

LESSON
2.5**Practice A**

For use with pages 106–112

Complete the logical argument by giving a reason for each step.

$$1. \quad \begin{array}{l} 8x - 34 = 6 \\ 8x = 40 \\ x = 5 \end{array} \quad \begin{array}{l} \text{Given} \\ \mathbf{a.} \quad ? \\ \mathbf{b.} \quad ? \end{array}$$

$$2. \quad \begin{array}{l} 4x - 7 = 6x + 7 \\ -2x - 7 = 7 \\ -2x = 14 \\ x = -7 \end{array} \quad \begin{array}{l} \text{Given} \\ \mathbf{a.} \quad ? \\ \mathbf{b.} \quad ? \\ \mathbf{c.} \quad ? \end{array}$$

$$3. \quad \begin{array}{l} 5(x - 3) = 4(x + 2) \\ 5x - 15 = 4x + 8 \\ x - 15 = 8 \\ x = 23 \end{array} \quad \begin{array}{l} \text{Given} \\ \mathbf{a.} \quad ? \\ \mathbf{b.} \quad ? \\ \mathbf{c.} \quad ? \end{array}$$

$$4. \quad \begin{array}{l} x = \frac{1}{7}y - 9 \\ x + 9 = \frac{1}{7}y \\ 7x + 63 = y \\ y = 7x + 63 \end{array} \quad \begin{array}{l} \text{Given} \\ \mathbf{a.} \quad ? \\ \mathbf{b.} \quad ? \\ \mathbf{c.} \quad ? \end{array}$$

Solve the equation. Write a reason for each step.

$$5. \quad x + 18 = 7 \qquad 6. \quad 5x = 4x + 8$$

$$7. \quad 7x - 9 = 4x \qquad 8. \quad 6x + 11 = 5x - 3$$

$$9. \quad 7x - 11 = 4x + 19 \qquad 10. \quad 14x + 3 = 19x + 23$$

$$11. \quad 4(2x + 11) = 76 \qquad 12. \quad 14(x + 1) = -7(4 + x)$$

LESSON
2.5
Practice A *continued*
 For use with pages 106–112

Solve the equation for a . Write a reason for each step.

13. $a - 3b = b + 7$

14. $4a + b = 5b + 28$

15. $b = 5a - 25$

16. $b = 3(2a - 24)$

Use the property to complete the statement.

17. Addition Property of Equality: If $RS = TU$, then $RS + 20 = \underline{\quad? \quad}$.

18. Multiplication Property of Equality: If $m\angle 1 = m\angle 2$, then $3m\angle 1 = \underline{\quad? \quad}$.

19. Substitution Property of Equality: If $a = 20$, then $5a = \underline{\quad? \quad}$.

20. Reflexive Property of Equality: If x is a real number, then $x = \underline{\quad? \quad}$.

21. Symmetric Property of Equality: If $AB = CD$, then $CD = \underline{\quad? \quad}$.

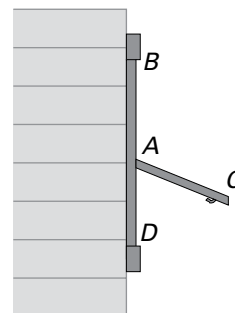
22. Transitive Property of Equality: If $m\angle E = m\angle F$ and $m\angle F = m\angle G$, then $\underline{\quad? \quad}$.

23. Skydiving As you begin a freefall, you have an accelerating downward velocity. Because of wind resistance, however, the acceleration slows and your velocity eventually becomes constant. This is called your *terminal velocity*. The terminal velocity of a typical skydiver is around 56 meters per second. A formula for the distance d (in meters) traveled in t seconds by a skydiver falling at this velocity is $d = 56t$.

- A skydiver reaches her terminal velocity of 56 meters per second and continues freefalling for 12 more seconds. How many meters does she fall during these 12 seconds?
- Solve the formula above for t . Write the reason for each step.
- Find the time it would take a skydiver to drop 840 meters while moving at a terminal velocity of 56 meters per second.

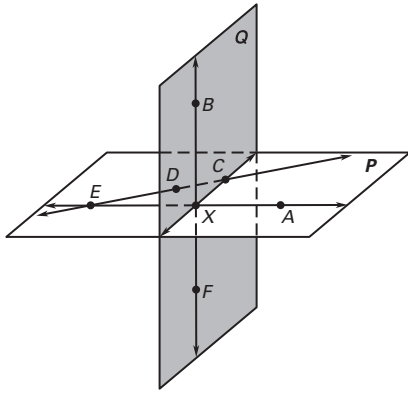
24. Windows The bottom section of the window pictured swings outward from the bottom to open in the style of an awning.

