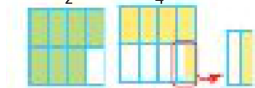


15. Since one square on a hundred grid is equal to 1%, then one square on a thousand grid (10 hundred grids placed together) would be equal to 0.1%. If this pattern is continued, then very small percents can be expressed on larger grids. If a ten million grid was used, then 0.0000125% would be represented 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 $\frac{8}{1000} = \frac{1}{125}$

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.

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

	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

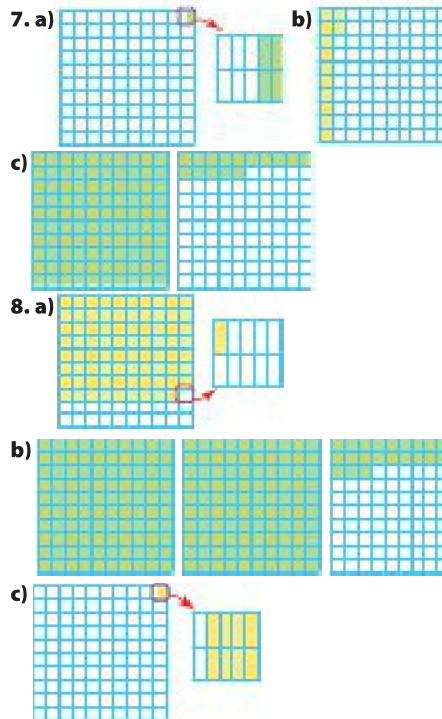
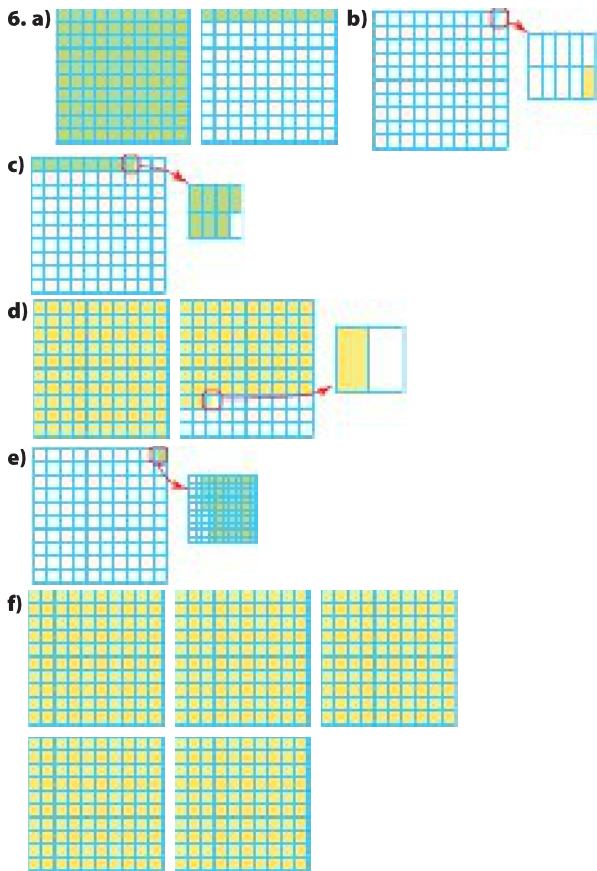
- 7. a)** 132 caribou **b)** The increase is not 30% because the 20% increase in the second year is based on the new population after the 10% increase in the first year.
- 8.** Answers may vary based on the PST rate in your province. Example: Based on a total tax of 12% (GST = 5% and PST = 7%):

Item Purchased	Price	Total Tax (12%)	Total Cost
a) Boots	\$119.99	\$14.40	\$134.39
b) Pants	\$89.99	\$10.80	\$100.79
c) Gloves	\$39.99	\$4.80	\$44.79
d) Helmet	\$189.99	\$22.80	\$212.79

- 9. a)** \$23 736 **b)** \$26 109.60
- 10.** \$362.10
- 11. a)** \$1060.90 **b)** 6.09%
- 12. a)** swim: approximately 2.9%; bike: approximately 77.7%; run: approximately 19.4%
- b)** approximately 97.1%
- 13.** 70%
- 14.** 8%

Chapter Review, pages 150–151

- 1.** percent **2.** fractional **3.** combined
- 4. a)** 2 **b)** 6 **c)** 15
- 5. a)** $\frac{7}{10}\%$ **b)** $\frac{3}{5}\%$ **c)** $50\frac{1}{4}\%$ **d)** 245%



9.

	Fraction	Decimal	Percent
a)	$\frac{23}{200}$	0.115	11.5%
b)	$\frac{19}{80}$	0.2375	$23\frac{3}{4}\%$
c)	$\frac{3}{200}$	0.015	1.5%
d)	$3\frac{17}{20}$	3.85	385%

- 10. a)** $\frac{110}{100} = \frac{11}{10}$ or 1.1 **b)** Answer may vary. Example:

It means that you must give more of an effort than you would normally.

- 11. a)** 0.955 or $\frac{955}{1000} = \frac{191}{200}$; Kyle scored $\frac{191}{200}$ on his

practice test. **b)** 1.4 or $\frac{140}{100} = \frac{7}{5}$; The store's sales

increased by a factor of 1.4. **c)** 0.009 or $\frac{9}{1000}$; By getting your car tuned up, you can reduce emissions by 0.009 times the original amount.

- 12. a)** 264.5 **b)** 40.4 **c)** 0.1 **d)** 0.8 **e)** 7656 **f)** 500

13. 6.25 cm

14. \$5.50

15. a) 1814 trees **b)** fir: approximately 31%; pine: approximately 18%; larch: approximately 9%; cedar: approximately 5%; hemlock: approximately 37%

16. \$329.31

17. a) No, the populations did not increase by the same amount. In the second year, the 7% increase in Cedarville is applied to the new population after the initial year increase of 7%. In Pinedale, the 15% increase is applied to the initial population of 1200.

b) Cedarville: 1387 people; Pinedale: 1380 people