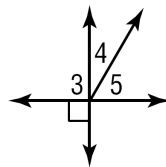
15. Find the coordinates of the midpoint of a segment having endpoints $R(-10, 5)$ and $S(8, 4)$.

For Questions 16-18, find x and the measures of each numbered angle.

16. $m\angle 2 = 4x - 26,$
 $m\angle 3 = 3x + 4$



17. $m\angle 4 = 2x - 5$
 $m\angle 5 = 4x - 13$



18. $m\angle 1 = x + 10$
 $m\angle 2 = 3x + 18$



For Questions 19-21, draw and label a figure. Then, write an equation to answer the question.

19. If \overline{GK} bisects $\angle FGH$, $m\angle FGK = (3v - 4)^\circ$, and $m\angle KGH = (2v + 7)^\circ$, find $m\angle FGK$.

20. Suppose $\angle RST$ is a right angle and point U is in the interior of $\angle RST$.
If $m\angle RSU = 3(w - 4)^\circ$ and $m\angle UST = (6w + 3)^\circ$, find w .

21. If \overline{BD} is in the interior of $\angle ABC$, $m\angle ABC = 55^\circ$, $m\angle ABD = (7x - 2)^\circ$,
and $m\angle DBC = (3x + 7)^\circ$, find $m\angle ABD$.

Unit 2

Review the properties, definitions theorems, and postulates listed below.

reflexive property	subtraction property	distributive property
symmetric property	multiplication property	midpoint theorem
transitive property	division property	definition of a midpoint
addition property	substitution property	definition of an angle bisector
segment addition postulate	angle addition postulate	complement theorem
supplement theorem	vertical angles theorem	

For #22-27, state the property, definition, theorem, or postulate that justifies each statement.

22. $QA = QA$. _____

23. If $AB = RS$ and $RS = WY$, then $AB = WY$. _____

24. If $AB = RS$, then $AB + 5 = RS + 5$. _____

25. If $80^\circ = m\angle A$, then $m\angle A = 80^\circ$. _____

26. If E is the midpoint of \overline{XY} , then $\overline{XE} \cong \overline{EY}$. _____

27. If \overline{BC} bisects $m\angle ABD$, the $\angle ABC \cong \angle CBD$. _____

Complete each proofs.

28. **Given:** $3x + 8 = 17$

Prove: $x = 3$

Statements	Reasons
1. $3x + 8 = 17$	1.
2. $3x + 8 = 17$ $- 8 \quad - 8$	2.
3. $3x = 9$	3.
4. $\frac{3x}{3} = \frac{9}{3}$	4.
5. $x = 3$	5.

29. **Given:** $5x - 2 = 3x + 6$

Prove: $x = 4$

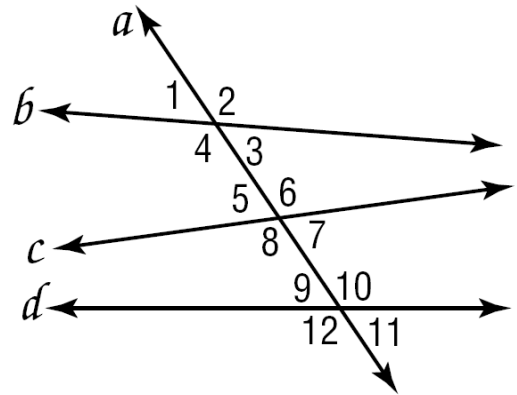
Statements	Reasons
1.	1.
2. $5x - 2 = 3x + 6$ $- 3x \quad - 3x$	2.
3. $2x - 2 = 6$	3. Substitution Property
4.	4. Addition Property

5.	5. Substitution Property
6. $\frac{2x}{2} = \frac{8}{2}$	6.
7.	7. Substitution Property

Unit 3

30. Use the figure at the right.

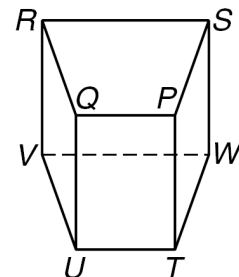
- Identify a pair of vertical angles.
- Identify a pair of corresponding angles.
- Identify a pair of alternate interior angles.
- Identify a pair of alternate exterior angles.
- Identify a pair of consecutive interior angles.
- Identify a pair of supplementary angles.
- Identify a linear pair.



