

Geometry CH 3 Review

Name _____ Hr. _____

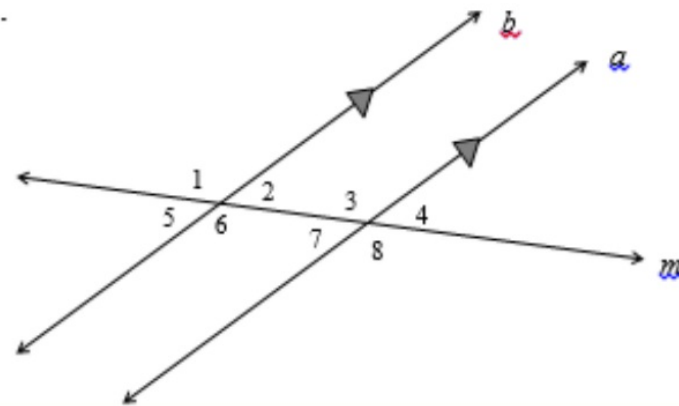
1. In the following diagram, give an example of...

a.) alternate interior angles $\angle 2$ and $\angle 7$

b.) alternate exterior angles $\angle 1$ and $\angle 8$

c.) consecutive interior angles $\angle 2$ and $\angle 3$

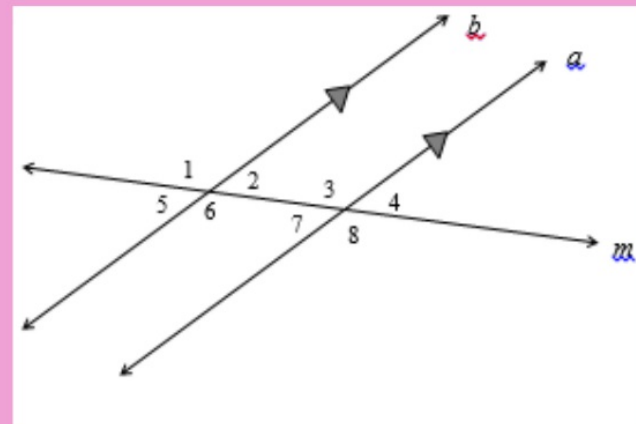
d.) corresponding angles $\angle 2$ and $\angle 4$



Use the Diagram from #1 for 2 and 3.

2. a. In the diagram for number 1, what is line m called? TRANSVERSAL!
- b. If $a \parallel b$, then $\angle 6 \cong \angle 3$ because Alt. Interior \angle 's THM.
- c. If $a \parallel b$, then $\angle 5 \cong \angle 4$ because Alt. Exterior \angle 's THM.
- d. If $a \parallel b$, then $\angle 6 \cong \angle 8$ because Corresponding \angle 's THM.
- e. If $a \parallel b$, then $\angle 2 + \angle 3 = 180$ because "SAME SIDE" INTERIOR \angle 's THM.
- f. $\angle 6 \cong \angle 1$ because VERTICAL \angle 's

3. a. $\angle 2 \cong \angle 7$, therefore $a \parallel b$ because Alt. Interior \angle 's CONVERSE.
- b. $\angle 2 \cong \angle 4$, therefore $a \parallel b$ because Corresponding \angle 's CONVERSE
- c. $\angle 5 \cong \angle 4$, therefore $a \parallel b$ because Alt. Exterior \angle 's CONVERSE
- d. $\angle 6$ and $\angle 7$ are supplementary, therefore $a \parallel b$ because Same Side Interior \angle 's CONVERSE



4. In the following diagram,

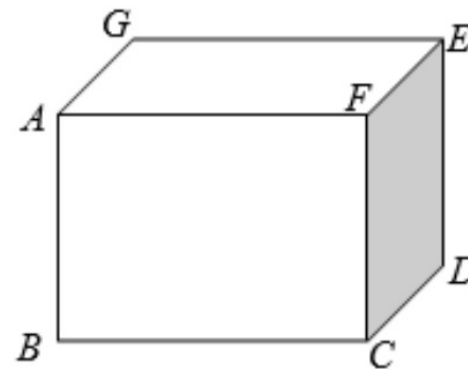
a.) give an example of parallel line segments.

$$AG \parallel FE \parallel CD$$

b.) give an example of perpendicular line segments.

