

Quarter 1 Exam Review

1. Determine the intersection of the following:

Two planes: a line A plane and a line: a point

2. Use the property to complete each statement.

a. **Transitive Property of Congruence:** If $\overline{CJ} \cong \overline{HS}$ and $\overline{HS} \cong \overline{EB}$, then $\overline{CJ} \cong \overline{EB}$

b. **Symmetric Property of Equality:** If $AB = XY$, then $XY =$ AB .

c. **Transitive Property of Equality:** If $AB = CD$ and $CD = EF$, then $AB = EF$.

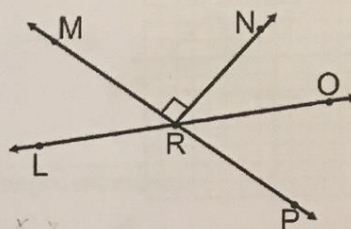
3. Use the diagram to the right to complete the following. **Each letter is a separate problem.**

a. $m\angle NRP =$ 90°

b. If $m\angle LRM = 50^\circ$, then $m\angle NRO =$ 40°

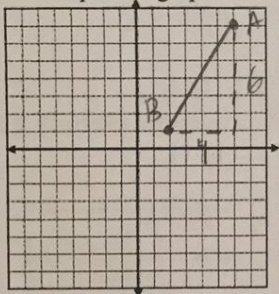
c. If $m\angle LRP = 160^\circ$, then $m\angle NRO =$ 70°

d. If $m\angle ORP = 60^\circ$, then $m\angle MRL =$ 60°



4. Given $A(6, 7)$ and $B(2, 1)$, find AB .

optional graph



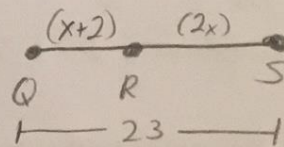
$$\begin{aligned} a^2 + b^2 &= c^2 \\ 4^2 + 6^2 &= c^2 \\ 16 + 36 &= c^2 \\ 52 &= c^2 \\ c &= \sqrt{52} \Rightarrow c = 2\sqrt{13} \\ AB &= \underline{2\sqrt{13}} \end{aligned}$$

$$\begin{aligned} & \begin{matrix} (6, 7) & (2, 1) \\ x_1, y_1 & x_2, y_2 \end{matrix} \\ d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(1 - 6)^2 + (2 - 7)^2} \\ &= \sqrt{(-6)^2 + (-5)^2} \\ &= \sqrt{36 + 25} \\ &= \sqrt{61} = 2\sqrt{13} \end{aligned}$$

5. Given R is between Q and S , $QR = (x + 2)$ in., $RS = (2x)$ in., and $QS = 23$ in., find the value of x .

$$\begin{aligned} x + 2 + 2x &= 23 \\ 3x + 2 &= 23 \\ 3x &= 21 \\ x &= 7 \end{aligned}$$

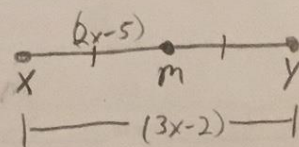
$x =$ 7



6. Suppose M is the midpoint of \overline{XY} . If $XY = (3x - 2)$ ft. and $XM = (2x - 5)$ ft., find MY .

$$\begin{aligned} 2(2x - 5) &= 3x - 2 & MY &= 2(8) - 5 \\ 4x - 10 &= 3x - 2 & &= 16 - 5 \\ x &= 8 & &= 11 \end{aligned}$$

$MY =$ 11 ft



7. Given \overline{RT} is the angle bisector of $\angle QRS$ with $\angle TRS = (6x+6)^\circ$ and $\angle QRT = (4x+8)^\circ$ find x and $m\angle QRS$.