For Questions 31 and 32, use the figure at the right.

31. Identify the plane parallel to plane VWT .

32. Name a segment that intersects with \overline{QP} .



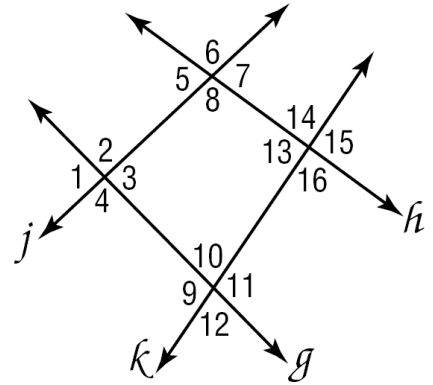
For 33 and 34, use the figure at the right.

33. Which of the following could prove $j \parallel k$?

- A. $\angle 1 \cong \angle 5$ C. $\angle 4 \cong \angle 10$
 B. $\angle 2 \cong \angle 4$ D. $\angle 3 \cong \angle 10$

34. Which of the following could prove $g \parallel h$?

- A. $\angle 9 \cong \angle 10$ C. $\angle 4 \cong \angle 10$
 B. $\angle 1 \cong \angle 5$ D. $\angle 3 \cong \angle 6$



For 35-38, suppose \overline{AB} has a slope = $\frac{2}{5}$, \overline{CD} has a slope = $\frac{5}{2}$, \overline{EF} has a slope = $-\frac{5}{2}$, \overline{GH} has a slope = 2.5, and \overline{JK} has a slope = $-\frac{2}{5}$.

35. Name two lines that are parallel.
36. Name two lines that are perpendicular.
37. Name two lines that are neither parallel nor perpendicular.
38. Determine if AB and EF are parallel, perpendicular or neither:
 $A(1, 3)$, $B(3, 6)$, $E(1, 5)$ and $F(-5, 9)$

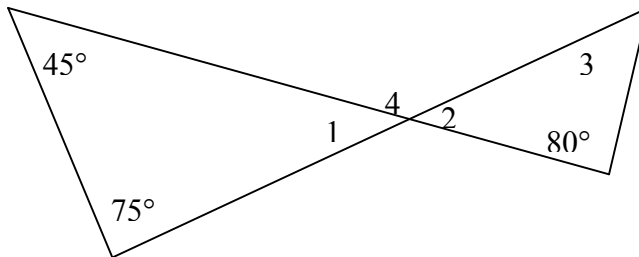
Unit 4

For Questions 39 and 40 draw and label a figure. Then, write an equation to answer the question.

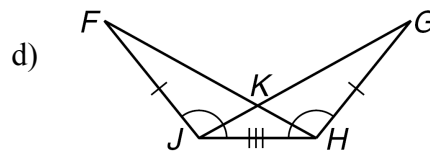
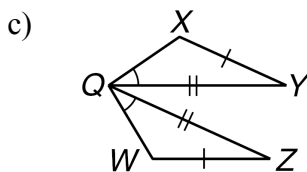
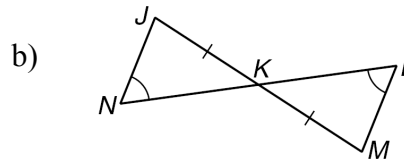
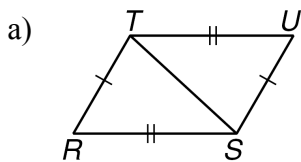
39. Find a and the measure of each side of equilateral triangle MNO if $MN = 5a$, $NO = 4a + 6$, and $MO = 7a - 12$.

40. Triangle TAC is an isosceles triangle with vertex angle A . If $TA = 3b + 1$, $AC = 4b - 11$, and $TC = 6b - 2$, find b , TA , AC , and TC .

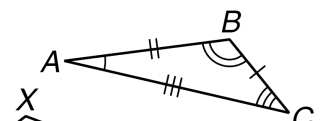
41. Using the figure below, find the measures of the numbered angles.



