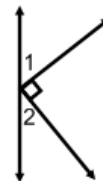


**Geometry with Trigonometry Midterm Review 2018**

**UNIT 1**

1. Use the diagram to the right.  $\angle 1$  and  $\angle 2$  are \_\_\_\_\_ angles.

- A) complementary      B) supplementary      C) congruent  
 D) vertical angles      E) a linear pair



2. If  $\angle P$  and  $\angle R$  are complementary and  $m\angle P = 46^\circ$ , find  $m\angle R$ .

3. Use the transitive property of congruence to complete the statement:

If  $\overline{AB} \cong \overline{XY}$  and  $\overline{XY} \cong \overline{MN}$ , then \_\_\_\_\_.

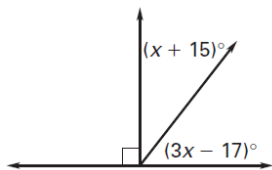
**For #4 -5, find the coordinates of the midpoint.**

4.  $C(2, 9), D(-2, -1)$       5.  $E(-3, -3), F(9, -15)$

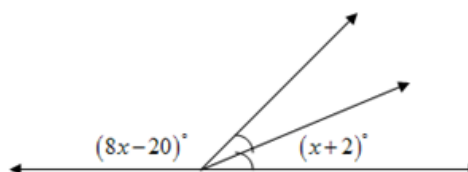
**Complete the following sentences.**

6. The intersection of two lines is a \_\_\_\_\_.  
 7. The intersection of two planes is a \_\_\_\_\_.  
 8. The intersection of a line and a plane is a \_\_\_\_\_.

9. Find the value of  $x$ .



10. Find the value of  $x$ .



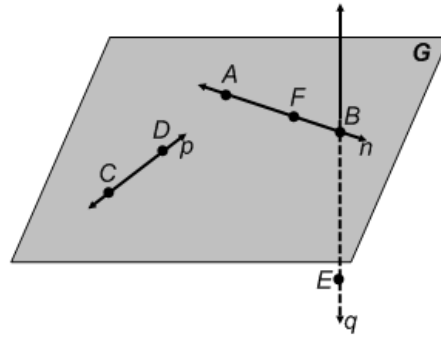
Use the diagram to the right to answer #11-14.

11. What is another name for plane  $G$ ?

12. What is another name for line  $p$ ?

13. Name the intersection of lines  $n$  and  $q$ .

14. Name the opposite ray of  $\overrightarrow{FB}$ .



## UNIT 2

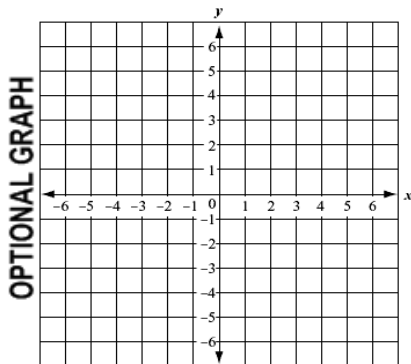
15. a) Find the slope of line parallel to the line passing through the given points.

b) Find the slope of line perpendicular to the line passing through the given points.

a. (1, 1) and (4, 10)

b. (2, 5) and (2, -7).

16. Find the distance of  $\overline{AB}$  when  $A(-4, -1)$  and  $B(2, 3)$ . Leave your answer in simplest radical form, if necessary.

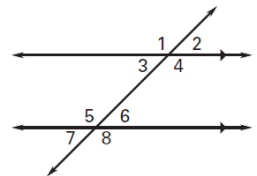


Use the diagram to determine whether the given angles are alternate interior, alternate exterior, corresponding, or consecutive interior angles. Then state whether they are congruent or supplementary.

17.  $\angle 2$  and  $\angle 6$

18.  $\angle 3$  and  $\angle 5$

19.  $\angle 4$  and  $\angle 5$



Decide whether the lines are parallel, perpendicular or neither.

