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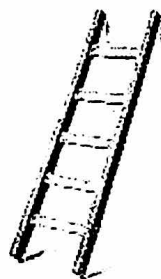
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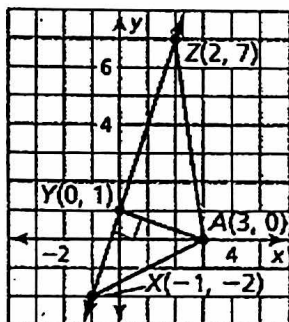
HW #3-10: Test Review

1. Each rung of the ladder is parallel to the rung directly above it. Explain why the top rung is parallel to the bottom rung.



All of the rungs are parallel to each other by the Trans. prop. of $\parallel$ Lines

2. Find the shortest distance from point A to $\overline{XZ}$.



$$AY^2 = 1^2 + 3^2$$

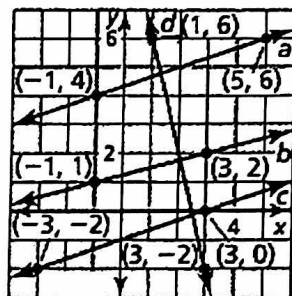
$$AY^2 = 1 + 9$$

$$\sqrt{AY^2} = \sqrt{10} \longrightarrow$$

$$AY = \pm\sqrt{10}$$

$$\boxed{AY = \sqrt{10}}$$

3. Determine which lines are parallel and which line are perpendicular.



$$a: \frac{2}{6} = \frac{1}{3}$$

$$d: \frac{-8}{2} = -4$$

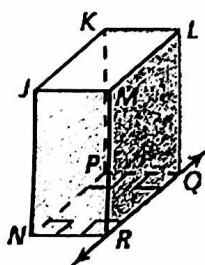
$$b: \frac{1}{4}$$

$$\boxed{a \parallel c}$$

$$c: \frac{2}{6} = \frac{1}{3}$$

$$\boxed{b \perp d}$$

4. Think of each segment in the figure as a line. Which line(s) or plane(s) appear to fit the description?



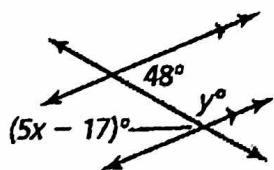
- a. line(s) perpendicular to $\overline{QR}$ $\overleftrightarrow{NR}$ or $\overleftrightarrow{QP}$

- b. Line(s) skew to $\overline{QR}$ $\overleftrightarrow{JM}$ or $\overleftrightarrow{KP}$

- c. Line(s) parallel to $\overline{QR}$ $\overleftrightarrow{LM}$ or $\overleftrightarrow{PN}$

- d. Plane(s) parallel to plane LMQ plane KJN

5. Find the values of x and y.



$$48 = 5x - 17$$

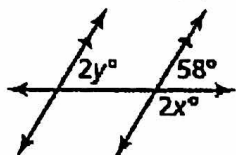
$$65 = 5x$$

$$\boxed{13 = x}$$

$$48 + y = 180$$

$$\boxed{y = 132}$$

6. Find the values of x and y .



$$2x + 58 = 180$$

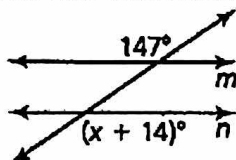
$$2x = 122$$

$$x = 61$$

$$2y = 58$$

$$y = 29$$

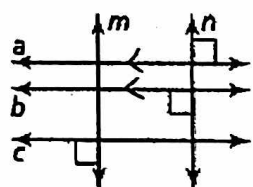
7. Find the value of x that makes $m \parallel n$.



$$x + 14 = 147$$

$$x = 133$$

8. Determine which lines, if any, must be parallel.



$a \parallel b$ only

9. Write an equation of the line passing through the given point that is parallel to the given line.

$A(3, -1) \dots y = \frac{1}{3}x + 10$

$\parallel$ slope: $\frac{1}{3}$

$$y - y_1 = m(x - x_1)$$

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

$$y + 1 = \frac{1}{3}x - 1$$

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

10. Write an equation of the line passing through the given point that is perpendicular to the given line.

$A(-1, 5) \dots y = \frac{1}{7}x + 4$

$\perp$ slope: -7

$$y - y_1 = m(x - x_1)$$

$$y - 5 = -7(x - (-1))$$

$$y - 5 = -7(x + 1)$$

$$y - 5 = -7x - 7 \rightarrow$$

$$y = -7x - 2$$

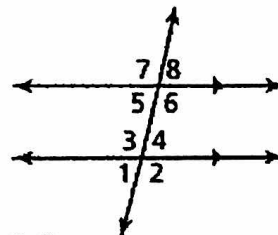
11. Select the angle that makes the statement true.

a. $\angle 4 \cong \angle 5$ by the Alternate Interior Angles Theorem (Thm. 3.2).

b. $\angle 2 \cong \angle 6$ by the Corresponding Angles Theorem (Thm. 3.1).

