

3.4 Parallel Lines and Transversals

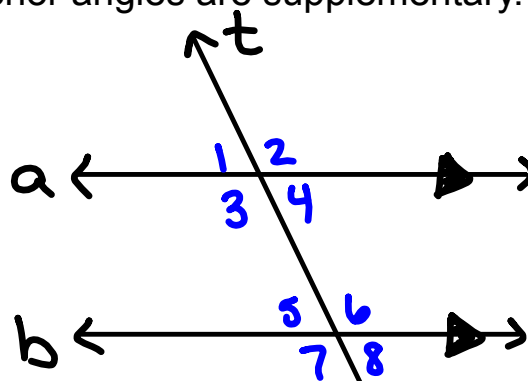
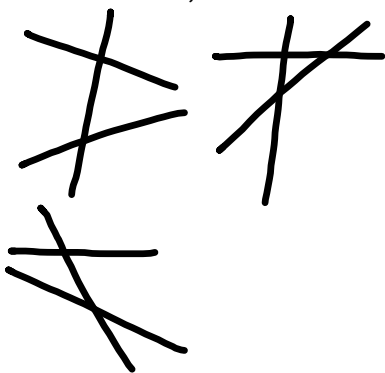
Objective: Use angle relationships and their theorems/postulates to find angle measures.

Corresponding Angles Postulate: If two parallel lines are cut by a transversal, then corresponding angles are congruent.

Alternate Interior Angles Theorem: If two parallel lines are cut by a transversal, then alternate interior angles are congruent.

Alternate Exterior Angles Theorem: If two parallel lines are cut by a transversal, then alternate exterior angles are congruent.

Same-Side Interior Angles Theorem: If two parallel lines are cut by a transversal, then same-side interior angles are supplementary.



corresponding

$$\angle 2 \cong \angle 6$$

$$\angle 1 \cong \angle 5$$

$$\angle 3 \cong \angle 7$$

$$\angle 4 \cong \angle 8$$

alt. interior

$$\angle 4 \cong \angle 5$$

$$\angle 3 \cong \angle 6$$

alt. exterior

$$\angle 1 \cong \angle 8$$

$$\angle 2 \cong \angle 7$$

same-side interior

$$\angle 3 + \angle 5 = 180$$

$$\angle 4 + \angle 6 = 180$$

SSS

Checkpoint at the bottom of page 130.

7. alt. ext. $\angle 7 = 130^\circ$

8. alt. ext. $\angle 8 = 42^\circ$

9. alt. ext. $\angle 9 = 90^\circ$

10. alt. ext. $\angle 1 \cong \angle 8$

11. not \cong , linear pair

12. not \cong , linear pair

13. alt. ext. $\angle 2 \cong \angle 7$

14. corresponding $\angle 3 \cong \angle 7$

15. not \cong , no relationship

Checkpoint at the bottom of page 131.

16. alt. int.

$$\begin{array}{r} x + 35 = 120 \\ -35 \quad -35 \\ \hline \end{array}$$

$$x = 85$$

17. $x - 2 + 78 = 180$

$$\begin{array}{r} x + 76 = 180 \\ -76 \quad -76 \\ \hline \end{array}$$

$$x = 104$$

same-side int.

18. $2x + 10 = 90$

$$\begin{array}{r} -10 \quad -10 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{80}{2}$$

$$x = 40$$