20.  $y = 4x - 3$

21.  $y = 2x + 5$

22.  $y = 5x + 7$

23.  $y = -2x + 4$

$y = 2x - 3$

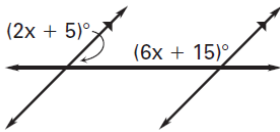
$y = -\frac{1}{2}x + 2$

$y = 5x - 7$

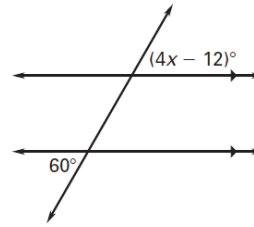
$y = -\frac{1}{2}x - 8$

**Solve for  $x$ .**

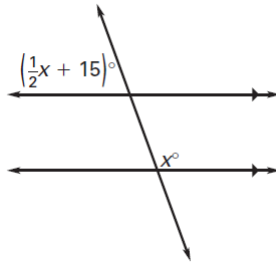
24.



25.



26.

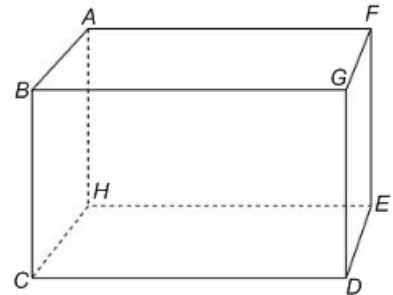


Use the diagram of the rectangular prism below to complete each statement.

27. A segment that appears to be parallel to  $\overline{FE}$ : \_\_\_\_\_

28. A segment that appears to be perpendicular to  $\overline{CD}$ : \_\_\_\_\_

29. A plane that appears to be parallel to plane  $ABC$ : \_\_\_\_\_



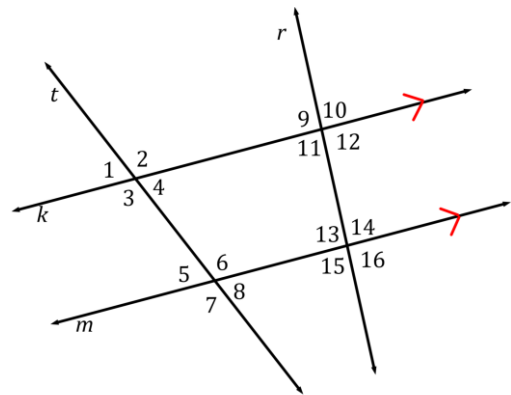
Classify the relationship between each pair of angles as *alternate interior*, *alternate exterior*, *corresponding*, or *consecutive interior angles*.

30.  $\angle 10$  and  $\angle 14$  are \_\_\_\_\_ angles.

31.  $\angle 2$  and  $\angle 7$  are \_\_\_\_\_ angles.

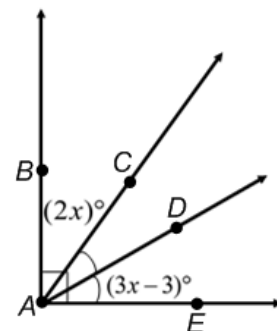
32.  $\angle 4$  and  $\angle 6$  are \_\_\_\_\_ angles.

33.  $\angle 11$  and  $\angle 14$  are \_\_\_\_\_ angles.



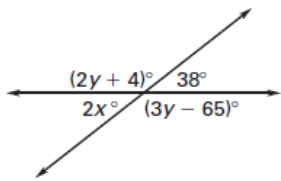
34. Use the diagram to the right. Find the value of  $x$ ,  $m\angle CAD$ , and  $m\angle BAD$ :

$x =$  \_\_\_\_\_       $m\angle CAD =$  \_\_\_\_\_       $m\angle BAD =$  \_\_\_\_\_

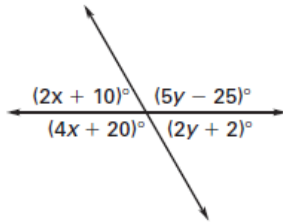


Find the value of  $x$  and  $y$ .

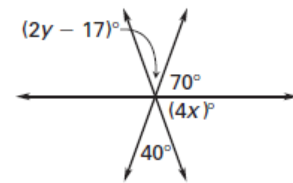
35.



36.



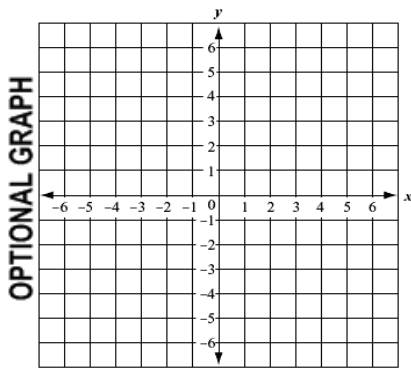
37.