$$4x+8 = 6x+6$$

$$2 = 2x$$

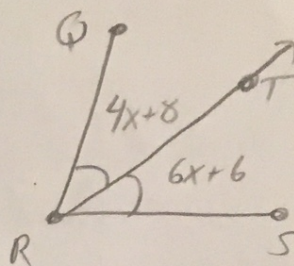
$$x = 1$$

$$m\angle QRS = 2[4x+8]$$

$$= 2[4(1)+8]$$

$$= 2[12]$$

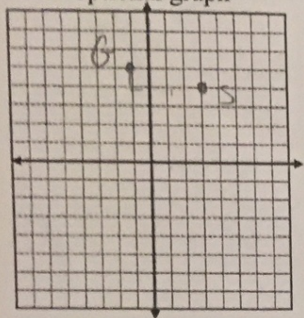
$$= 24$$



$x = \underline{1}$ $m\angle QRS = \underline{24^\circ}$

8. Gary and Sally are meeting at the mall. If Sally's house is located at $(3, 4)$, Gary's house is located at $(-1, 5)$, and the mall is halfway between them, find the coordinates of the mall's location.

optional graph



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

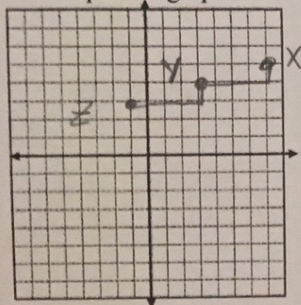
$$M\left(\frac{3+(-1)}{2}, \frac{4+5}{2}\right)$$

$$M\left(\frac{2}{2}, \frac{9}{2}\right)$$

$$M(1, 4.5)$$

9. Given $X(7, 5)$ and $Y(3, 4)$, find the coordinate of the missing endpoint if Y is the midpoint of \overline{XZ} .

optional graph



Use the graph:

$$Z(-1, 3)$$

or

Use Midpoint Formula:

$$X(7, 5) \quad Z(x_2, y_2) \quad Y(3, 4)$$

$$\frac{x_1+x_2}{2} = 3$$

$$\frac{y_1+y_2}{2} = 4$$

$$\frac{7+x_2}{2} = 3$$

$$\frac{5+y_2}{2} = 4$$

$$7+x_2 = 6$$

$$x_2 = -1$$

$$5+y_2 = 8$$

$$y_2 = 3$$

$$(-1, 3)$$

10. The measure of the complement of an angle is three more than two times the angle. Find the measure of each angle.

the \angle : x

Complement: $2x+3$

add to 90°

$$x + 2x + 3 = 90$$

$$3x + 3 = 90$$

$$3x = 87$$

$$x = 29$$

$$2(29) + 3 = 61$$

The angle measures 29° & its complement measures 61°

11. Find x and y for the diagram to the right.

$$3x = 45 \leftarrow \text{vertical angles}$$

$$x = 15$$

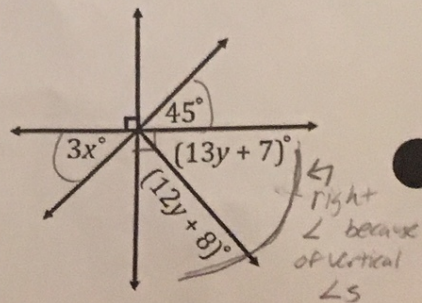
$$13y + 7 + 12y + 8 = 90$$

$$25y + 15 = 90$$

$$25y = 75$$

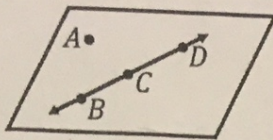
$$y = 3$$

$x = \underline{15}$ $y = \underline{3}$



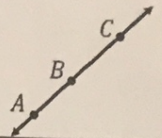
a. the plane

Plane ABD

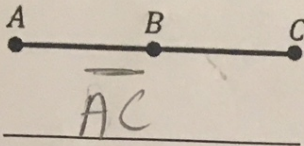


b. the line

AB

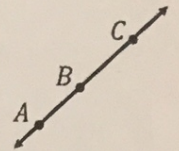


c. the segment



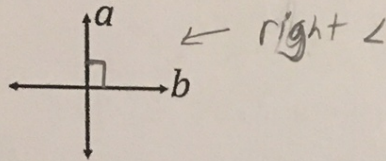
d. a pair of opposite rays.

