

Lesson 69 • Direct Variation

Power Up

- *Facts*
- *Mental Math*
- *Problem Solving*

New Concepts

- *Examples*
- *Practice Set*

Written Practice

Facts

Solve each proportion.

$\frac{x}{12} = \frac{4}{6}$ $x = 8$	$\frac{5}{x} = \frac{10}{30}$ $x = 15$	$\frac{8}{16} = \frac{x}{4}$ $x = 2$	$\frac{3}{6} = \frac{9}{x}$ $x = 18$
$\frac{x}{20} = \frac{2}{10}$ $x = 4$	$\frac{3}{x} = \frac{5}{15}$ $x = 9$	$\frac{7}{14} = \frac{x}{12}$ $x = 6$	$\frac{3}{12} = \frac{5}{x}$ $x = 20$
$\frac{x}{100} = \frac{5}{25}$ $x = 20$	$\frac{12}{x} = \frac{60}{20}$ $x = 4$	$\frac{10}{100} = \frac{x}{50}$ $x = 5$	$\frac{9}{27} = \frac{10}{x}$ $x = 30$

Written Practice

1. $\frac{9}{5}$
2. 17
3. 900
4. no
5. $x = 6, y = 2\frac{1}{2}$
6. Sample: The smaller triangle is dilated by a scale factor of 2.
7.
 - a. 30°
 - b. 45°
 - c. $\sqrt{2}$ in.
 - d. 2 in.
8. $y = \frac{1}{4}x - 1$
9. $y = \frac{1}{2}x - 3$
10.
 - a. 38 m^2
 - b. 27 m

Written Practice

continued

11. a. $0.\overline{4}$
 b. $44\frac{4}{9}\%$
 c. $0.\overline{4}, \frac{4}{9}, 0.5$

12. a. {HHH, HHT, HTH, HTT, THH, THT, TTH, TTT}
 b. $\frac{1}{2}$
 c. See student work

13. a. $5(x^2 + 2x + 3)$
 b. $-8x - 12$

14. a.

Hours	1	2	3	4
Gallons	-	1	-	2

14. b. Sample answer: Yes, the total amount of water that leaks from the faucet varies directly with time. As time increases from zero the total amount of water increases from zero at a constant rate.

Written Practice

continued

15. $\frac{1}{2} \text{ gal/hr} \cdot \frac{24 \text{ hr}}{1 \text{ day}} = 12 \text{ gal/day}$

16. $2x^2$

17. $\frac{2}{3}$

18. a. =

b. No. We only know the relationship between the angle measures because the lines are parallel.

19. $x = 1$

20. $x = \frac{7}{2}$

21. $x = 10$

22. $x = 2.5$

23. $x = 7.5$

24. $\frac{120 \text{ mi}}{\text{hr}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} = \frac{2 \text{ mi}}{\text{min}}$

25. The relationship is proportional because the ratio of altitude to time is constant at 200 ft/min. Using the constant we can find that the altitude at 5 minutes is about 1000 ft.