- Use the diagram and your knowledge of linear pairs to write an equation that relates a sum of two angle measures to 180° .
- Solve the equation for $m\angle DAC$.
- Find $m\angle DAC$ when $m\angle BAC = 112^\circ$.



Lesson 2.4, continued

7. a. Sample answers:



b. \overleftrightarrow{XC} because if two planes intersect, then their intersection is a line (Postulate 11). c. No. In order for D , E , and X to be collinear, D would have to be between points E and X because E and X are collinear. d. No. This does not follow from Postulate 10 because D lies in plane P and B lies in plane Q .

Lesson 2.5

Practice Level A

1. a. Addition Property of Equality b. Division Property of Equality 2. a. Subtraction Property of Equality b. Addition Property of Equality c. Division Property of Equality 3. a. Distributive Property b. Subtraction Property of Equality c. Addition Property of Equality 4. a. Addition Property of Equality b. Multiplication Property of Equality c. Symmetric Property of Equality

5–16: Sample answers:

5.
 $x + 18 = 7$ Given
 $x = -11$ Subtr. Prop. of Equality
6.
 $5x = 4x + 8$ Given
 $x = 8$ Subtr. Prop. of Equality
7.
 $7x - 9 = 4x$ Given
 $3x - 9 = 0$ Subtr. Prop. of Equality
 $3x = 9$ Add. Prop. of Equality
 $x = 3$ Div. Prop. of Equality
8.
 $6x + 11 = 5x - 3$ Given
 $x + 11 = -3$ Subtr. Prop. of Equality
 $x = -14$ Subtr. Prop. of Equality

9.
 $7x - 11 = 4x + 19$ Given
 $3x - 11 = 19$ Subtr. Prop. of Equality
 $3x = 30$ Add. Prop. of Equality
 $x = 10$ Div. Prop. of Equality

10.
 $14x + 3 = 19x + 23$ Given
 $3 = 5x + 23$ Subtr. Prop. of Equality
 $-20 = 5x$ Subtr. Prop. of Equality
 $-4 = x$ Div. Prop. of Equality

11.
 $4(2x + 11) = 76$ Given
 $8x + 44 = 76$ Distributive Prop.
 $8x = 32$ Subtr. Prop. of Equality
 $x = 4$ Div. Prop. of Equality

12.
 $14(x + 1) = -7(4 + x)$ Given
 $14x + 14 = -28 - 7x$ Distributive Prop.
 $21x + 14 = -28$ Add. Prop. of Equality
 $21x = -42$ Subtr. Prop. of Equality
 $x = -2$ Div. Prop. of Equality

13.
 $a - 3b = b + 7$ Given
 $a = 4b + 7$ Add. Prop. of Equality

14.
 $4a + b = 5b + 28$ Given
 $4a = 4b + 28$ Subtr. Prop. of Equality
 $a = b + 7$ Div. Prop. of Equality

15.
 $b = 5a - 25$ Given
 $b + 25 = 5a$ Add. Prop. of Equality
 $\frac{b}{5} + 5 = a$ Div. Prop. of Equality

16.
 $b = 3(2a - 24)$ Given
 $b = 6a - 72$ Distributive Prop.
 $b + 72 = 6a$ Add. Prop. of Equality
 $\frac{b}{6} + 12 = a$ Div. Prop. of Equality

17. $TU + 20$ 18. $3m\angle 2$ 19. $5(20)$ 20. x

21. AB 22. $m\angle E = m\angle G$

23. a. 672 m
 b.
 $d = 56t$ Given
 $\frac{d}{56} = t$ Div. Prop. of Equality
 $t = \frac{d}{56}$ Symm. Prop. of Equality

- c. 15 seconds

Lesson 2.5, continued

24. a. $m\angle BAC + m\angle DAC = 180^\circ$
 b. $m\angle DAC = 180^\circ - m\angle BAC$ c. 68°

Practice Level B

1. a. Distributive Property b. Addition Property of Equality c. Subtraction Property of Equality

2. a. Addition Property of Equality
 b. Addition Property of Equality c. Division Property of Equality 3. a. Segment Addition Postulate b. Substitution Property of Equality
 c. Distributive Property 4. a. Reflexive Property of Equality b. Addition Property of Equality
 c. Angle Addition Postulate d. Angle Addition Postulate e. Substitution Property of Equality

5. a. Definition of perpendicular segments and definition of right angle b. Definition of perpendicular segments and definition of right angle
 c. Substitution or Transitive Property of Equality 6. $m\angle B$ 7. $GH, CD = RS$ 8. 17

9. $RL = BC$ 10. $3(45)$ 11. $\frac{1}{3}$

12. $C(-3, 6), E(5, 0)$; AB is 5 units long. Because $AB = CD$, then CD is 5 units long. So the coordinates of C are $(-3, 6)$. Because $CD = OE$, then OE is 5 units long. So the coordinates of E are $(5, 0)$.

