

It is very important that you review for the Geometry Final. Here are a few pieces of information you want to know.

- Your Final is worth **20%** of your overall grade
- The final covers concepts from the entire semester, they are the following, including the problem numbers that will be assigned each night for homework.
  - **Unit 1 – Introductory Unit (Monday, 12-8, # 7-14, 46)**
  - **Unit 2 – Parallel Lines (Tuesday, 12-9, # 16-19)**
  - **Unit 3 – Parallel and Perpendicular Lines (Wednesday, 12-10, # 15, 20-24)**
  - **Unit 4 – Symmetry and Transformations (Thursday, 12-11, # 1-6)**
  - **Unit 5 – Triangle Congruence (Friday, 12-12, # 11, 25-37)**
  - **Unit 6 – Quadrilaterals (Monday, 12-15, # 38-45, 47-50)**
- The final is 50 multiple choice problems, here are some tips for multiple choice problems
  - Read the question before you look at the answer
  - Come up with the answer in your head before looking at the possible answers, this way the choices given on the test won't throw you off or trick you
  - Eliminate answers you know aren't right
  - Read all the choices before choosing your answer
  - If there is no guessing penalty, always take an educated guess and select an answer
  - Don't keep on changing your answer, usually your first choice is the right one, unless you misread the question
  - A positive choice is more likely to be true than a negative one
  - Usually the correct answer is the choice with the most information

**Finals Schedule**

<b>Monday, December 15th, 2014</b>		<b>Tuesday, December 16th, 2014</b>	
1st period Final	7:45 - 9:30	2nd period exam	7:45 - 9:30
2nd period	9:40 -10:19	Break	
3rd period	10:24 - 11:03	3rd period exam	9:40 -11:25
4th period	11:08 -11:47		
Lunch	11:47 -12:27	<b>Wednesday, December 17th, 2014</b>	
5th period	12:27-1:06	4th period exam	7:45 - 9:30
6th period	1:11 -1:50	Break	
7th period	1:55 -2:35	5th period exam	9:40- 11:25
		<b>Thursday, December 18th, 2014</b>	
		6th period exam	7:45 - 9:30
		Break	
		7th period exam	9:40 -11:25

**This Assignment is due on the day of your final and is worth 500 assignment points. Make sure you show your work for full credit, circling the correct answer is not enough**

**Multiple Choice:** *Identify the choice that best completes the statement or answers the question. Figures are not necessarily drawn to scale.*

1. Describe the transformation  $M: (-2, 5) \rightarrow (2, -5)$ .

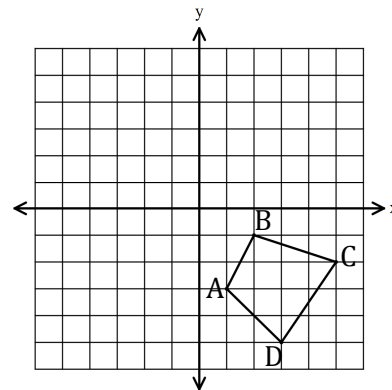
- A. A reflection across the  $y$ -axis
- B. A reflection across the  $x$ -axis
- C. A rotation  $180^\circ$  with center of rotation  $(0, 0)$
- D. A rotation  $90^\circ$  with center of rotation  $(0, 0)$

2. Find the coordinates of the image of the point  $(-5, 7)$  when it is reflected across the line  $y = 11$ .

- A.  $(-5, 18)$
- B.  $(-5, 15)$
- C.  $(-5, -4)$
- D.  $(-5, -7)$

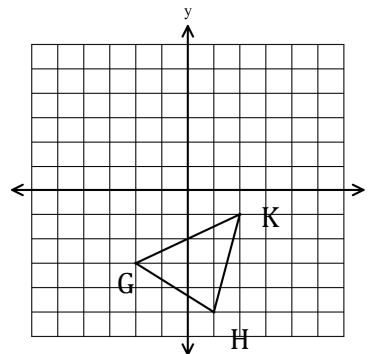
3. What are coordinates for the image of quadrilateral ABCD after the translation of  $(x, y) \rightarrow (x + 7, y - 2)$  ?

