Answers

Topic 1 Getting Ready

Page 1

Getting Started

2 **a)** Topic 6 – Mass
b) Topic 22 – Transformations
c) Topic 12 – Number Facts
d) Topic 17 – Multiplying and Dividing
e) Topic 23 – Perimeter and Area

Unit 1 Check Your Skills

Page 2

Let's Think …

The numbers in each column, row and diagonal do not all have the same sum.

1 **a)** $1.00 – $0.30 = $0.70
They each got 70¢ change.
b) 50¢ + 20¢
c) 20¢ + 10¢ + 20¢ + 20¢

2 **a)** 90 minutes
b) 135 minutes
c) 216 minutes

3 You can fill 15 containers of 200 mL.

4 **a)** 800 + 70 + 6
b) 2 000 + 300 + 40 + 6
c) 80 000 + 900 + 70 + 6
d) 100 000 + 20 000 + 3 000 + 90 + 8
e) 1 000 000 + 200 000 + 30 000 + 4 000

5 **a)** thousand
b) one
c) ten thousand
d) million

6 **a)** 12 345 + 2 765 = 15 110
12 000 + 2 000 = 14 000
300 + 700 = 1 000
40 + 60 = 100
5 + 5 = 10
14 000 + 1 000 + 100 + 10 = 15 110
b) 19 876 – 4 859 = 15 017
19 876
– 4859
15 017

c) $23 \times 15 = 345$
$20 \times 10 = 200$
$3 \times 10 = 30$
$20 \times 5 = 100$
$3 \times 5 = 15$
$200 + 30 + 100 + 15 = 345$

d) $3\,145 \div 5 = 629$

e) $3\,456 + 349 + 12\,807 = 16\,612$

$$\begin{array}{r} 3\,456 \\ 349 \\ \underline{12\,807} \\ 16\,612 \end{array}$$

f) $9 \times 387 = 3\,483$
$9 \times 300 = 2\,700$
$9 \times 80 = 720$
$9 \times 7 = 63$
$2\,700 + 720 + 63 = 3\,483$

7 **a)** 29, 36, 43

b) 65, 59, 53

c) 45 000, 450 000, 4 500 000

d) 56, 28, 14

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8 Decade, leap year, year, month, week, day, hour, minute, second

9 Square

10 $85\,604 - 17\,342 = 68\,262$ miles

$$\begin{array}{r} 85\,604 \\ -\ 17\,342 \\ \hline 68\,262 \end{array}$$

Last year it sailed 68 262 miles

11 **a)** $250 + 347 + 640 = 1\,237$ mm
She has 1 237 mm of ribbon.

b) 1.237 m of ribbon.

12 **a)** $\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$

b) $\frac{4}{7} + \frac{2}{7} - \frac{3}{7} = \frac{3}{7}$

c) $3\frac{1}{5} + 2\frac{3}{5} = 5\frac{4}{5}$

d) $3\frac{8}{9} - 1\frac{5}{9} = 2\frac{3}{9}$

13 **a)** 36 °C

b) 3 °C

c) 98 °C

14 **a)** Student's drawing

b) $3 \times 2 + 6\frac{1}{2} \times 2$
$6 + 13 = 19$ cm

15 When doing her first calculations, she broke the numbers up before multiplying. She wrote 3 + 10 instead of 3 × 10, although her calculations were correct.

16 **a)** Flip
b) Slide
c) Rotation

17 **a)** Impossible
b) Likely
c) Certain

Looking Back

The width of the rectangle is 4 centimetres.

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Talking Mathematics

Area is measuring two-dimensional shape whereas volume is measuring three-dimensional shape.
Share, find the quotient, how many times will something go into something, divide.
A rectangle has two opposite sides equal in length, whereas a square has all four sides equal in length.
A mixed number is made up of a whole number and a fraction; a whole number stands alone, without decimals or fractions.

Quick Check

1 **a)** 65
b) 260
c) 540
d) 200
e) 240
f) 250
g) 249
h) 36

2 **a)** 2 000 + 1 000 = 3 000
2 341 + 1 408 = 3 749
b) 2 000 – 1 000 = 1 000
2 000 – 1 209 = 791
c) 2 000 – 1 000 = 1 000
1 987 – 1 235 = 752
d) 3 000 – 1 000 = 2 000
2 872 – 1 458 = 1 414

3 1 209 089
1 000 000 – million
200 000 – hundred thousand
9 000 – thousand
80 – ten
9 – one

4 b) 2:45
a) 4:40

e) 6:50
c) 9:55
d) 10:35

5 Student's drawing

6 **a)** 4 – 2
6 – 3
2 – 1
0 – 0
b) 3 210
c) 0.321

7 $5 \times 2 + 4 \times 2$
10 + 8 = 18 m
They will neede 18 posts for the fence.

