

2. a) $(3 + 2) \times 4 = 20$
 b) $20 - 6 \times (2 + 1) = 2$
 c) $4 \times (2 + 3) + 1 = 21$
 d) $4 \times (2 + 3 + 1) = 24$
 e) $(4 + 2) \times (3 - 2) = 6$
 f) $(7 - 2)^2 + 3 = 28$
 g) $(2 + 2 + 2)^2 = 36$
 h) $8 - 3 \times (2 - 1) = 5$
3. a) 21 b) 7 c) 2 d) 17
 e) 5 f) 38 g) 35 h) 8
 i) 46 j) 25
4. Fawn is correct.
5. (d)
6. (b)
7. a) < b) > c) > d) <
 e) = f) = g) < h) =
8. a) $3 \times 4 + 2 \times 6$
 b) 24 articles of clothing

1.8 Solve Problems by Using Power Patterns

1. a) The exponent is the same as the number of zeros.
 b) 100 zeros
2. 5
3. a) 16
 b) Square the middle number to find the sum. $5^2 = 25$
 c) 81

Test Yourself

1. a) 2, 4, 6, 8, 10, 12
 b) 8, 16, 24, 32, 40, 48
 c) 10, 20, 30, 40, 50, 60
 d) 12, 24, 36, 48, 60, 72
2. a) yes b) no c) yes d) yes
3. a) 30 b) 28 c) 24 d) 20
4. every 21 days
5. a) 1, 2, 3, 4, 6, 9, 12, 18, 36
 b) 1, 2, 3, 6, 7, 14, 21, 42
 c) 1, 2, 4, 17, 34, 68
 d) 1, 3, 9, 27, 81
6. a) 8 b) 1 c) 24 d) 14
7. a) 2 b) 7 c) 21
8. 2 buses, 1 van
9. a) Mr. Singh's garden could be 1 by 36, 2 by 18, 3 by 12, 4 by 9, or 6 by 6. Mrs. Jackson's garden could be 1 by 20, 2 by 10, or 4 by 5.
 b) The fence could be 4 m long (the GCF).
10. a) yes b) yes c) no d) no
 e) yes f) no
11. a) 32 b) 125 c) 10 000
12. a) 3^3 b) 2^7 c) 10^6
13. 17 m by 17 m

14. a) 10 b) 100 c) 200 d) 3000
15. a) 30 b) 13 c) 21 d) 4505
16. a) 1 b) 8 c) 5 d) 4
17. a) Volume = (5 cm^3) b) 125 cm^3

Chapter 2

2.1 Exploring Ratio Relationships

1. a) yes b) no
2. b) 1:2, 3:6, 4:8; They are all similar.
3. c) yes d) 5:1 e) 10:2 f) yes

2.2 Solving Ratio Problems

1. a) 4:2, 6:3, 8:4
 b) 8:1, 16:2, 24:3
 c) 9:5, 18:10, 36:20
 d) $\frac{20}{6}, \frac{30}{9}, \frac{40}{12}$
2. a) 2 b) 6 c) 6 d) 3
3. a) 16 shaded squares, $4:6 = 16:24$
 b) 2 shaded squares, $1:4 = 2:8$
4. a) 2:3 b) 15 pails of earth
5. a) 12:6 b) 36 years old
 c) three times

2.3 Solving Rate Problems

1. a) 9 times/3 months; 3 times/month;
 6 times/2 months
 b) $\$32/4 \text{ h}$; $\$8/\text{h}$; $\$16/2 \text{ h}$
2. a) 14 km/h b) 2 h
3. a) $\$18$ b) $\$108$
4. a) 36 times/min b) 72 times/min
 c) 130 times/min
5. a) 5 min b) 4 min

