

Answers for 4.5

For use with pages 252–255

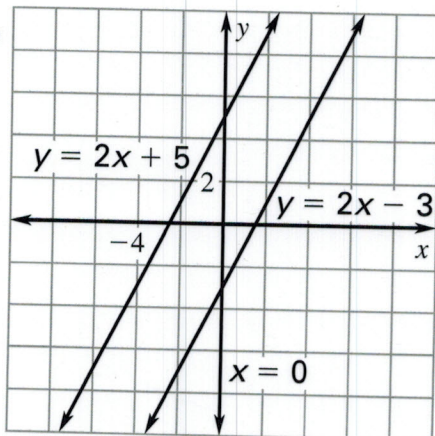
4.5 Skill Practice

1. *Sample answer:* A flow proof shows the flow of a logical argument.
2. a pair of congruent sides that are either both included or both not included
3. yes; AAS
4. no
5. yes; ASA
6. There is no AAA postulate or theorem.
7. B
8. $\angle F, \angle L$
9. $\angle F, \angle L$
10. $\overline{HG}, \overline{NM}$
11. $\angle AFE \cong \angle DFB$ by the Vertical Angles Theorem.
12. $\overline{ED} \cong \overline{ED}$ by the Reflexive Property of Segment Congruence.
13. $\angle EDA \cong \angle DCB$ by the Corresponding Angles Postulate.
14. yes; SAS
15. No; there is no AAA postulate or theorem.
16. No; \overline{AC} and \overline{DE} are not corresponding sides.
17. No; the segments that are congruent are not corresponding sides.
18. no
19. yes; the SAS Congruence Postulate
20. no
21. a. \overline{BC} and \overline{AD} are parallel, because their slopes are equal, with \overline{AC} being a transversal. The Alternate Interior Angles Theorem applies.
b. \overline{AB} and \overline{CD} are parallel, because their slopes are equal, with \overline{AC} being a transversal. The Alternate Interior Angles Theorem applies.
c. Using parts 21a, 21b, and the fact that $\overline{AC} \cong \overline{CA}$, it can be shown they are congruent by ASA.

Answers for 4.5 continued

For use with pages 252–255

22. a.

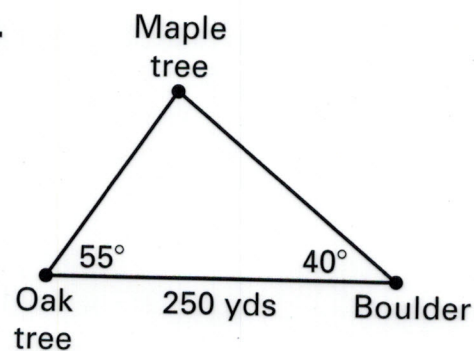


- b. Any real value except 2; $-\frac{1}{2}$ or 0; the resulting triangles are right triangles with one pair of acute angles forming a linear pair and both hypotenuses 4 units long, so they are congruent by AAS.

4.5 Problem Solving

23. Two pairs of angles and an included pair of sides are congruent. The triangles are congruent by ASA.
24. Two pairs of angles and a non-included pair of sides are congruent. The triangles are congruent by AAS.
25. $\overline{AD} \parallel \overline{CE}$; Given;
Alt. Int. \angle s Thm.;
Alt. Int. \angle s Thm.;
AAS

26.



Yes. *Sample answer:* By the ASA Congruence Postulate, the triangle formed with these measures is unique and the third vertex gives the location of the maple tree.

27. AAS

28. Since all right angles are congruent and the right angles are the included angles of the congruent legs in the triangles, the triangles are congruent by SAS.
29. Since all right angles are congruent, the two triangles are congruent by either AAS, if the side is not included, or ASA, if it is the included side.
30. Since all right angles are congruent, the two triangles are congruent by AAS.

Answers for 4.5 continued

For use with pages 252–255

31. Statements (Reasons)

$$1. \overline{AK} \cong \overline{CJ}, \angle BJK \cong \angle BKJ, \angle A \cong \angle C \quad (\text{Given})$$

$$2. \triangle ABK \cong \triangle CBJ \quad (\text{ASA})$$

32.

$$\overline{VW} \cong \overline{UW}, \angle X \cong \angle Z \quad \text{Given}$$

$$\angle W \cong \angle W \quad \text{Reflexive Property of Congruence}$$

$$\triangle XWV \cong \triangle ZWU \quad \text{AAS}$$

33.

$$\angle NKM \cong \angle LMK, \angle L \cong \angle N \quad \text{Given}$$

$$\triangle NMK \cong \triangle LKM \quad \text{AAS}$$

$$\overline{KM} \cong \overline{MK} \quad \text{Reflexive Prop. of Congruence}$$

34.

X is the midpoint of \overline{VY} and \overline{WZ} .
Given

$$\overline{VX} \cong \overline{YX}, \overline{WX} \cong \overline{ZX} \quad \text{Def. of midpoint}$$

$$\angle VXW \cong \angle YXZ \quad \text{Vertical Angles Congruence Theorem}$$

$$\triangle VWX \cong \triangle YZX \quad \text{SAS}$$

35.

F is the midpoint of \overline{AE} ,
B is the midpoint of \overline{AC} .
Given

$$\overline{FE} \cong \overline{AF}, \overline{BC} \cong \overline{AB} \quad \text{Definition of midpoint}$$

$$\triangle ABF \cong \triangle DFB \quad \text{Given}$$

$$\overline{AF} \cong \overline{DB}, \overline{AB} \cong \overline{DF} \quad \text{Corr. parts of } \cong \triangle \text{ are } \cong.$$

$$\overline{FE} \cong \overline{DB}, \overline{BC} \cong \overline{DF} \quad \text{Transitive Property of Congruence}$$

$$\angle AFB \cong \angle DBF, \angle ABF \cong \angle DFB, \angle FAB \cong \angle BDF \quad \text{Corr. parts of } \cong \triangle \text{ are } \cong.$$

$$m\angle AFB = m\angle DBF, m\angle ABF = m\angle DFB, m\angle FAB = m\angle BDF \quad \text{Definition of congruent angles}$$

$$m\angle AFB + m\angle DFB + m\angle EFD = 180^\circ, m\angle ABF + m\angle DBF + m\angle CBD = 180^\circ \quad \text{Def. of straight angle}$$

$$m\angle AFB + m\angle ABF + m\angle EFD = 180^\circ, m\angle ABF + m\angle AFB + m\angle CBD = 180^\circ \quad \text{Substitution Property of Equality}$$

$$m\angle EFD = 180^\circ - m\angle AFB - m\angle ABF, m\angle CBD = 180^\circ - m\angle AFB - m\angle ABF \quad \text{Subtraction Property of Equality}$$

$$m\angle AFB + m\angle ABF + m\angle FAB = 180^\circ \quad \text{Triangle Sum Theorem}$$

$$m\angle FAB = 180^\circ - m\angle AFB - m\angle ABF \quad \text{Subtraction Property of Equality}$$

$$\angle FAB \cong \angle EFD \cong \angle CBD \quad \text{Definition of Congruent Angles}$$

$$\triangle FDE \cong \triangle BCD \cong \triangle ABF \quad \text{SAS Congruence Theorem}$$

Answers for 4.5 *continued*

For use with pages 252–255

4.5 Mixed Review

36. 51

37. 69

38. 85

39. $y = x + 3$

40. $y = -2x$

41. SSS

42. HL

43. SAS