6-8: Angles, Lines and Transversals

1. Sample answer: Alternate interior angles are congruent. Corresponding angles are congruent. Same-side interior angles are supplementary.

2. Sample answer: You can translate one of the parallel lines to the same position as the other parallel line to show that the angles are the same. Then you can use what you know about vertical angles and supplementary angles to describe other angle relationships.

3. There are 8 angles created and there are two different angle measures.

4. Sample answer: Two lines are parallel if the corresponding angles formed by the lines and a transversal are congruent, or if the alternate interior angles formed by the lines and a transversal are congruent, or if same side interior angles are supplementary.

5. ∠2, ∠4, and ∠6

6. 70°; Sample answer: The angles are alternate interior angles so their measures are congruent.

7. m∠8 + 95 = 180; m∠8 = 85°

8. Line *a* is parallel to line *b* if x = 34.

9. m∠u = 32°

10. No; Sample answer: The angles are supplementary angles.

11. m∠4 = 25°

12. 127°; Sample answer:
    m∠12 + 53° = 180°;
    m∠12 = 180° - 53°;
    m∠12 = 127°

13. x = 16.5; Sample answer: Because ∠2 and ∠4 are corresponding angles, ∠2 and ∠8 are supplementary. So, (4x + 7) + 107 = 180. 4x + 114 = 180, so 4x = 66. x = 16.5

14. Yes; Sample answer: *m ∥ n* because the labeled angles are congruent alternate interior angles that are equal.

15. x = 30.5; m∠2 = m∠5 = 86°, m∠1 = m∠3 = m∠4 = m∠6 = 94°

16. a. x = 9
    b. m∠1 = 54°; m∠2 = 54°

17. m∠b = 60.7°; m∠d = 43.1°

18. B, E

19. a. w = 79°
    b. Sample answer: Jacob likely thought that ∠w and the angle that measures 101° are corresponding angles and have the same measure.