- A.  $A'(8, -5), B'(2, -1), C'(12, -4), D'(10, -7)$
- B.  $A'(-6, -1), B'(-5, 1), C'(-2, 0), D'(-4, -3)$
- C.  $A'(-6, -5), B'(2, -1), C'(12, -4), D'(10, -7)$
- D.  $A'(8, -5), B'(9, -3), C'(12, -4), D'(10, -7)$



4. What are the coordinates for the image of  $\triangle GHK$  after a rotation  $90^\circ$  clockwise about the origin and a translation of  $(x, y) \rightarrow (x + 3, y + 2)$  ?

- A.  $G''(-3, 2), H''(-5, -1), K''(-1, -2)$
- B.  $G''(0, 4), H''(-2, 1), K''(2, 0)$
- C.  $G''(1, 2), H''(5, 1), K''(2, -1)$
- D.  $G''(6, 0), H''(8, 3), K''(4, 5)$

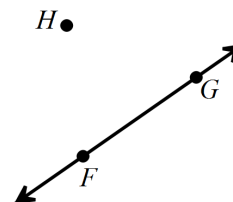


5. The point  $P(-2, -5)$  is rotated  $90^\circ$  counterclockwise about the origin, and then the image is reflected across the line  $x = 3$ . What are the coordinates of the final image  $P''$ ?

- A.  $(1, -2)$
- B.  $(11, -2)$
- C.  $(-2, 1)$
- D.  $(2, 11)$

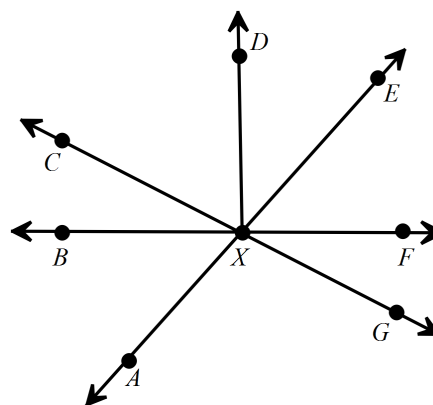
6. Reflect point  $H$  across the line  $\overleftrightarrow{FG}$  to form point  $H'$ , which of the following is true?

- A.  $\overline{HF} \cong \overline{FG}$
- B.  $\overline{HF} \cong \overline{H'G}$
- C.  $\overline{FG} \cong \overline{H'G}$
- D.  $\overline{HG} \cong \overline{H'G}$



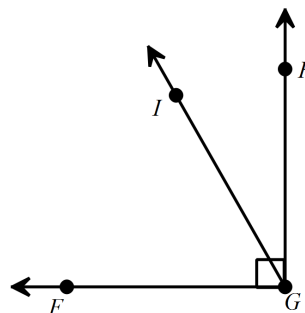
7. Excluding straight angles, how many angles are shown in the figure?

- A. 7
- B. 18
- C. 19
- D. 21



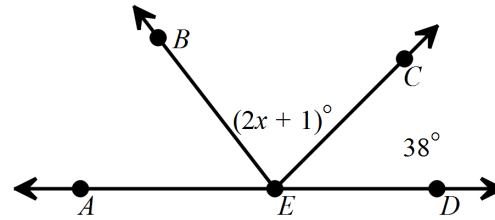
8. In the figure  $m\angle FGI = (2x + 9)^\circ$  and  $m\angle HGI = (4x - 15)^\circ$ . Find  $m\angle FGI$  and  $m\angle HGI$ .

- A.  $m\angle FGI = 71^\circ$  and  $m\angle HGI = 109^\circ$
- B.  $m\angle FGI = 45^\circ$  and  $m\angle HGI = 45^\circ$
- C.  $m\angle FGI = 33^\circ$  and  $m\angle HGI = 33^\circ$
- D.  $m\angle FGI = 41^\circ$  and  $m\angle HGI = 49^\circ$



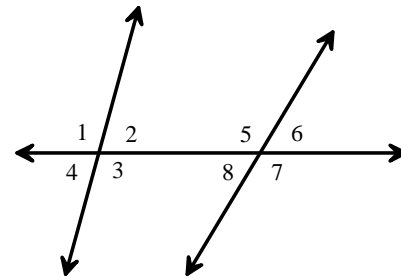
9.  $\overrightarrow{EB}$  is the angle bisector of  $\angle AEC$ . What is the value of  $x$ ?

- A.  $x = 35$
- B.  $x = 51.5$
- C.  $x = 70.5$
- D.  $x = 142$



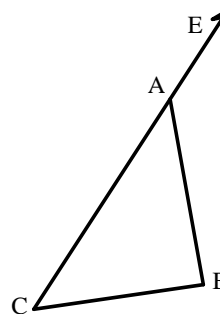
10. In the figure, which pair of angles is supplementary?