42. Name the postulate that could prove the two triangles are congruent (**SSS**, **SAS**, **ASA**, **AAS**). If there is not enough information, write **Not Possible**.



43. Identify the congruent triangles in the figure at the below right.



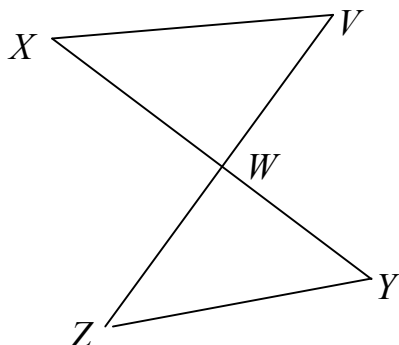
Be sure to name the corresponding vertices in the correct order!

$$\triangle ABC \cong \triangle \underline{\hspace{2cm}}$$

For Questions 44-46, write a two-column proof.

44. **Given:** W is the midpoint of \overline{XY}
 W is the midpoint of \overline{VZ}

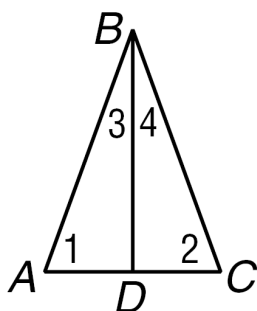
Prove: $\triangle X VW \cong \triangle Y Z W$



Statements	Reasons
1. W is the midpoint of \overline{XY}	1.
2. W is the midpoint of \overline{VZ}	2.
3.	3. Midpoint Theorem
4.	4. Midpoint Theorem
5. $\angle X W V \cong \angle Y W Z$	5.
6. $\triangle X VW \cong \triangle Y Z W$	6.

45. **Given:** \overline{BD} bisects $\angle ABC$
 $\angle ADB \cong \angle CDB$

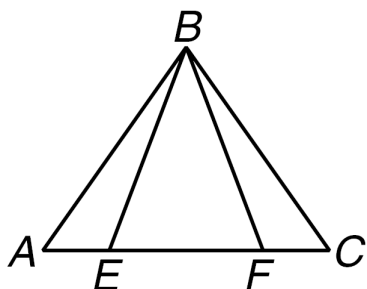
Prove: $\angle 1 \cong \angle 2$



Statements	Reasons
1. \overline{BD} bisects $\angle ABC$	1.
2. $\angle ADB \cong \angle CDB$	2.
3. $\angle 3 \cong \angle 4$	3.
4. $\overline{BD} \cong \overline{BD}$	4.
5. $\triangle ABD \cong \triangle CBD$	5.
6. $\angle 1 \cong \angle 2$	6.

46. **Given:** $\triangle ABC$ is isosceles with base \overline{AC}
 $\angle AEB \cong \angle CFB$

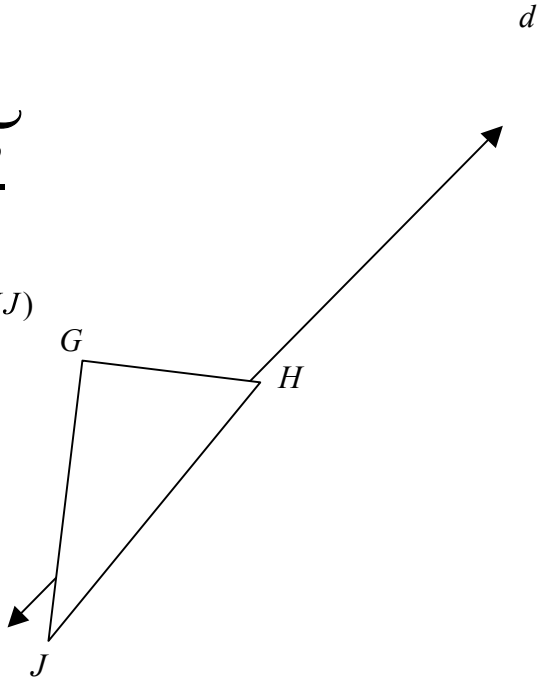
Prove: $\triangle ABE \cong \triangle CBF$