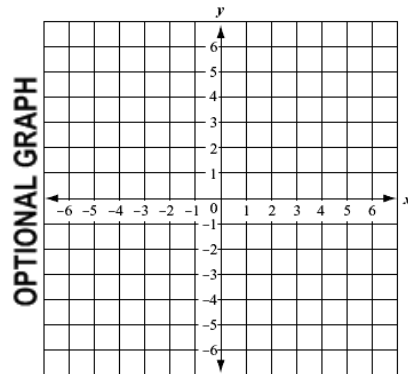
### UNIT 3

38. Point  $P(-2, -4)$  is reflected in the line  $y = -1$ . What are the coordinates of  $P'$ ?

39. Point  $P(-2, -4)$  is reflected in the line  $y$ -axis. What are the coordinates of  $P'$ ?



$P'$  \_\_\_\_\_



$P'$  \_\_\_\_\_

40. Find the image of  $\triangle ABC$  after the transformation described.

Translation:  $(x, y) \rightarrow (x, y + 1)$ ; Reflection: in  $x = 1$ .

$A'$ (     ,     )

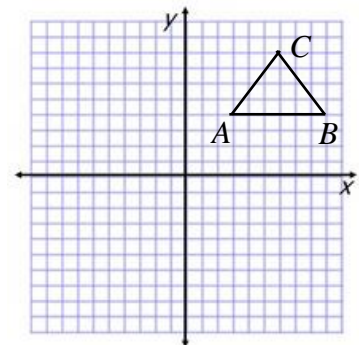
$A''$ (     ,     )

$B'$ (     ,     )

$B''$ (     ,     )

$C'$ (     ,     )

$C''$ (     ,     )



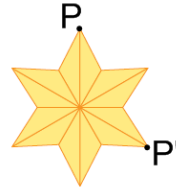
41. Rotate point  $A(-2, 5)$  ...