BC and BA



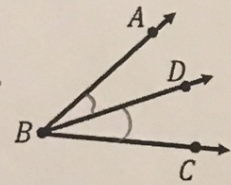
13. Mark the diagram given the following information.

a. $a \perp b$

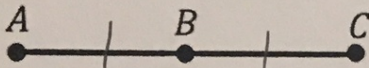


b. \overline{BD} bisects $\angle ABC$

2 \cong \angle s

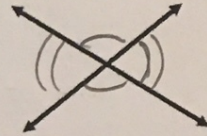


c. B is the midpoint of \overline{AC}



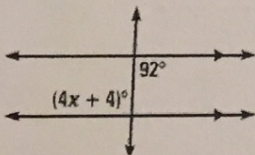
2 \cong segments

d. Mark the congruent angles.



Vertical \angle s are \cong

14. Find the value of x. Then justify by completing the if-then statement.



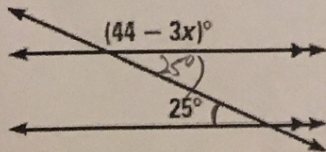
$$4x + 4 = 92$$

$$4x = 88$$

$$x = 22$$

x = 22; If 2 || lines cut by transversal then alt. interior \angle s are \cong

15. Find the value of x. Then justify by completing the if-then statements.



$$25 + 44 - 3x = 180$$

$$69 - 3x = 180$$

$$-3x = 111$$

$$x = -37$$

x = -37; If 2 || lines cut by transversal then alt int. \angle s are \cong

If 2 \angle s form a linear pair then they are supplementary

16. For each of the following, determine whether the following lines are parallel, perpendicular, or neither.

a) $y - 5 = \frac{3}{4}(x + 2)$

$$\frac{4y}{4} = \frac{3x}{4} + \frac{10}{4}$$

$$y = \frac{3}{4}x + \frac{5}{2}$$

|| (same slope; $m = \frac{3}{4}$)

b) line a passes through (2, -6) and (4, 10)

line b passes through (-4, 3) and (4, 2)

a: $m = \frac{10 - (-6)}{4 - 2} = \frac{16}{2} = 8$

b: $m = \frac{2 - 3}{4 - (-4)} = -\frac{1}{8}$

⊥ ; slopes are opposite reciprocals

c) $y = -4x - 5$

$$y - 2 = -\frac{1}{4}(x - 4)$$

neither

17. Write the equation in slope-intercept form of the line parallel to $y = \frac{2}{3}x + 2$ through (-6, 2).

|| $m = \frac{2}{3}$

$$y - 2 = \frac{2}{3}(x - (-6))$$

(-6, 2)

$$y - 2 = \frac{2}{3}(x + 6)$$

$$y - 2 = \frac{2}{3}x + 4$$

$$y = \frac{2}{3}x + 6$$

18. Write the equation in slope-intercept form of the line perpendicular to $y = 2x - 1$ that passes through (4, 5).

⊥ $m = -\frac{1}{2}$

$$y - 5 = -\frac{1}{2}(x - 4)$$

(4, 5)

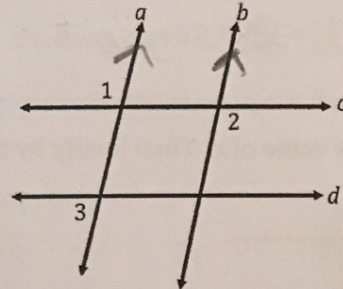
$$y - 5 = -\frac{1}{2}x + 2$$

$$y = -\frac{1}{2}x + 7$$

19. Complete the following proof.

Given: $\angle 2 \cong \angle 3$
 $a \parallel b$

Prove: $\angle 1 \cong \angle 3$



Statements	Reasons
1. $a \parallel b$	1. Given
2. $\angle 1$ and $\angle 2$ are alternate exterior angles.	2. Given by diagram
3. $\angle 1 \cong \angle 2$	3. If 2 lines cut by transversal, then alt. exterior \angle s are \cong
4. $\angle 2 \cong \angle 3$	4. Given
5. $\angle 1 \cong \angle 3$	5. Transitive POC