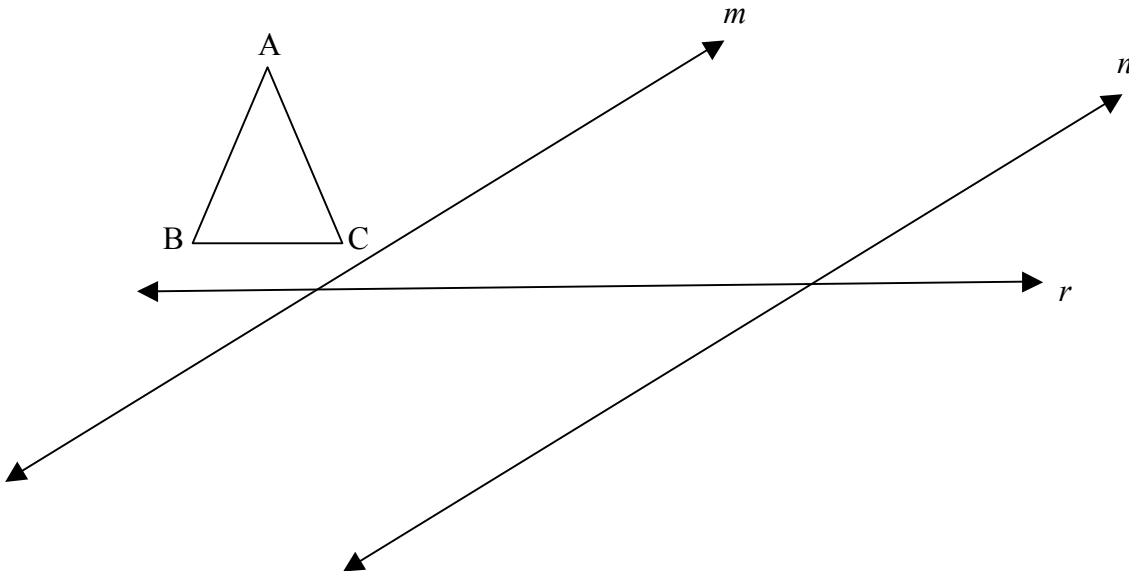
Statements	Reasons
4. $\angle A \cong \angle C$	4.
5. $\triangle ABE \cong \triangle CBF$	5.
1. $\triangle ABC$ is isosceles with base \overline{AC}	1.
2. $\angle AEB \cong \angle CFB$	2.
3. $\overline{AB} \cong \overline{CB}$	3.

Unit 5

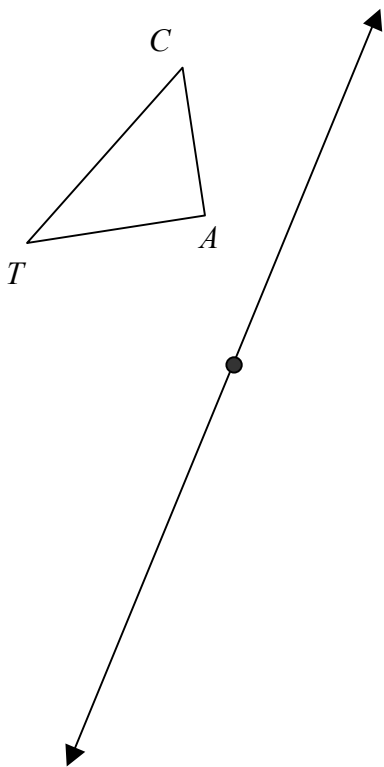
47. $r_d(\triangle GHJ)$



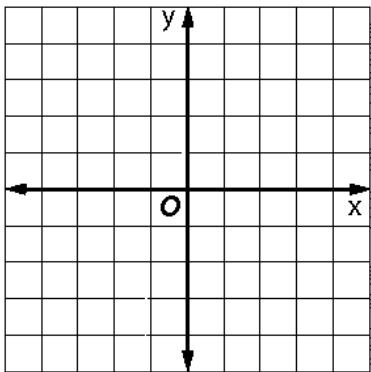
48. Perform the necessary reflections to **translate** $\triangle ABC$.