a.  $90^\circ$  cw about the origin

b.  $180^\circ$  cw about the origin

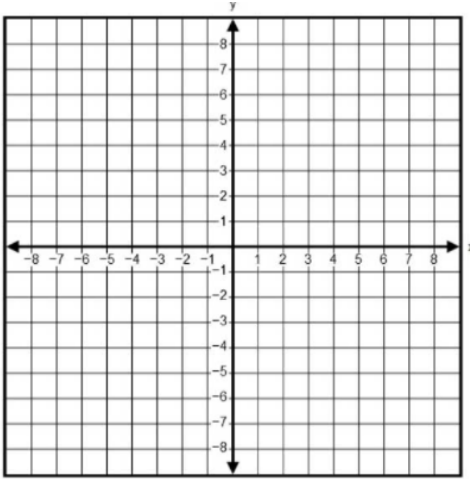
c.  $90^\circ$  ccw about the origin

42. Find the angle of rotation that maps  $P$  onto  $P'$ .

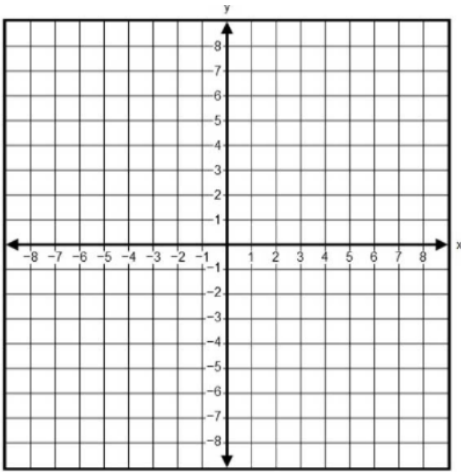


\_\_\_\_\_° cw      \_\_\_\_\_° ccw

43. Rotate  $A(4, 2)$   $90^\circ$  counterclockwise about  $(3, 5)$



44. Rotate  $R(-5, 3)$   $180^\circ$  clockwise about  $(-3, 2)$



## UNIT 4

45. Given  $\triangle ABC \cong \triangle HIJ$ , complete the statements below. Draw a diagram to help.

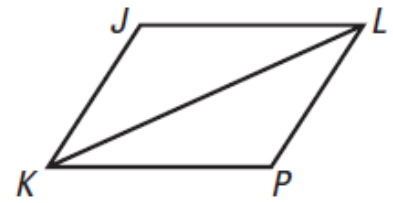
a)  $\angle I \cong \angle$  \_\_\_\_\_

b)  $\overline{CA} \cong$  \_\_\_\_\_

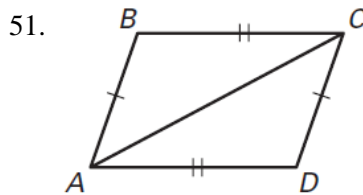
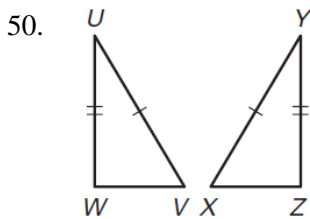
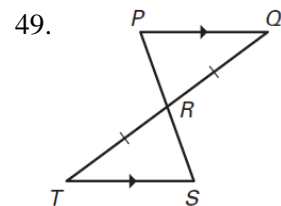
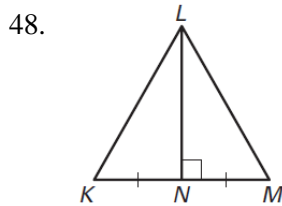
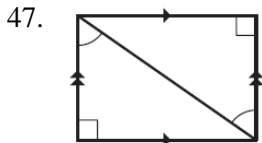
c)  $\triangle HIJ \cong \triangle$  \_\_\_\_\_

46. Use the diagram to the right to complete the following.

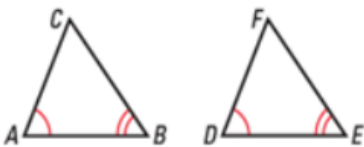
- Name the included side between  $\angle P$  and  $\angle KLP$ . \_\_\_\_\_.
- Name the included angle between  $\overline{JK}$  and  $\overline{JL}$ . \_\_\_\_\_.
- Name the included side between  $\angle JKL$  and  $\angle JLK$ . \_\_\_\_\_.



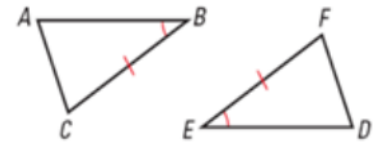
Is it possible to prove the triangles are congruent? Write yes or no. If possible, tell which congruence postulate or theorem you would use (ASA, SAS, AAS, or SSS).



52. To prove these two triangles congruent by ASA,  
it must also be given that \_\_\_\_\_.

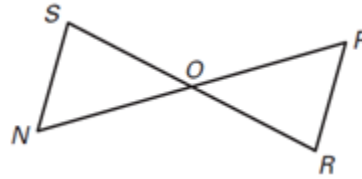


53. To prove these two triangles congruent by AAS,  
it must also be given that \_\_\_\_\_.



54. Complete the proof.

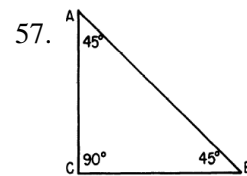
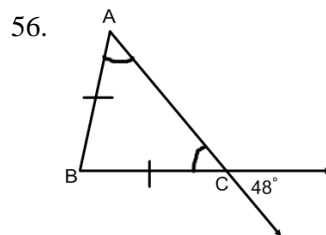
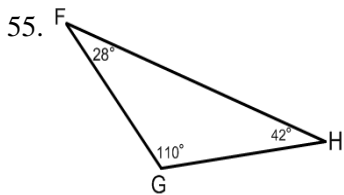
Given:  $O$  is the midpoint of  $\overline{NP}$   
 $\angle N \cong \angle P$   
Prove:  $\overline{SO} \cong \overline{RO}$



Statements	Reasons
1)	1)
2)	2)
3)	3)
4)	4)
5)	5)
6)	6)
7)	7)

**UNIT 5**

Classify the following triangles by angles and sides.



58. The vertices of  $\triangle ABC$  are at  $A(2,3)$ ,  $B(5,1)$ , and  $C(0,-3)$ .

a) Draw a median from vertex  $B$

b) Draw an altitude from vertex  $C$



59. Determine the possible values for  $x$ , if the sides lengths of a triangle are 7 yds., 24 yds., and  $(2x - 1)$  yds.