2.4 Communicating about Ratio and Rate Problems

1. yes
2. a) 4 km b) no, only 8 km
3. a) 20 brownies b) 25 brownies

2.5 Ratios as Percents

1. a) $\frac{1}{2}$ or $\frac{50}{100}$; 0.50; 50%
 b) $\frac{3}{4}$ or $\frac{75}{100}$; 0.75; 75%
 c) $\frac{1}{2}$ or $\frac{50}{100}$; 0.50; 50%
 d) $\frac{1}{2}$ or $\frac{50}{100}$; 0.50; 50%

e) $\frac{28}{100}$ or $\frac{7}{25}$; 0.28; 28%

f) $\frac{40}{100}$ or $\frac{2}{5}$; 0.40; 40%

2. a) 46% b) 38% c) 48% d) 40%
e) 80% f) 75%

3. a) 0.21, 0.74, 0.98, 0.03
b) 21:100, 74:100, 98:100, 3:100

4. a) 1:4 b) $\frac{3}{5}$ c) 1:5, 0.2

d) $\frac{3}{10}$, 30% e) 0.41, 41%

f) 9:50, 18%

g) $\frac{23}{100}$, 23:100, 0.23 h) $\frac{6}{8}$ or $\frac{3}{4}$, 0.75, 75%

5. a) 100%, 84%, 64%, 41%, 2%
b) 114%, 35%, 14%, 7%, 3%
c) 0.9, 74%, 0.5, 0.32, 19%

d) 88%, 56%, $\frac{45}{100}$, $\frac{2}{100}$

e) 85%, 0.81, 44%, $\frac{1}{4}$, $\frac{2}{10}$

f) 91%, 72%, $\frac{8}{20}$, $\frac{26}{100}$, 0.04

6. 25%

7. 20%

8. 15%

2.6 Solving Percent Problems

1. a) 30 b) 10 c) 6 d) 3.6
e) 67.5 f) 12

2. a) 300 b) 150 c) 70 d) 750
e) 800 f) 40

3. 28%

4. 106%

5. a) \$16.00, \$18.00, \$17.25
b) Able Audio

6. 40, 64, 16

7. 585 people

8. a) 12 matches b) 4 matches

9. 30%

10. a) \$3.00, \$27.00 b) 4.95, \$10.05
c) 22.50, \$22.50 d) 2.50, \$47.50
e) \$14.70, \$83.30 f) \$16.50, \$5.50

11. a) 70% b) \$175 c) \$52.50

2.7 Decimal Multiplication

1. a) 0.15 b) 0.54

2. a) 0.14 b) 0.48 c) 1.55 d) 0.096

3. 41.25

4. \$3.15

2.8 Decimal Division

1. a) 13 b) 12

2. a) 4 b) 33 c) 4.16 d) 9.2

3. a) 30 flags b) 5 flags c) 16 flags

4. 12.5 h

Test Yourself

1. a) 40:60 b) $\frac{2}{5}$ c) 60%

2. (a), (c), and (d) are equivalent

3. a) 4 b) 6 c) 15 d) 4

e) 1 f) 8 g) 3 h) 30

4. 8 min

5. \$12/h, \$8.50/h, \$10/h, \$7.75/h

6. 1350 people

7. a) 110 b) 10 c) 60 d) 20%

e) 140 f) 22

8. a) 25% b) 75 dogs

9. a) 5.28 b) 0.015 c) 1.98 d) 4

e) 5 f) 3.90

10. 0.96 (Romona), 0.87 (Miguel), 0.79 (Paul),
0.75 (Fawn)

11. 336 people

12. a) 180 cm by 90 cm b) 150 cm

c) 150 cm by 240 cm d) 210 cm

Chapter 3

3.1 Collecting Data

1. primary data

2. a) 15% chose pizza, 50% chose hot dogs, 30%
chose hamburgers, 5% chose sandwiches

b) hot dogs and hamburgers

3. a) 70% chose apple juice, 25% chose grape
juice, 5% chose orange juice

b) apple juice

3.2 Avoiding Bias in Data Collection

1. a) ii b) ii c) i

2. a) What is your favourite type of cereal? Or,
which of the following cereals do you
prefer? (with a list provided)

b) What type of music do you listen to?

3.3 Using a Database

1. a) a field b) a record

2. Number in store

3. a) Sale price b) \$20 for jeans

c) \$75 for black sweater