$$AF \perp FC$$

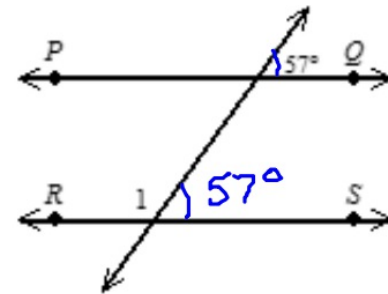
c.) give an example of skew line segments. $AG \parallel FC$
 $AG \parallel ED$



5. Find $m\angle 1$ in the figure at the right. \overleftrightarrow{PQ} and \overleftrightarrow{RS} are parallel.

$$m\angle 1 + 57 = 180 \quad (\text{Linear Pair!})$$
$$\quad -57 \quad -57$$

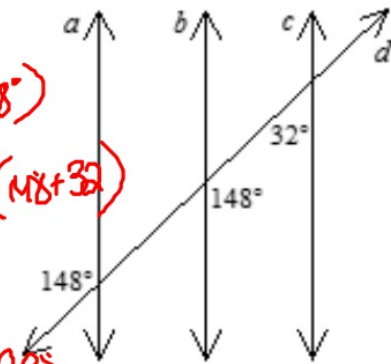
$$m\angle 1 = 123^\circ$$



6. Which lines, if any, can be proved parallel given the following diagram?

For each conclusion, provide the justification.

- 1) $a \parallel b$ Alt. Exterior \angle 's Converse (148°)
- 2) $b \parallel c$ Same Side Interior \angle 's Converse ($148^\circ + 32^\circ$)
- 3) $a \parallel c$ Transitive Prop of Parallel Lines



7. Are the following lines parallel, perpendicular, or neither? Explain your answer.

a.) $y = -\frac{1}{3}x + 2$ and $y = -\frac{1}{3}x - 2$. Parallel (Same slope)

b.) $y = -\frac{2}{3}x + 2$ and $y = \frac{3}{2}x - 2$. Perpendicular (opposite reciprocals)

c.) **Line 1** passes through $(-9, -8)$ and $(-4, -4)$

Line 2 passes through $(-7, -2)$ and $(-11, 3)$

$$m_1 = \frac{-4 - (-8)}{-4 - (-9)} = \frac{4}{5} \checkmark \quad m_2 = \frac{3 - (-2)}{-11 - (-7)} = \frac{5}{-4} = -\frac{5}{4} \checkmark \quad \text{Perpendicular!}$$

8. Write the equation of the line that is parallel to $y = \frac{1}{3}x - 3$ and passes through the point (6, 2).

$$y - 2 = \frac{1}{3}(x - 6)$$

$$m = \frac{1}{3}$$

$$\begin{array}{r} y - 2 = \frac{1}{3}x - 2 \\ +2 \qquad +2 \end{array}$$

$$\boxed{y = \frac{1}{3}x}$$

9. Write the slope-intercept form of the equation of the line passing through the point (3, -5) and

perpendicular to the line $y = \frac{1}{4}x + 1$.

$$m = -4$$

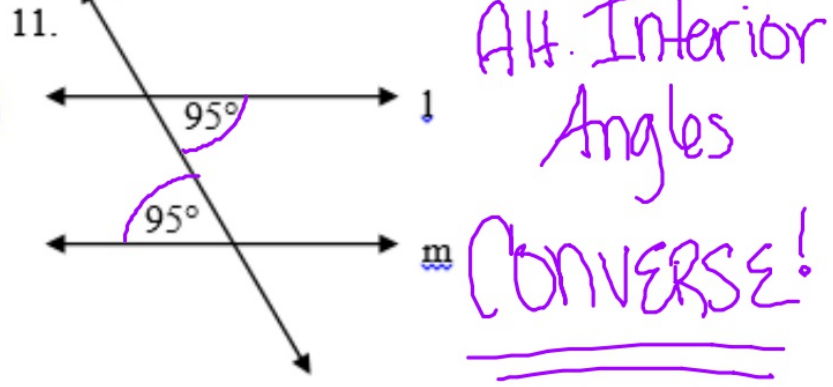
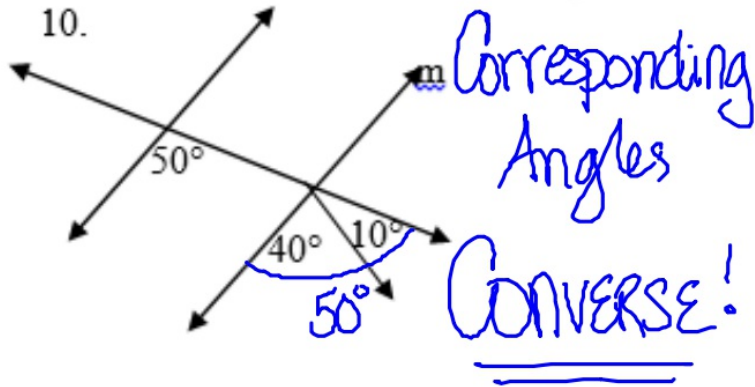


