

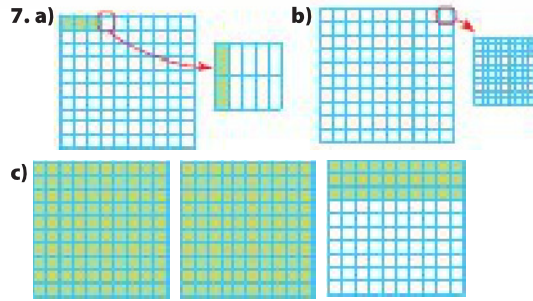
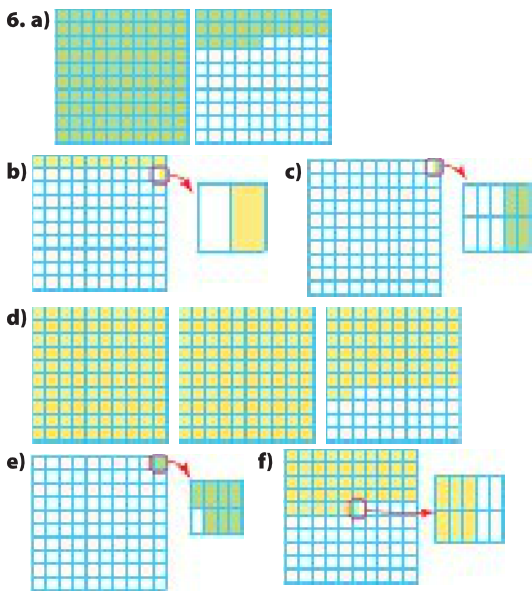
Chapter Review, pages 112–113

1. square root 2. perfect square
3. hypotenuse 4. Pythagorean relationship
5. prime factorization
6. a) 36 b) 121 c) 625
7. a) 7 b) 16 c) 10 000
8. No, the fabric has an area of 4×4 or 16 m^2 . Lisa needs 17 m^2 .
9. a) No, the triangle is not a right triangle. The sum of the two smaller squares is $16 \text{ cm}^2 + 16 \text{ cm}^2 = 32 \text{ cm}^2$. This does not equal the area of the largest square, which is 36 cm^2 . b) 4 cm; 4 cm; 6 cm
10. Yes, the triangle is a right triangle since the sum of the squares of the two smaller sides is $225 + 1296 = 1521$, which is equal to the square of the largest side.
11. Triangles A, C, and D are right triangles.
12. a) Answer may vary. Example: 30 cm^2 b) 5 cm, 6 cm
- c) Answer may vary. Example: 5.5 cm
- d) Answer may vary. Example: 5.5 cm
13. a) 3.2 b) $\sqrt{6}$ is closer to 2 than 3 because 6 is closer to $4 (2^2)$ than $9 (3^2)$. c) When 3.61 is squared the result is 13.0321, which is closest to 13.
14. a) $d = 13 \text{ m}$ b) $v = 12 \text{ cm}$
15. a) 5.4 cm; 6.7 cm b) 15.7 cm
16. No, the ladder will not reach the window. The length the ladder needs to reach is greater than 4 m: $1^2 + 3.9^2 \approx 4.03^2$.
17. 99.0 cm

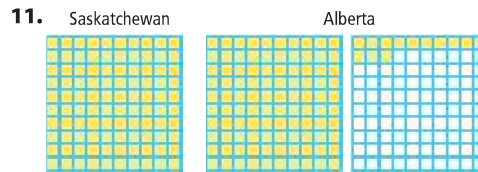
Chapter 4

4.1 Representing Percents, pages 128–129

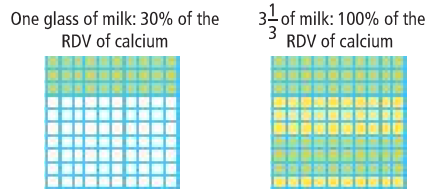
4. a) 112% b) $\frac{2}{10}\%$ c) $85\frac{1}{3}\%$
5. a) $\frac{3}{8}\%$ b) $125\frac{1}{2}\%$ c) 282%



8. a) 3 b) 5 c) 12
9. Answers may vary. Example: Two situations where the percent will be greater than 100% are a mother's mass compared to her newborn child, and the volume of water in the Pacific Ocean in relation to a lake in Canada.
10. A scientist may need to relate the measurement of something that is less than 1% of its size. Example: The percent of different pollutants in the water will likely be between 0% and 1%.

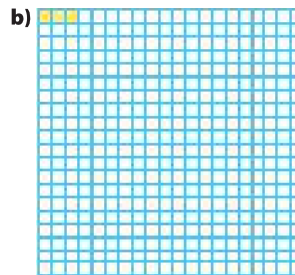
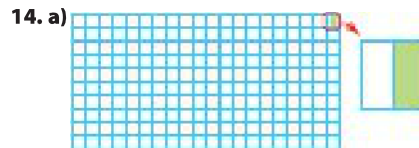


12. Answers may vary.



13. a)

b) Answers may vary. You must know how to convert a repeating decimal to fraction form.