- A.  $\angle 3$  and  $\angle 7$
- B.  $\angle 1$  and  $\angle 4$
- C.  $\angle 5$  and  $\angle 7$
- D.  $\angle 4$  and  $\angle 6$



11. In the figure,  $m\angle ABC = m\angle ACB = x$ . Find the  $m\angle EAB$  in terms of  $x$ .

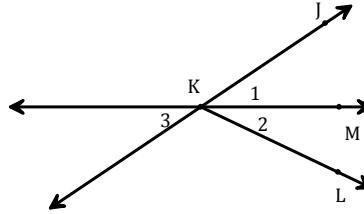
- A.  $180 - 2x$
- B.  $2x$
- C.  $x$
- D.  $x + 90$



For #12-13 use the following:

Given:  $\overrightarrow{KM}$  bisects  $\angle JKL$

Prove:  $m\angle 2 = m\angle 3$



Statements	Reasons
$\overrightarrow{KM}$ bisects $\angle JKL$	Given
$\angle 1 \cong \angle 2$	<b>12.</b>
$m\angle 1 = m\angle 2$	Definition of Congruence
$\angle 1 \cong \angle 3$	<b>13.</b>
$m\angle 1 = m\angle 3$	Definition of Congruence
$m\angle 2 = m\angle 3$	Substitution Property of Equality

12. Choose one of the following to complete the proof.

- A. Definition of angle bisector- If a ray is an angle bisector, then it divides an angle into two congruent angles.
- B. Definition of opposite rays- If a point on the line determines two rays are collinear, then the rays are opposite rays.
- C. Definition of ray- If a line begins at an endpoint and extends infinitely, then it is ray.
- D. Definition of segment bisector- If any segment, line, or plane intersects a segment at its midpoint then it is the segment bisector.

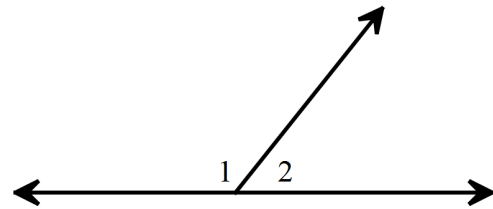
13. Choose one of the following to complete the proof.

- A. Definition of complementary angles- If the angle measures add up to  $90^\circ$ , then angles are supplementary
- B. Supplemental Angle Theorem- If two angles are supplementary to a third angle then the two angles are congruent
- C. Definition of supplementary angles- If the angles are supplementary, then the angle's measures add to  $180^\circ$ .
- D. Vertical Angle Theorem- If two angles are vertical angles, then they have congruent angle measures.

For #14 use the following:

Given:  $\angle 1$  and  $\angle 2$  are supplementary, and  $m\angle 1 = 135^\circ$

Prove:  $m\angle 2 = 45^\circ$



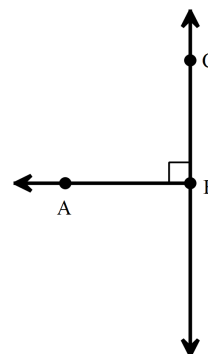
Statements	Reasons
$\angle 1$ and $\angle 2$ are supplementary	Given
[1]	Given
$m\angle 1 + m\angle 2 = 180^\circ$	[2]
$135^\circ + m\angle 2 = 180^\circ$	Substitution Property of Equality
$m\angle 2 = 45^\circ$	[3]

14. Fill in the blanks to complete the two column proof:

- A. [1]  $m\angle 2 = 135^\circ$   
 [2] Definition of Supplementary Angles  
 [3] Subtraction Property of Equality
- B. [1]  $m\angle 1 = 135^\circ$   
 [2] Definition of Supplementary Angles  
 [3] Substitution Property
- C. [1]  $m\angle 1 = 135^\circ$   
 [2] Definition of Supplementary Angles  
 [3] Subtraction Property of Equality
- D. [1]  $m\angle 1 = 135^\circ$   
 [2] Definition of Complementary Angles  
 [3] Subtraction Property of Equality

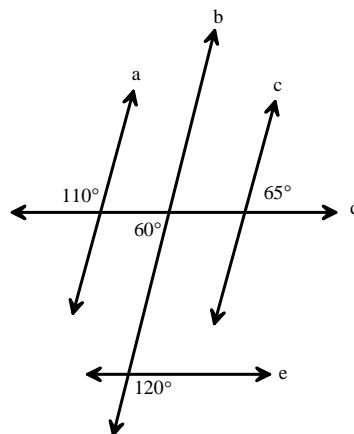
15. Point A is reflected over the line  $\overleftrightarrow{BC}$ .  
 Which of the following is NOT true of line  $\overleftrightarrow{BC}$ ?

