1. $\overleftrightarrow{PQ}$ and $\overleftrightarrow{SR}$ with transversal $\overleftrightarrow{SQ}$; alt. int. $\angle$s

2. $\overleftrightarrow{PS}$ and $\overleftrightarrow{QR}$ with transversal $\overleftrightarrow{SQ}$; alt. int. $\angle$s

3. $\overleftrightarrow{PS}$ and $\overleftrightarrow{QR}$ with transversal $\overleftrightarrow{PQ}$; same-side int. $\angle$s

4. $\overleftrightarrow{PS}$ and $\overleftrightarrow{QR}$ with transversal $\overleftrightarrow{SR}$; corr. $\angle$s

5. $\angle1$ and $\angle2$: corr. $\angle$s
$\angle3$ and $\angle4$: alt. int. $\angle$s
$\angle5$ and $\angle6$: corr. $\angle$s

6. $\angle1$ and $\angle2$: same-side int. $\angle$s
$\angle3$ and $\angle4$: corr. $\angle$s
$\angle5$ and $\angle6$: corr. $\angle$s

7. $\angle1$ and $\angle2$: corr. $\angle$s
$\angle3$ and $\angle4$: same-side int. $\angle$s
$\angle5$ and $\angle6$: alt. int. $\angle$s

8. alt. int. $\angle$s

9. 2. Same-Side Int. Angles Thm.

4. Same-Side Int. Angles Thm.

5. Congruent Supplements Thm.

10. 1. $a \parallel b$ (Given)

2. $\angle1 \cong \angle4$ (Alt. Int. $\angle$s Thm.)

3. $c \parallel d$ (Given)

4. $\angle4 \cong \angle3$ (Corr. $\angle$s Post.)

5. $\angle1 \cong \angle3$ (Trans. Prop.)

11. $m\angle1 = 75$ because corr. $\angle$s of $\parallel$ lines are $\cong$;
$m\angle2 = 105$ because same-side int. $\angle$s of $\parallel$ lines are suppl.

12. $m\angle1 = 120$ because corr. $\angle$s of $\parallel$ lines are $\cong$; $m\angle2 = 60$
because same-side int. $\angle$s of $\parallel$ lines are suppl.

13. $m\angle1 = 100$ because same-side int. $\angle$s of $\parallel$ lines are suppl.;
$m\angle2 = 70$ because alt. int. $\angle$s of $\parallel$ lines have = measure.

14. 70; 70, 110   **15.** 25; 65, 65   **16.** 20; 100, 80

17. $m\angle 1 = m\angle 3 = m\angle 6 = m\angle 8 = m\angle 9 = m\angle 11 = m\angle 13 = m\angle 15 = 52; m\angle 2 = m\angle 4 = m\angle 5 = m\angle 7 = m\angle 10 = m\angle 12 = m\angle 14 = 128$

18. You must find the measure of one ∠. All ∕s that are vert., corr., or alt. int. to that ∠ will have that measure. All other ∕s will be the suppl. of that measure.

19. two   **20.** four   **21.** two

22. four   **23.** 32

24. $x = 76, y = 37, v = 42, w = 25$

25. $x = 135, y = 45$

26. *Trans* means across or over. A transversal cuts across other lines.

27. Answers may vary.

Sample: *E* illustrates corr. ∕s (∠1 and ∠3, ∠2 and ∠4) and same-side int. ∕s (∠1 and ∠2, ∠3 and ∠4); *I* illustrates alt. int. ∕s (∠1 and ∠4, ∠2 and ∠3) and same-side int. ∕s (∠1 and ∠3, ∠2 and ∠4).

28. 1. $a \parallel b$ (Given)

2. ∠1 ≅ ∠2 are suppl. (Same Side Int. ∕s Thm.)

3. ∠3 ≅ ∠4 are suppl. (Same Side Int. ∕s Thm.)

4. ∠1 ≅ ∠4 (Given)

5. ∠3 ≅ ∠1 are suppl. (Subst.)

6. ∠2 ≅ ∠3 (≅ Suppl. Thm.)

29. Since $a \parallel b$, $\angle 1 \cong \angle 3$ because they are corr. ∠s. Also $\angle 3$ and $\angle 2$ are supplementary by the $\angle$ Add. Post. So by Subst., $\angle 1$ and $\angle 2$ are supplementary.

30. a. 57

b. same-side int. ∠s

31. a. alt. int. ∠s

b. He knew that alt. int. ∠s of $\parallel$ lines are $\cong$.

32. The ∠s labeled are corr. ∠s and should be $\cong$. If you solve $2x - 60 = 60 - 2x$, you get $x = 30$. This would be impossible since $2x - 60$ and $60 - 2x$ would equal 0.

33. Never; the two planes do not intersect.

34. Sometimes; if they are $\parallel$.

35. Sometimes; they may be skew.

36. Sometimes; they may be $\parallel$.