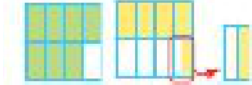


15. Since one square on a hundred grid is equal to 1%, then one square on a thousand grid (10 hundred grids placed together) would be equal to 0.1%. If this pattern is continued, then very small percents can be expressed on larger grids. If a ten million grid was used, then 0.0000125% would be represented by 1.25 squares.

Grid Type (number of squares)	Value of One Square as a Percent
Hundred	1%
Thousand	0.1%
Ten thousand	0.01%
Hundred thousand	0.001%
Million	0.0001%
Ten million	0.00001%

16. a) 1.7% b) 130%

c) $87\frac{1}{2}\%$; $56\frac{1}{4}\%$



4.2 Fractions, Decimals, and Percents, pages 135–137

4. a) 0.004 or 0.4% b) 0.405 or 40.5% c) 1.4 or 140%

5. a) 1.7 or 170% b) 0.105 or 10.5% c) 0.006 or 0.6%

6. a) 0.72% or $\frac{72}{10\,000} = \frac{9}{1250}$ b) 54.8% or $\frac{548}{1000} = \frac{137}{250}$

c) 345% or $\frac{345}{100} = \frac{69}{20}$

7. a) 25.6% or $\frac{256}{1000} = \frac{32}{125}$ b) 0.05% or $\frac{5}{10\,000} = \frac{1}{2000}$

c) 650% or $\frac{650}{100} = \frac{13}{2}$

8. a) 2.48 or $\frac{248}{100} = \frac{62}{25}$ b) 0.0056 or $\frac{56}{10\,000} = \frac{7}{1250}$

c) 0.7575 or $\frac{7575}{10\,000} = \frac{303}{400}$

9. a) 0.059 or $\frac{59}{1000}$ b) 5.5 or $\frac{550}{100} = \frac{11}{2}$

c) 0.008 or $\frac{8}{1000} = \frac{1}{125}$

10.

Percent	Fraction	Decimal
165%	$\frac{165}{100}$	1.65
230%	$\frac{230}{100}$	2.3
0.38%	$\frac{38}{10\,000}$	0.0038
19.9%	$\frac{199}{1000}$	0.199

11. a) $\frac{17}{25}$ or 0.68 or 68% b) $\frac{9}{24} = \frac{3}{8}$ or 0.375 or 37.5%

12. a) $\frac{33}{25}$ or 1.32 or 132% b) $\frac{47}{20}$ or 2.35 or 235%

13. 2000%

14. 2.25% or 0.0225 or $\frac{225}{10\,000} = \frac{9}{400}$

15. smallest to largest: 0.6%, $\frac{5}{8}\%$, 33.5%, 0.65, 1.32, 145%

16. approximately 0.4% or 0.004 or $\frac{4}{900} = \frac{1}{225}$

17. Answers may vary. Example: a) "Ticket sales are $\frac{13}{10}$ of what they were this time last year." The number 1.3 sounds like a small number. b) "We are already at 0.605 of our target and we just started!" The decimal 0.605 is easily recognizable as more than half. c) "We have managed to cut our costs by $\frac{75}{10\,000}$." The large denominator makes this number sound large.

18.

Species	Number	Percent of Total	Fraction of Total	Decimal Equivalent
Chinook	143	53.56%	$\frac{143}{267}$	0.5356
Coho	122	45.69%	$\frac{122}{267}$	0.4569
Steelhead	2	0.75%	$\frac{2}{267}$	0.0075

19. 600% or 6.0 or $\frac{600}{100} = \frac{6}{1}$

20. 90 beats per minute: 120% or $\frac{6}{5}$ or 1.2;

125 beats per minute: 166. $\bar{6}\%$ or $\frac{5}{3}$ or 1. $\bar{6}$;

150 beats per minute: 200% or $\frac{200}{100} = \frac{2}{1}$ or 2.0

21.

	Percent	Decimal	Fraction
a)	1000	10.00	$\frac{10}{1}$
b)	500	5.00	$\frac{5}{1}$
c)	250	2.50	$\frac{5}{2}$
d)	125	1.25	$\frac{5}{4}$
e)	62.5	0.625	$\frac{5}{8}$

4.3 Percent of a Number, pages 142–143

3. a) 6000 b) 0.75 c) 0.04

4. a) 12 b) 1000 c) 10.5

5. a) 1.3 b) approximately 144.88 c) \$219.63

6. a) 3.25 b) 150.8 c) \$191.25

7. a) 0.5% b) 5

8. \$21.42

9. 5957.73 m

10. a) 75 mL b) 825 mL

11. approximately 649 004 km²

12. 1100 km

13. a) Commission is the portion of the sale price that the real estate agent earns. b) \$18 700

14. 50; 4% is half of 8%, and 50 is half of 100

15. Answer may vary. Example: \$572.15, with an assumption that no rounding occurred after each bid.

16. 8

4.4 Combining Percents, pages 148–149

4. \$38.04

5. \$66.57

6. \$38.25