- A. line  $\overleftrightarrow{BC}$  is perpendicular to line  $\overleftrightarrow{AA'}$
- B. line  $\overleftrightarrow{BC}$  is perpendicular to line  $\overleftrightarrow{AB}$
- C. line  $\overleftrightarrow{BC}$  bisects line segment  $\overline{AB}$
- D. line  $\overleftrightarrow{BC}$  bisects line segment  $\overline{AA'}$



16. Which statement is true based on the figure?

- A.  $a \parallel b$
- B.  $b \parallel c$
- C.  $a \parallel c$
- D.  $d \parallel e$



17. Draw two lines and a transversal such that  $\angle 1$  and  $\angle 2$  are alternate interior angles,  $\angle 2$  and  $\angle 3$  are corresponding angles, and  $\angle 3$  and  $\angle 4$  are alternate exterior angles. What type of angle pair is  $\angle 1$  and  $\angle 4$ ?

A.

$\angle 1$  and  $\angle 4$  are supplementary angles

Diagram A shows two horizontal lines, m and n, intersected by a transversal line p. At the intersection with line m, the top-right angle is labeled 4 and the bottom-left angle is labeled 1. At the intersection with line n, the top-left angle is labeled 3 and the top-right angle is labeled 2.

C.

$\angle 1$  and  $\angle 4$  are corresponding angles

Diagram C shows two horizontal lines, m and n, intersected by a transversal line p. At the intersection with line m, the top-left angle is labeled 3 and the bottom-left angle is labeled 1. At the intersection with line n, the top-right angle is labeled 2 and the bottom-left angle is labeled 4.

B.

$\angle 1$  and  $\angle 4$  are vertical angles

Diagram B shows two horizontal lines, m and n, intersected by a transversal line p. At the intersection with line m, the top-left angle is labeled 3 and the bottom-left angle is labeled 2. At the intersection with line n, the top-right angle is labeled 1 and the bottom-left angle is labeled 4.

D.

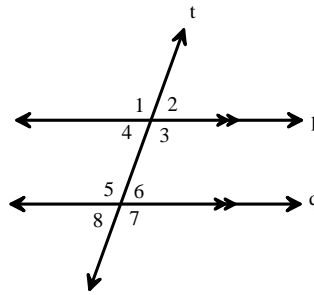
$\angle 1$  and  $\angle 4$  are alternate exterior angles

Diagram D shows two horizontal lines, m and n, intersected by a transversal line p. At the intersection with line m, the top-left angle is labeled 4 and the bottom-right angle is labeled 2. At the intersection with line n, the top-right angle is labeled 1 and the bottom-left angle is labeled 3.

For #18-19 use the following:

Given:  $p \parallel q$

Prove:  $m\angle 3 + m\angle 6 = 180$



Statements	Reasons
$p \parallel q$	Given
<b>18.</b>	Alternate Interior Angles Theorem
$m\angle 3 = m\angle 5$	Definition of Congruence
$m\angle 5 + m\angle 6 = 180$	<b>19.</b>
$m\angle 3 + m\angle 6 = 180$	Substitution Property of Equality

18. Choose one of the following to complete the proof.

- A.  $\angle 4 \cong \angle 5$
- B.  $\angle 2 \cong \angle 8$
- C.  $\angle 3 \cong \angle 6$
- D.  $\angle 3 \cong \angle 5$

19. Choose one of the following to complete the proof.

- A. Vertical Angle Theorem- If two angles are vertical angles, then they have congruent angle measures
- B. Supplemental Angle Theorem- If two angles are supplementary to a third angle then they are congruent
- C. Linear Pair Theorem- If two angles form a linear pair, then the angles are supplementary and their angle measures add to  $180^\circ$
- D. Definition of complementary angles- If two angles are a linear pair, then the angles are complementary and their angle measures add to  $90^\circ$

20. What are the coordinates of the point  $P$  that lies along the directed segment from  $C(-3, -2)$  to  $D(6, 1)$  and partitions the segment in the ratio of 2 to 1?

