

Use the diagram for Exercises 35-40.

35. Name a pair of alternate interior angles with transversal n . $\angle 5 \cong \angle 8$

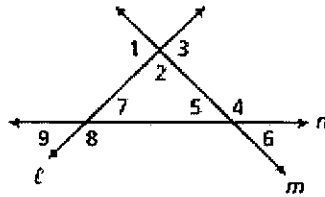
36. Name a pair of same-side interior angles with transversal l . $\angle 7 \cong \angle 2$

37. Name a pair of corresponding angles with transversal m . $\angle 3 \cong \angle 6$, $\angle 1 \cong \angle 5$

38. Identify the transversal and classify the angle pair for $\angle 3$ and $\angle 7$. l ; corresponding \angle s

39. Identify the transversal and classify the angle pair for $\angle 5$ and $\angle 8$. n ; alternate interior \angle s

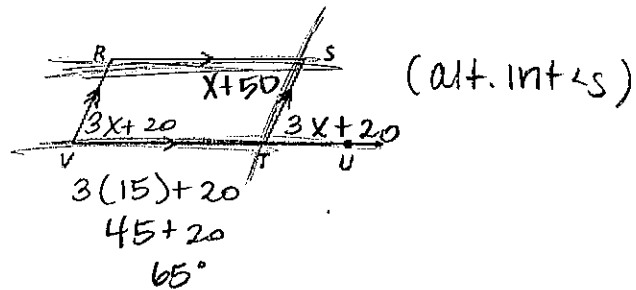
40. Identify the transversal and classify the angle pair for $\angle 1$ and $\angle 6$. m ; alternate exterior \angle s



34. $m\angle RST = (x + 50)^\circ$, and $m\angle STU = (3x + 20)^\circ$. Find $m\angle RVT$.

- (A) 15° (B) 27.5°
 (C) 65° (D) 77.5°

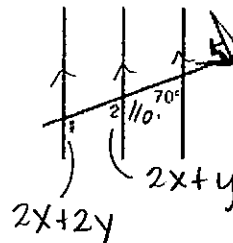
$$\begin{aligned} x + 50 &= 3x + 20 \\ 50 &= 2x + 20 \\ 30 &= 2x & \quad x &= 15 \end{aligned}$$



6. Ocean waves move in parallel lines toward the shore. The figure shows Sandy Beaches windsurfing across several waves. For this exercise, think of Sandy's wake as a line. $m\angle 1 = (2x + 2y)^\circ$ and $m\angle 2 = (2x + y)^\circ$. Find x and y .

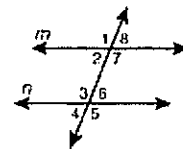
$$\begin{cases} 2x + 2y = 110 \\ 2x + y = 70 \end{cases} \rightarrow y = -2x + 70$$

$x = 15$
 $y = 40$



$$\begin{aligned} 2x + 2(-2x + 70) &= 110 \\ 2x - 4x + 140 &= 110 \\ -2x + 140 &= 110 \\ -2x &= -30 \\ x &= 15 \end{aligned}$$

Use the figure for Exercises 1-8. Tell whether lines m and n must be parallel from the given information. If they are, state your reasoning. (Hint: The angle measures may change for each exercise, and the figure is for reference only.)



1. $\angle 7 \cong \angle 3$ **YES** - conv. of alt int alt. int. \angle s \angle s Thm

2. $m\angle 3 = (15x + 22)^\circ$, $m\angle 1 = (19x - 10)^\circ$, $x = 8$ **YES** Conv. of corr. \angle s Post.

$$\begin{aligned} m\angle 3 &= 15(8) + 22 = 142^\circ \\ m\angle 1 &= 19(8) - 10 = 142^\circ \end{aligned}$$

3. $\angle 7 \cong \angle 6$ **NO** - same side int \angle s are not \cong - should be supp. \angle s.

4. $m\angle 2 = (5x + 3)^\circ$, $m\angle 3 = (8x - 5)^\circ$, $x = 14$ **YES** - conv. of same side interior \angle s

$$\begin{aligned} m\angle 3 &= m\angle 1 \\ \angle 3 &\cong \angle 1 \\ \text{corr. } \angle \text{s} \end{aligned}$$

5. $m\angle 8 = (6x - 1)^\circ$, $m\angle 4 = (5x + 3)^\circ$, $x = 9$ **NO** - $\angle 8 \not\cong \angle 4$ alt. ext. \angle s are \cong .

6. $\angle 5 \cong \angle 7$ **YES** - conv. of corr. \angle s Post.

$$\begin{aligned} m\angle 2 &= 5(14) + 3 = 73^\circ \\ m\angle 3 &= 8(14) - 5 = 107^\circ \\ m\angle 2 + m\angle 3 &= 180^\circ \\ \text{supp. } \angle \text{s} \end{aligned}$$

7. $\angle 1 \cong \angle 5$ **YES** - conv. of alt. ext \angle s

8. $m\angle 6 = (x + 10)^\circ$, $m\angle 2 = (x + 15)^\circ$ alt. int. \angle s **NO** - angles can never be congruent. $x + 10 = x + 15$ $10 \neq 15$

$$\begin{aligned} m\angle 8 &= 6(9) - 1 = 53^\circ \\ m\angle 4 &= 5(9) + 3 = 48^\circ \\ m\angle 8 &\neq m\angle 4 \end{aligned}$$

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1. $\overline{AE} \perp \overline{AB}$
2. $\overline{AB} \neq \overline{FG}$ are skew
3. $\overline{AE} \parallel \overline{FB}$
4. $\overline{AEF} \parallel \overline{DHG}$
5. $\angle 3 \cong \angle 5$
 $\angle 4 \cong \angle 8$
6. $\angle 1 \cong \angle 7$
 $\angle 6 \cong \angle 2$
7. $\angle 2 \cong \angle 8$
 $\angle 3 \cong \angle 7$
 $\angle 1 \cong \angle 5$
 $\angle 4 \cong \angle 6$
8. $\angle 4 \cong \angle 5$
 $\angle 3 \cong \angle 8$
9. 135° - Corr. \angle s
10. $15x - 7 = 19x - 15$
 $-7 = 4x - 15$
 $8 = 4x$
 $x = 2$
 $\angle = 23^\circ$
11. $43x + 36 = 54x + 14$ - alt. ext \angle s
 $36 = 11x + 14$
 $22 = 11x$
 $x = 2$
 $\angle = 122^\circ$
12. $m\angle 8 = 13(3) + 20 = 39 + 20 = 59^\circ$
 $m\angle 6 = 7(3) + 38 = 21 + 38 = 59^\circ$
 $m\angle 8 = m\angle 6$
 $\angle 8 \cong \angle 6$
a//b - conv. of the corr. \angle s Post.
13. $\angle 1 \cong \angle 5$
a//b - conv. of the alt ext \angle s Thm
14. $m\angle 8 + m\angle 7 = 180$
a//b - conv. of the same side int \angle s Thm
15. $m\angle 8 = m\angle 4$
 $\angle 8 \cong \angle 4$
a//b - conv of the alt int \angle s Thm
16. $m\angle 1 = 3(14) + 12$
 $m\angle 1 = 54^\circ$
 $m\angle 2 = 4(14) - 2$
 $m\angle 2 = 54^\circ$
 $m\angle 1 = m\angle 2$
 $\angle 1 \cong \angle 2$
The guy wires are // by the conv. of the Corr \angle s Post.

} answers will vary!