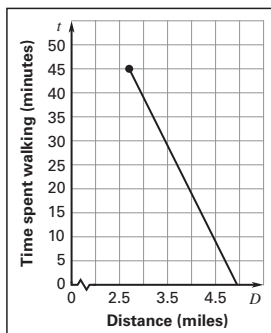
13.

$$\begin{aligned} D &= 0.06t + 0.11(45 - t) && \text{Given} \\ D &= 0.06t + 4.95 - 0.11t && \text{Distributive Property} \\ D &= 0.06t - 0.11t + 4.95 && \text{Group like terms.} \\ D &= -0.05t + 4.95 && \text{Simplify.} \\ 0.05t + D &= 4.95 && \text{Addition Property of Equality} \\ 0.05t &= -D + 4.95 && \text{Subtraction Property of Equality} \\ t &= -20D + 99 && \text{Division Property of Equality} \end{aligned}$$

14.

D	2.7	3	3.7	4.3	4.5
t	45	39	25	13	9

15.



The time spent walking decreases as the distance increases.

16. $m\angle 1 = 80^\circ, m\angle 2 = 80^\circ, m\angle 3 = 120^\circ, m\angle 4 = 80^\circ$ 17. Candidate 1: 22.2%, Candidate 2: 22.2%, Candidate 3: 33.3%, Candidate 4: 22.2% 18. Candidate 1: 70, Candidate 2: 70, Candidate 3: 105, Candidate 4: 70

Practice Level C

1–12: Sample answers:

1.

$$\begin{aligned} 3x + 8 &= 14 && \text{Given} \\ 3x &= 6 && \text{Subtr. Prop. of Equality} \\ x &= 2 && \text{Div. Prop. of Equality} \end{aligned}$$

2.

$$\begin{aligned} -12x &= 28 - 16x && \text{Given} \\ 4x &= 28 && \text{Add. Prop. of Equality} \\ x &= 7 && \text{Div. Prop. of Equality} \end{aligned}$$

3.

$$\begin{aligned} 7(x - 11) &= 12x - 122 && \text{Given} \\ 7x - 77 &= 12x - 122 && \text{Distributive Property} \\ -5x - 77 &= -122 && \text{Subtr. Prop. of Equality} \\ -5x &= -45 && \text{Add. Prop. of Equality} \\ x &= 9 && \text{Div. Prop. of Equality} \end{aligned}$$

4.

$$\begin{aligned} 4(3x + 6) &= 5(x - 5) && \text{Given} \\ 12x + 24 &= 5x - 25 && \text{Distributive Property} \\ 7x &= -49 && \text{Subtr. Prop. of Equality} \\ x &= -7 && \text{Div. Prop. of Equality} \end{aligned}$$

5.

$$\begin{aligned} 6(7x + 18) &= (x + 8)4 && \text{Given} \\ 42x + 108 &= 4x + 32 && \text{Distributive Property} \\ 38x &= -76 && \text{Subtr. Prop. of Equality} \\ x &= -2 && \text{Div. Prop. of Equality} \end{aligned}$$

6.

$$\begin{aligned} -11(x + 3) + 18 &= (8 - 3x)7 && \text{Given} \\ -11x - 33 + 18 &= 56 - 21x && \text{Distributive Property} \\ 10x &= 71 && \text{Add. Prop. of Equality} \\ x &= 7.1 && \text{Div. Prop. of Equality} \end{aligned}$$

7.

$$\begin{aligned} \frac{1}{4}(3x + 16) &= 7(9 - 2x) && \text{Given} \\ \frac{3}{4}x + 4 &= 63 - 14x && \text{Distributive Property} \\ \frac{59}{4}x + 4 &= 63 && \text{Add. Prop. of Equality} \\ \frac{59}{4}x &= 59 && \text{Subtr. Prop. of Equality} \\ x &= 4 && \text{Mult. Prop. of Equality} \end{aligned}$$