- A. (0, 3)
- B. (3, 0)
- C. (1.5, 0.5)
- D. (4.5, 1.5)



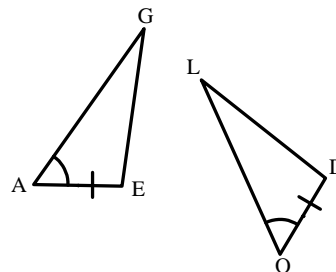
21. An 80 mile trip is represented on a gridded map by a directed line segment from point  $M(3, 2)$  to point  $N(9, 13)$ . What point represents 60 miles into the trip?
- A.  $(8, 14.6)$
  - B.  $(3.75, 9.75)$
  - C.  $(9, 11.25)$
  - D.  $(7.5, 10.25)$
22. Given the two lines below, which statement is true?  
*Line 1:*  $x - 3y = -15$  and *Line 2:*  $y = 3(x + 2) - 1$
- A. The lines are parallel.
  - B. They are the same line.
  - C. The lines are perpendicular.
  - D. The lines intersect but are not perpendicular.
23. Which equation of the line passes through  $(8, 10)$  and is parallel to the graph of the line  $y = \frac{8}{3}x + 7$ ?
- A.  $y = \frac{8}{3}x - \frac{34}{3}$
  - B.  $y = \frac{8}{3}x + \frac{8}{3}$
  - C.  $y = 6x - \frac{34}{3}$
  - D.  $y = 16x + \frac{8}{3}$
24. Which equation of the line passes through  $(4, 7)$  and is perpendicular to the graph of the line that passes through the points  $(1, 3)$  and  $(-2, 9)$ ?
- A.  $y = 2x - 1$
  - B.  $y = \frac{1}{2}x + 5$
  - C.  $y = \frac{1}{2}x - 5$
  - D.  $y = -2x + 15$
25. Which of the following is true?
- A. All triangles are congruent.
  - B. All congruent figures have three sides.
  - C. If two figures are congruent, there must be some sequence of rigid motions that maps one to the other.
  - D. If two triangles are congruent, then they must be right angles.

26. If  $\triangle ABC \cong \triangle DEF$ , which of the following is true?

- A.  $\angle A \cong \angle D, \angle B \cong \angle E, \angle C \cong \angle F$
- B.  $\angle A \cong \angle D, \angle B \cong \angle F, \angle C \cong \angle E$
- C.  $\angle A \cong \angle F, \angle B \cong \angle E, \angle C \cong \angle D$
- D.  $\angle A \cong \angle E, \angle B \cong \angle D, \angle C \cong \angle F$

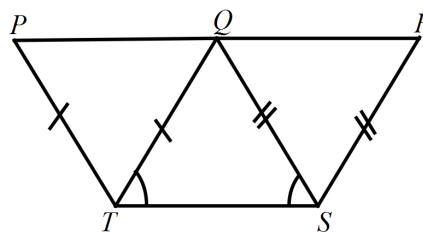
27. In the figure  $\angle GAE \cong \angle LOD$  and  $\overline{AE} \cong \overline{DO}$ . What information is needed to prove that  $\triangle AGE \cong \triangle OLD$  by SAS?

- A.  $\overline{GE} \cong \overline{LD}$
- B.  $\overline{AG} \cong \overline{OL}$
- C.  $\angle AGE \cong \angle OLD$
- D.  $\angle AEG \cong \angle ODL$



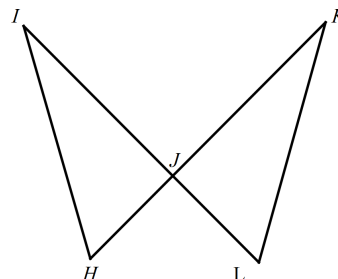
28. Which conclusion can be drawn from the given facts in the diagram?

- A.  $\overline{TQ}$  bisects  $\angle PTS$
- B.  $\angle TQS \cong \angle RQS$
- C.  $\overline{PT} \cong \overline{RS}$
- D.  $TS = PQ$



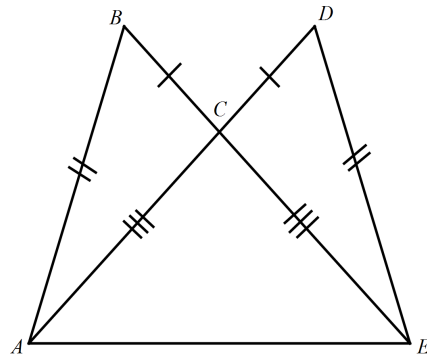
29. In the figure  $\angle H \cong \angle L$  and  $HJ = JL$ . Which of the following statements is about congruence is true?