Topic 2 Numbers and Place Value

Page 5

Getting Started

1 **a)** 7 823 512
b) 25 000 000

2 **a)** 1 000
b) 10 000
c) 10 000 000

3 **a)** Eight million seven hundred sixty-five thousand
b) Three million
c) Three hundred forty thousand nine hundred eighty-seven
d) Two million three hundred thousand five hundred
e) One million four hundred fifty thousand two hundred thirty-one

Unit 1 Revisiting Millions

Page 6

Let's Think …

a) 9 754 210
b) 1 024 579
c) Nine million seven hundred fifty-four thousand two hundred ten
One million twenty-four thousand five hundred seventy-nine

1 **a)** 99 987; 99 988; 99 989; 99 990; 99 991; 99 992; 99 993; 99 994; 99 995; 99 996; 99 997; 99 998; 99 999; 1 000 000; 1 000 001; 1 000 002; 1 000 003; 1 000 004; 1 000 005
b) 990 000; 991 000; 992 000; 993 000; 994 000; 995 000; 996 000; 997 000; 998 000; 999 000; 1 000 000; 1 001 000
c) 999 950; 999 960; 999 970; 999 980; 999 990; 1 000 000; 1 000 010; 1 000 020
d) 600 000; 700 000; 800 000; 900 000; 1 000 000; 1 100 000; 1 200 000

e) 1 000 010; 1 000 000; 999 990; 999 980; 999 970; 999 960; 999 950
f) 1 000 002; 1 000 000; 999 998; 999 996; 999 994; 999 992; 999 990

2 **a)** 40 000 – forty thousand
b) 4 000 000 – four million
c) 80 – eighty
d) 200 000 – two hundred thousand
e) 8 000 – eight thousand
f) 900 000 – nine hundred thousand
g) 900 – nine hundred
h) 9 – nine

3 123; 6 897; 78 098; 900 324; 993 098; 1 096 321; 2 000 000

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4 **a)** Student 1 – 3 552 000
Student 2 – 1 465 250
Student 3 – 3 552 000
Student 4 – 1 499 300
b) One number – 1 876 125
c) Example: Start – Has it got 3 millions? – (Yes) – Has it got five thousands – (Yes) – Has it got less than 5 hundred thousands? – (Yes) – Accept

Looking Back

1 **a)** 1 500 000
b) 2 466 000
c) 3 200 000
d) 2 100 000

2 3 200 000; 2 466 000; 2 100 000; 1 500 000

Unit 2 More Millions

Page 8

Let's Think …

a) 56 000 000
b) 109 000 000
c) 140 000 000
d) 16 500 000

These numbers would be written as such owing to the place value of each digit.

1 **a)** Three hundred thirty-four million
b) Two hundred ten million six hundred fifty-four thousand seven hundred sixty-three
c) Nine hundred eighty-seven million nine hundred eighty-seven
d) Seventeen million two hundred thirty-four thousand nine hundred
e) Nine hundred ninety-nine million four hundred thirty-five thousand four
f) Five hundred ninety-nine million one thousand one

2 **a)** 60 000 000 – sixty million
b) 600 000 000 – six hundred million
c) 6 000 000 – six million

3 **a)** 600 000 000 + 40 000 000 + 7 000 000 + 200 000 + 30 000 + 4 000 + 700 + 50 + 6
b) 8 000 000 000 + 100 000 000 + 20 000 000 + 100 000 + 30 000 + 5 000 + 700 + 80 + 1
c) 700 000 000 + 30 000 000 + 4 000 000 + 600 000 + 80 000 + 100 + 20 + 9

4 **a)** 8 747 543; 10 203 004; 12 983 467; 18 765 100; 24 302 065
b) 132 098 999; 191 098 000; 199 046 871; 200 987 456; 218 021 098
c) 213 312 456; 231 432 654; 231 876 132; 231 987 098; 312 342 125

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5 **a)** Mercury, Venus, Earth
b) Jupiter
c) Yes
d) Yes

6 **a)** Antarctica, Australia, Europe
b) Asia
c) North America
d) Bigger
e) Australia, Europe, Antarctica, South America, North America, Africa, Asia

Looking Back

a) 106 400 000 < 165 250 000
b) 6 000 000 – six million
60 000 000 – sixty million
c) 58 850 000 km^2

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Talking Mathematics

a) Two hundred thirty-three million eight hundred seventy-six thousand sixteen
b) 123 456 089 < 123 465 908
c) Counting from the ones, if a number is the hundred million it will be the ninth digit in the number.