$$y - (-5) = -4(x - 3)$$

$$\begin{array}{r} y + 5 = -4x + 12 \\ -5 \qquad -5 \end{array}$$

$$\boxed{y = -4x + 7}$$

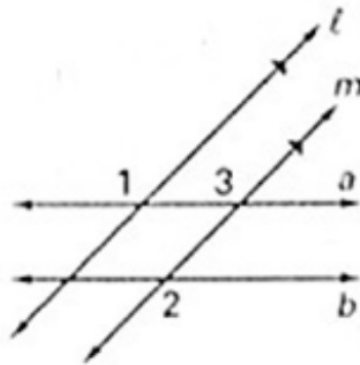
State the Postulate or Theorem you would use to prove that lines l and m are parallel.



12. Complete the two-column proof.

Given: $\ell \parallel m$, $\angle 1 \cong \angle 2$

Prove: $a \parallel b$



Statements

Reasons

1. $\ell \parallel m$

1. GIVEN

2. $\angle 1 \cong \angle 3$

2. Corresponding \angle 's

3. $\angle 1 \cong \angle 2$

3. GIVEN

4. $\angle 2 \cong \angle 3$

4. Transitive Prop.

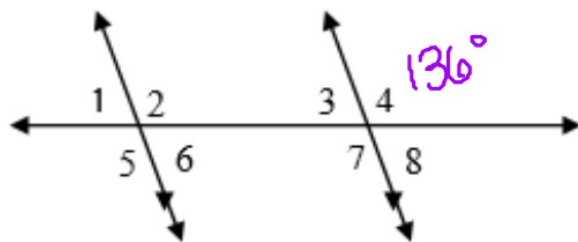
5. $a \parallel b$

5. Alt. Exterior \angle 's

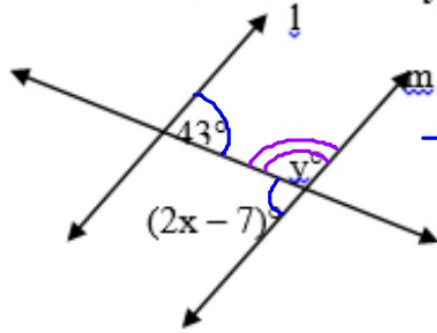
CONVERSE

Use the figure at the right to find each measure, given that $m\angle 4 = 136^\circ$.

13. $m\angle 2 = \underline{136^\circ}$
14. $m\angle 5 = \underline{136^\circ}$
15. $m\angle 6 = \underline{44^\circ}$
16. $m\angle 8 = \underline{44^\circ}$

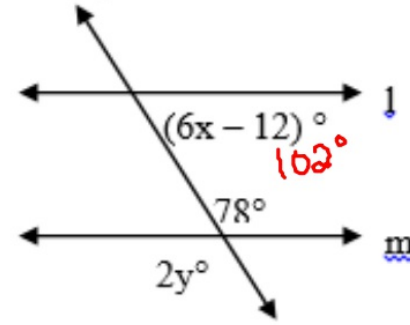


Find the value of x and y, given that lines l and m are parallel.



$$\begin{aligned} 2x - 7 &= 43 \\ +7 & \quad +7 \\ \hline 2x &= 50 \\ \frac{2x}{2} & \quad \frac{50}{2} \\ x &= 25 \end{aligned}$$

18. $x = \underline{25}$ $y = \underline{137^\circ}$ $180 - 43 = 137^\circ$



$$\begin{aligned} 2y &= 78 \\ \frac{2y}{2} & \quad \frac{78}{2} \\ y &= 36 \end{aligned}$$

$$\begin{aligned} 6x - 12 &= 102 \\ +12 & \quad +12 \\ \hline 6x &= 114 \\ \frac{6x}{6} & \quad \frac{114}{6} \end{aligned}$$

$$x = 19$$

19. $x = \underline{19}$ $y = \underline{36}$

20. Find the slope of the line that passes through the points A and B below. Use the slope formula.

$$m = \frac{1 - 5}{7 - (-1)} = \frac{-4}{8} = \boxed{-\frac{1}{2}}$$

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