- A.  $\triangle HIJ \cong \triangle LKJ$  by ASA
- B.  $\triangle HIJ \cong \triangle LKJ$  by SSS
- C.  $\triangle HIJ \cong \triangle LKJ$  by SAS
- D.  $\triangle HIJ \cong \triangle LKJ$  by SAS



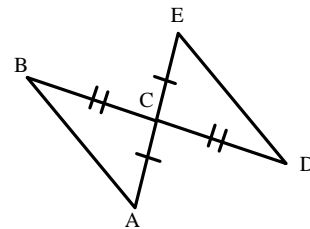
30. Refer To the figure to complete the congruence statement,  $\triangle ABC \cong$  \_\_\_\_\_.

- A.  $\triangle ACE$
- B.  $\triangle EDC$
- C.  $\triangle EAD$
- D.  $\triangle EDA$



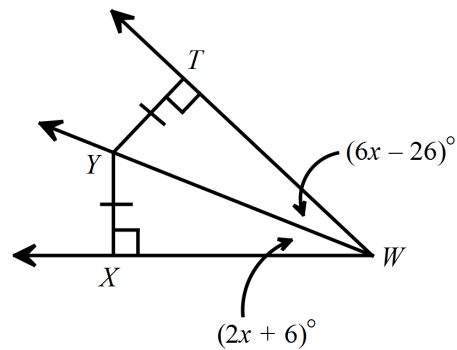
31. Which theorem can be used to conclude that  $\triangle CAB \cong \triangle CED$ ?

- A. SAA
- B. SAS
- C. SSS
- D. AAA



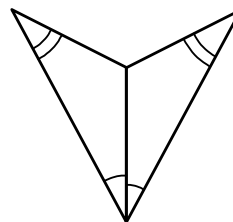
32. In the figure, identify which congruence statement is true. Then find  $m\angle TYW$ .

- A.  $\triangle WTY \cong \triangle WXY$  by HL  
 $m\angle TYW = 22^\circ$
- B.  $\triangle WTY \cong \triangle XYW$  by HL  
 $m\angle TYW = 78^\circ$
- C.  $\triangle YWT \cong \triangle WXY$  by HL  
 $m\angle TYW = 22^\circ$
- D.  $\triangle WTY \cong \triangle WXY$  by HL  
 $m\angle TYW = 68^\circ$



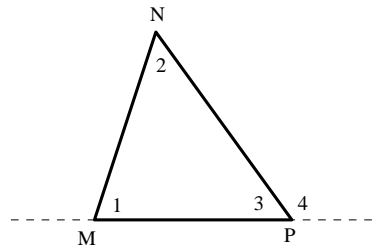
33. Determine which postulate or theorem can be used to prove the pair of triangles congruent.

- A. AAS
- B. SAS
- C. ASA
- D. SSS



34. Given  $\triangle MNP$ , Anna is proving  $m\angle 1 + m\angle 2 = m\angle 4$ . Which statement should be part of her proof?

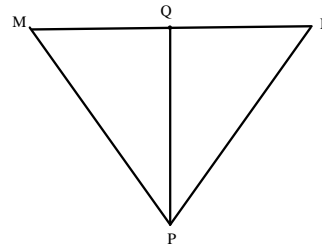
- A.  $m\angle 1 = m\angle 2$
- B.  $m\angle 1 = m\angle 3$
- C.  $m\angle 1 + m\angle 3 = 180^\circ$
- D.  $m\angle 3 + m\angle 4 = 180^\circ$



For #35-36 use the following:

Given:  $Q$  is the midpoint of  $\overline{MN}$ ;  $\angle MQP \cong \angle NQP$

Prove:  $\triangle MQP \cong \triangle NQP$



Statements	Reasons
$Q$ is the midpoint of $\overline{MN}$ ; $\angle MQP \cong \angle NQP$	Given
<b>35.</b>	Definition of Midpoint
$\angle MQP \cong \angle NQP$	Given
$\overline{QP} \cong \overline{QP}$	Reflexive property of congruence
$\triangle MQP \cong \triangle NQP$	<b>36.</b>