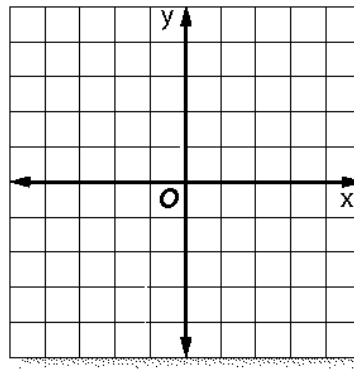
49. You are given figure $\triangle CAT$ and reflection line m . Draw $r_n \circ r_m$ (QUAD) by adding a second reflection line, n and performing the necessary reflections so that the magnitude of the rotation is 80° .

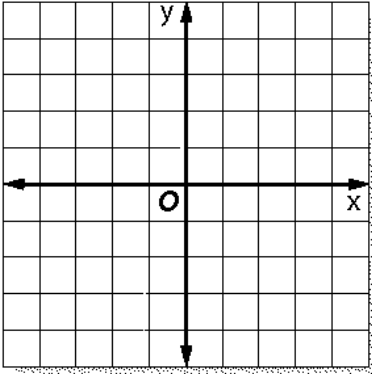
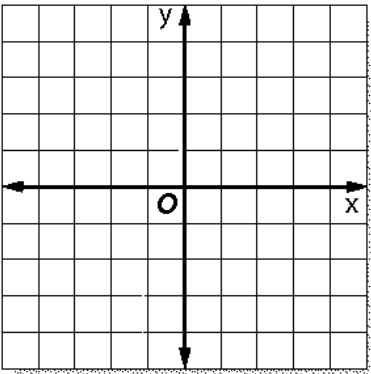


50. Suppose $\triangle JKM$ has vertices $J(4, -2)$, $K(-1, -3)$, and $M(-2, 5)$. Draw $R_{90^\circ}(\triangle JKM)$ and state the coordinates of $J'K'M'$.



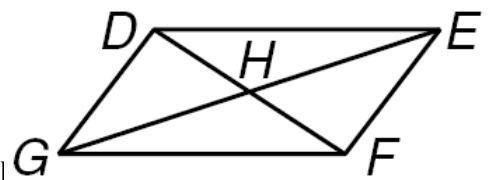
51. Suppose $\triangle DEF$ has vertices $D(-3, -4)$, $E(0, 2)$, and $F(4, -5)$ when $(x, y) \rightarrow (x + 1, y + 4)$. Draw $\triangle DEF$ and its image under $T_{(1,4)}$. Then state the coordinates of $D'E'F'$.



$J(\quad , \quad) \quad K'(\quad , \quad) \quad M'(\quad , \quad)$	$D'(\quad , \quad) \quad E'(\quad , \quad) \quad F'(\quad , \quad)$
<p>52. Graph quadrilateral $LMNP$ with $L(1, 3)$, $M(5, 1)$, $N(-4, 0)$ and $P(-1, 3)$. Draw $T_{(-1, 2) \circ r_{x\text{-axis}}}$ and state the coordinates for $L''M''N''P''$.</p>  <p> $L''(\quad , \quad) \quad M''(\quad , \quad)$ $N''(\quad , \quad) \quad O''(\quad , \quad)$ </p>	<p>53. Graph quadrilateral $DEFG$ with $D(4,0)$, $E(3, 3)$, $F(-3, -3)$, and $G(2, -2)$. Draw $r_{x=1}(DEFG)$. Then state the coordinates for $D'E'F'G'$.</p>  <p> $D'(\quad , \quad) \quad E'(\quad , \quad)$ $F'(\quad , \quad) \quad G'(\quad , \quad)$ </p>

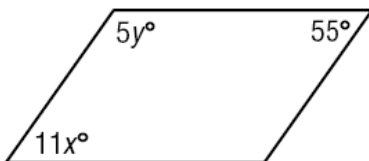
Unit 6

54. In parallelogram $DEFG$, $m\angle FGE = 4x + 1$ and $m\angle DEG = 6x - 15$. Find $m\angle FGE$.

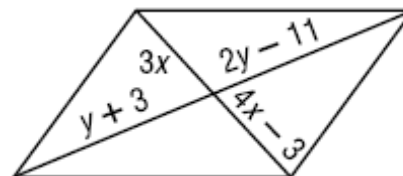


For #55-56, find the values of x and y so that each figure is a parallelogram.