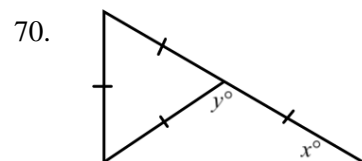
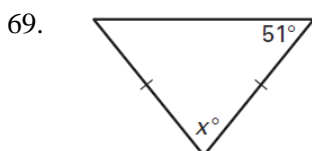
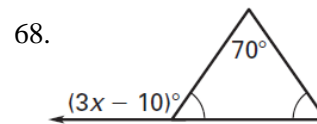
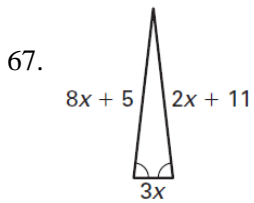
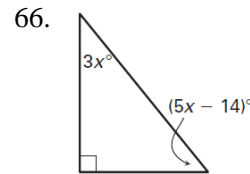
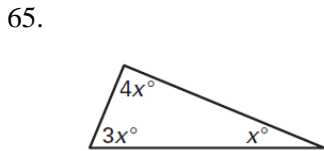
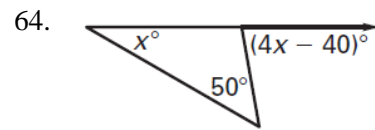
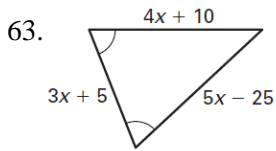
**Determine whether it is possible to draw a triangle with sides of the given lengths. Explain.**

60. 12, 11, 17

61. 1, 2, 3

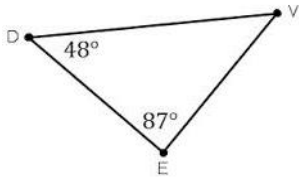
62. 9, 41, 30

**Find the value of  $x$ .**



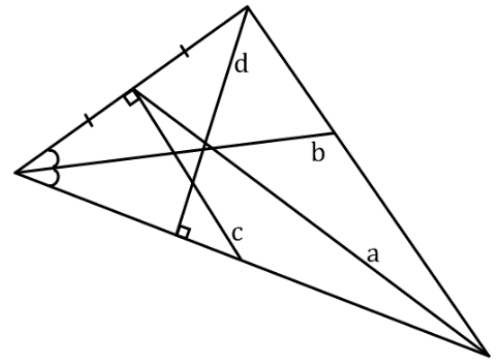


71. List the sides in order from *smallest to largest*.



72. Identify the special segment (perpendicular bisector, angle bisector, altitude, or median).

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_



### Formulas for Coordinate Geometry

<b>Slope</b>	$m = \frac{y_2 - y_1}{x_2 - x_1}$	<ul style="list-style-type: none"> <li>• <math>(x_1, y_1)</math> = a point on the line</li> <li>• <math>(x_2, y_2)</math> = a 2<sup>nd</sup> point on the line</li> <li>• <math>m</math> = rise/run</li> </ul>
<b>Distance</b>	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	<ul style="list-style-type: none"> <li>• <math>(x_1, y_1)</math> = a point on the line</li> <li>• <math>(x_2, y_2)</math> = a 2<sup>nd</sup> point on the line</li> <li>• distance = length of segment</li> </ul>
<b>Midpoint</b>	$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$	<ul style="list-style-type: none"> <li>• <math>(x_1, y_1)</math> = a point on the line</li> <li>• <math>(x_2, y_2)</math> = a 2<sup>nd</sup> point on the line</li> <li>• Hint: Take the <u>average</u>!</li> </ul>
<b>Slope-Intercept Form of a Line</b>	$y = mx + b$	<ul style="list-style-type: none"> <li>• <math>m</math> = slope</li> <li>• <math>b</math> = y-intercept</li> <li>• <math>(x, y)</math> = a point on the line</li> </ul>
<b>Point-Slope Form of a Line</b>	$y - y_1 = m(x - x_1)$	<ul style="list-style-type: none"> <li>• <math>(x_1, y_1)</math> = a point on the line</li> <li>• <math>m</math> = slope</li> <li>• optional to use, but must then change to slope-intercept form</li> </ul>

### Finding the Missing Side Length of a Right Triangle

<b>Pythagorean Theorem</b>	$a^2 + b^2 = c^2$	<ul style="list-style-type: none"> <li>• for <u>right</u> triangles only</li> <li>• must be given 2 of the 3 side lengths</li> <li>• <math>c</math> = length of hypotenuse (side opposite right angle)</li> </ul>
----------------------------	-------------------	---