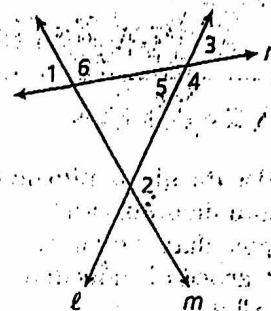
c. $\angle 1 \cong \angle 8$ by the Alternate Exterior Angles Theorem (Thm. 3.3).

d. $m\angle 6 + m\angle 4 = 180^\circ$ by the Consecutive Interior Angles Theorem (Thm. 3.4).



12. Identify the transversal and classify each angle pair

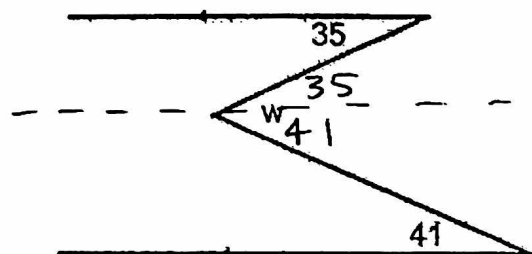
- $\angle 5$ and $\angle 2$ alt. int. $\angle$ s; transv. is l
- $\angle 6$ and $\angle 3$ corresp. $\angle$ s; transv. is n
- $\angle 2$ and $\angle 4$ consec. int. $\angle$ s; transv. is l
- $\angle 1$ and $\angle 2$ alt. ext. $\angle$ s; transv. is n



13. Use the slope formula to find the slope of the line: $A(-3, 2)$, $B(4, 1)$

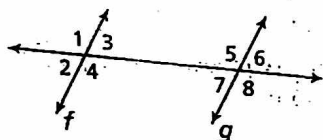
$$m = \frac{1-2}{4-(-3)} = \boxed{-\frac{1}{7}}$$

14. Solve for w .



$$\boxed{w = 76}$$

15. In the diagram, $m\angle 4 = 110^\circ$ and $f \parallel g$. Identify three numbered angles that have a measure of 110° .



$$m\angle 1 = 110^\circ \leftarrow \text{vertical to } \angle 4$$

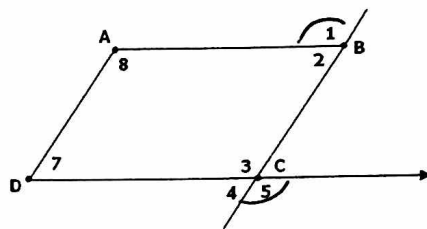
$$m\angle 5 = 110^\circ \leftarrow \text{alt. int. w/ } \angle 4$$

$$m\angle 8 = 110^\circ \leftarrow \text{corresp. w/ } \angle 4$$

16. Complete the two-column proof.

Given: $\angle 1 \cong \angle 5$

Prove: $m\angle 7 + m\angle 8 = 180^\circ$

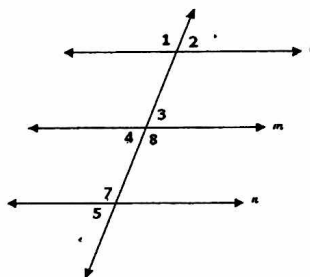


Statements	Reasons
1. $\angle 1 \cong \angle 5$	1. Given
2. $\overline{AB} \parallel \overline{CD}$	2. alt. ext. $\angle$ s $\cong \rightarrow \parallel$
3. $m\angle 7 + m\angle 8 = 180^\circ$	3. $\parallel \rightarrow$ consec. int. $\angle$ s supp

17. Complete the two-column proof.

Given: $l \parallel m$ and $\angle 2 \cong \angle 5$

Prove: $\angle 5$ and $\angle 8$ are supplementary



Statements	Reasons
1. $\angle 2 \cong \angle 5$	1. Given
2. $l \parallel n$	2. alt. ext. $\angle$ s $\cong \rightarrow \parallel$
3. $l \parallel m$	3.
4. $m \parallel n$	4. transitive property of parallel lines
5. $\angle 5$ and $\angle 8$ are supplementary	5. def. supp $\angle$ s

need more opps!

S	R
⑤ alt. int. $\angle$s $\cong$ $\angle 7 \cong \angle 8$	⑤ $\parallel \rightarrow$ alt. int. $\angle$ s $\cong$
⑥ $m\angle 7 + m\angle 5 = 180$	⑥ lin pair $\rightarrow$ supp
⑦ $m\angle 7 = m\angle 8$	⑦ $\angle \leftrightarrow \cong$
⑧ $m\angle 8 + m\angle 5 = 180$	⑧ subst. prop. =
⑨ alt. int. $\angle$s $\cong$	