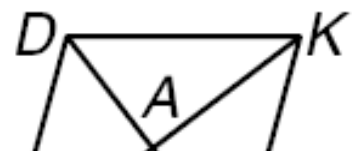
55.



56.



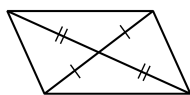
57. In rhombus $DKLM$, $ML = 40$, $MK = 64$, and $LA = 24$ and $m\angle MDA = 52^\circ$.



- a. $AM =$ _____ f. $MD =$ _____
 b. $KL =$ _____ g. $KA =$ _____
 c. $DL =$ _____ h. $DK =$ _____
 d. $AD =$ _____ i. $m\angle DMA =$ _____
 e. $m\angle DKA =$ _____ j. $m\angle DKL =$ _____

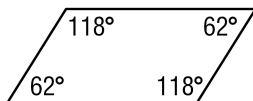
For #58-61, determine whether each quadrilateral is a **parallelogram** based on the given information. Justify your answer.

58. Is there enough information to state that the figure at the left is a parallelogram? _____



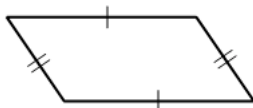
Justification _____

59. Is there enough information to state that the figure at the left is a parallelogram? _____



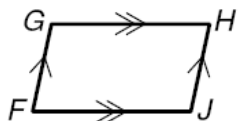
Justification _____

60. Is there enough information to state that the figure at the left is a parallelogram? _____



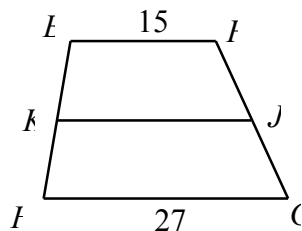
Justification _____

61. Is there enough information to state that the figure at the left is a parallelogram? _____

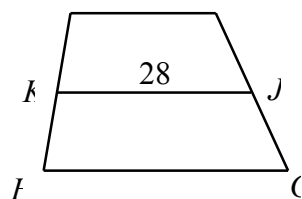


Justification _____

62. For trapezoid $EFGH$, J and K are the midpoints of the legs. Find JK . **Show all calculations.**

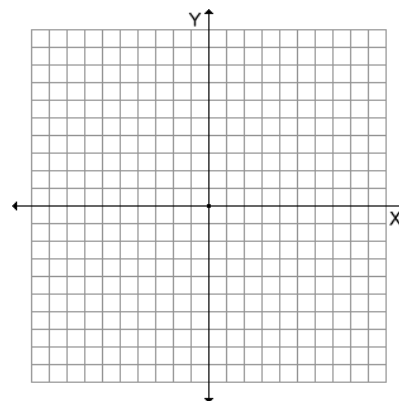


63. For trapezoid $EFGH$, J and K are the midpoints of the legs. Find HG . **Show all calculations.**



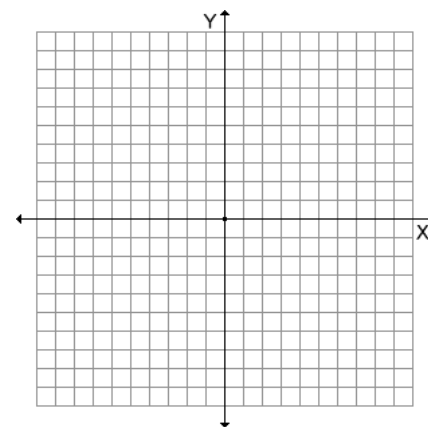
For #64-65, determine whether the quadrilateral with the given vertices is a parallelogram, rectangle, rhombus, or square. List all that apply and justify your answer. Show all calculations.

64. $B(0, 3), E(6, -2), F(1, -8), G(-5, -3)$



What type of figure(s) is $BEFG$? _____

65. $R(-2, 5), S(1, 3), M(-3, -4), Y(-6, -2)$



What type of figure(s) is $BEFG$? _____