35. Choose one of the following to complete the proof.

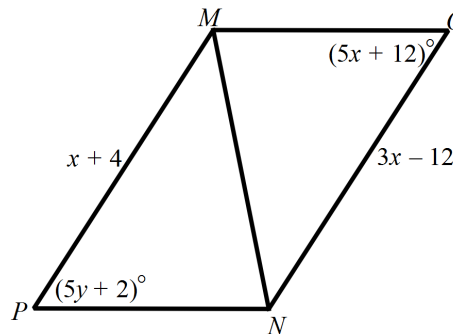
- A.  $\overline{MN} \cong \overline{QP}$
- B.  $\overline{MQ} \cong \overline{NQ}$
- C.  $\overline{MP} \cong \overline{NP}$
- D.  $\overline{QP} \cong \overline{QP}$

36. Choose one of the following to complete the proof.

- A. Reflexive property of equality
- B. SSA Congruence
- C. SAS Congruence
- D. AAS Congruence

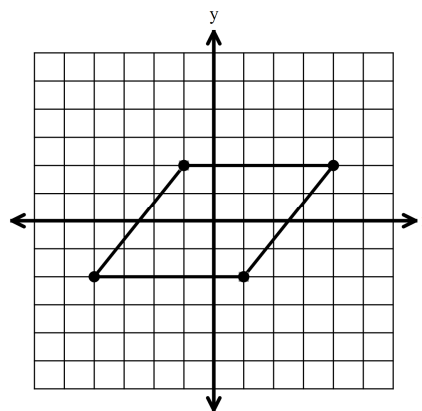
37. In the figure,  $\triangle MON \cong \triangle NPM$ . What is the value of  $y$ ?

- A.  $y = 8$
- B.  $y = 10$
- C.  $y = 42$
- D.  $y = 52$



38. Reflecting over which line will map the rhombus onto itself?

- A.  $y = -2x$
- B.  $y = 0$
- C.  $y = \frac{1}{4}x$
- D.  $y = x$



39. What is the measure of  $HJ$  in Parallelogram  $FGHJ$ , given the following:

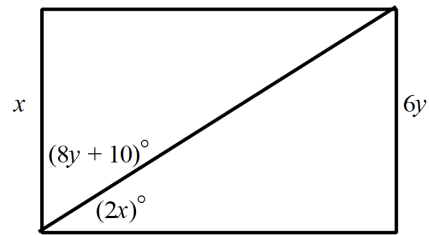
$$\begin{aligned}
 FG &= x + 7 \\
 GH &= 5x + 3 \\
 m\angle F &= 46^\circ \\
 m\angle H &= (3x + 10)^\circ
 \end{aligned}$$

- A.  $HJ = 63$
- B.  $HJ = 19$
- C.  $HJ = 12$
- D.  $HJ = 8$



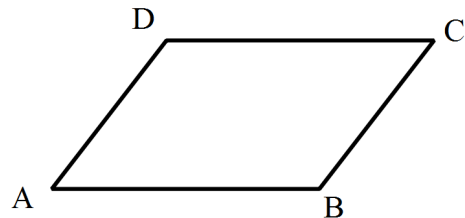
40. What is the value of  $x$  in the rectangle?

- A.  $x = 42$
- B.  $x = 24$
- C.  $x = 8$
- D.  $x = 4$



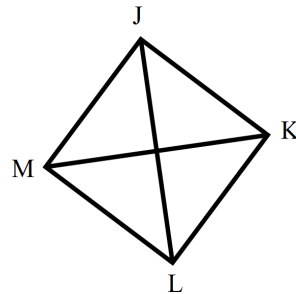
41. Which of the following is NOT always true of Parallelogram  $ABCD$ ?

- A.  $\overline{AB} \cong \overline{BC}, \overline{DC} \cong \overline{BC}$
- B.  $\overline{AB} \cong \overline{DC}, \overline{BC} \cong \overline{AD}$
- C.  $m\angle A + m\angle B = 180^\circ$
- D.  $AB + BC = AD + DC$

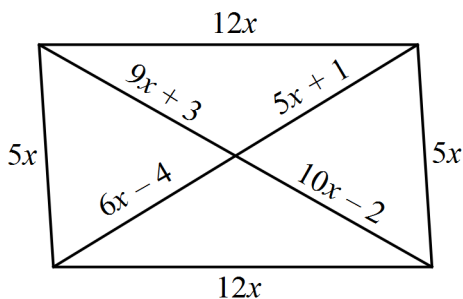


42.  $JKLM$  is a rhombus. If  $m\angle JML = 70^\circ$ , what is the value of  $m\angle JKM$ ?

- A.  $m\angle JKM = 35^\circ$
- B.  $m\angle JKM = 70^\circ$
- C.  $m\angle JKM = 55^\circ$
- D.  $m\angle JKM = 110^\circ$



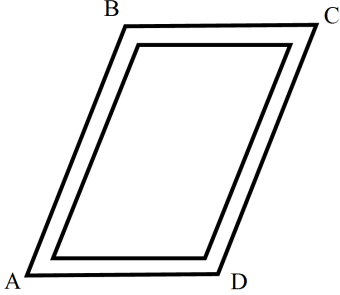
43. Based on the figure below, which statements are true?



- A. I, III, and V
- B. I, IV, and VI

- I. The figure is a rectangle
- II. The figure is a parallelogram
- III.  $6x - 4 = 9x + 3$
- IV.  $9x + 3 = 10x - 2$
- V.  $x = 8$
- VI. The longest side has a length of 60.
- C. II, IV, and VI
- D. II, III, and V

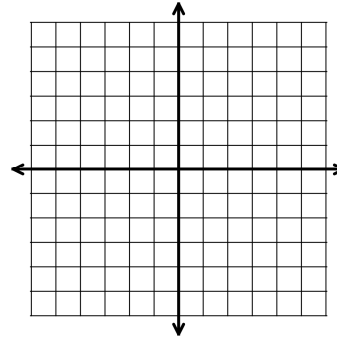
44. A wooden frame has screws at  $A$ ,  $B$ ,  $C$ , and  $D$  so that the sides of it can be pressed to change the angles occurring at each vertex.  $\overline{AB} \cong \overline{CD}$  and  $\overline{AB} \parallel \overline{CD}$ , even when the angles change. Why is the frame always a parallelogram?



- A. The angles always stay the same, so  $ABCD$  is a parallelogram.
- B. All sides are congruent, so  $ABCD$  is a parallelogram.
- C. One pair of opposite sides is congruent and parallel, so  $ABCD$  is a parallelogram.
- D. One pair of opposite sides is congruent, so  $ABCD$  is a parallelogram.
45. Which statement is true?
- A. All quadrilaterals are rectangles.
- B. All rectangles are parallelograms.
- C. All parallelograms are rectangles.
- D. All quadrilaterals are squares.
46. Archeologists use coordinate grids on their dig sites to help document where objects are found. While excavating the site of a large ancient building, archeologists find what they believe to be a wooden support beam that extended across the entire building. One end of the beam was located at the coordinate  $(-13, 12)$  and markings on the beam indicate that the midpoint of the beam was located at  $(2, 4)$ . Assuming the beam is still intact, where should the archeologists begin digging to find the other end of the beam?
- A.  $(-17, 4)$
- B.  $(-7.5, 4)$
- C.  $(-5.5, 8)$
- D.  $(17, -4)$

47. Use slope or the distance formula to determine the most precise name for the figure:  
 $A(-1, -4), B(1, -1), C(4, 1), D(2, -2)$ .

- A. Kite
- B. Rhombus
- C. Trapezoid
- D. Square

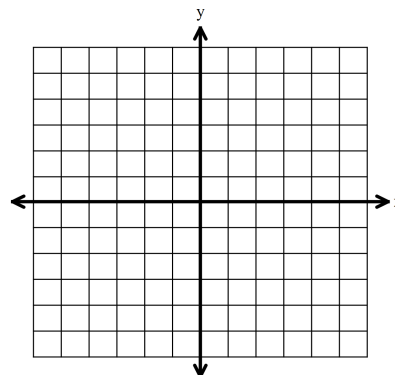


48. Find the distance between the line  $y = 2x - 3$  and the point  $(3, -7)$ .

- A. 4.5 units
- B. 5 units
- C. 10 units
- D. 12.2 units

49. Given points  $B(-3, 3), C(3, 4)$ , and  $D(4, -2)$ . Which of the following points must be point  $A$  in order for the quadrilateral  $ABCD$  to be a parallelogram?

- A.  $A(-2, -1)$
- B.  $A(-1, -2)$
- C.  $A(-2, -3)$
- D.  $A(-3, -2)$



50. Find the area of the polygon with vertices  $A(-8, 1), B(-5, 6), C(4, 2)$ , and  $D(-2, -2)$ .

- A. 44.5 units
- B. 46 units
- C. 48 units
- D. 49.5 units