Quick Check

1 **a)** 3 014 499
b) 325 125 000
c) 10 000 000

2 **a)** 3 000 000 + 10 000 + 4 000 + 400 + 90 + 9
b) 300 000 000 + 20 000 000 + 5 000 000 + 100 000 + 20 000 + 5 000
c) 10 000 000

3 **a)** 100 000 – hundred thousand
b) 30 000 000 – thirty million
c) 9 000 000 – nine million
d) 300 000 000 – three hundred million

4 **a)** 974 433 210
b) 102 334 479
c) 970 443 321
d) 130 234 479

5 **a)** Pacific Ocean
b) Arctic Ocean
c) Atlantic Ocean

Topic 3 Exploring Patterns

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Getting Started

1 Examples:
a) Numbers on houses along a street.
b) Lines on the road showing two lanes.
c) Robot
d) Tablecloth
e) Curtains

2 **a)** Skip count in 2s starting with 13.
21, 23, 25
b) Double the previous number, starting with 24.
192, 384, 768

3 **First rule:**
18 ÷ 6 + 3 = 6
60 ÷ 6 + 3 = 10
108 ÷ 6 + 3 = 21
Second rule:
3 × 100 – 10 = 290
7 × 100 – 10 = 690
10 × 100 – 10 = 990

Unit 1 Understand and Describe Patterns

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Let's Think …

a) One
b) Six
c) Twelve
d) Eighteen and twenty-four
e) Beehive

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1 **a)** Student's drawing: 5 squares; 6 squares (in a row)
1, 2, 3, 4, 5, 6
Add one to the last square, starting with one.

b) Student's drawing: 5 triangles; 6 triangles (fitting into each other)
1, 2, 3, 4, 5, 6
Add one to the last triangle, starting with one. Make sure they fit into each other (rotating position each time).

c) Student's drawing: 10 squares; 12 squares (adding two more squares on top of each other to the pattern)
2, 4, 6, 8, 10, 12
Add two squares on top of each other to each new pattern.

d) Student's drawing: 15 dots; 21 dots (array of dots creating a triangle, each time adding by one more row)
1, 3, 6, 10, 15, 21
Add consecutive numbers, starting at 2.

e) Student's drawing: 25 dots; 36 dots (array of dots to make a square, each time adding one more row and column)
1, 4, 9, 16, 25, 36
Multiply each pattern by itself (Pattern 1: 1×1, Pattern 2: 2×2, and so on).

Looking Back

A triangle made up of dots. (15 dots.)

Unit 2 Investigate Patterns

Page 14

Let's Think …

To find the value of the numbers you just multiply them by their position in the sequence; for example, 1st dot = 1×1; 2nd set = 2×2. So the 10th number is $10 \times 10 = 100$.

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1
$1 \times 1 = 1$
$2 \times 2 = 4$
$3 \times 3 = 9$
$4 \times 4 = 16$
$5 \times 5 = 25$
$6 \times 6 = 36$
$7 \times 7 = 49$
$8 \times 8 = 64$
$9 \times 9 = 81$
$10 \times 10 = 100$

2
a) 24; 35; 48; 63; 80
b) 3; 8; 15; 24; 35; 48; 63; 80
c) The number of dominoes needed is always one less that the square numbers.

3
a) You add one more than you did to the previous number.
b) Instead of making drawings, you can just add on to the number you already have.
c) 1; 3; 6; 10; 15; 21; 28; 36; 45; 55; 66; 78; 91

4 **a)** $1 \times 1 = 1$
$2 \times 3 = 6$
$3 \times 4 = 12$
$4 \times 5 = 20$
b) It is double the triangular numbers.
c) $9 \times 10 \div 2 = 45$

Looking Back
a) 9, 1, 16
b) 1, 3, 6, 10
c) 10

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Talking Mathematics
1 What is the name of the pattern made with shapes or objects?
2 What can help you extend a pattern further?
3 What tells you how many times a number is multiplied by itself?
4 What is the name of a pattern made up of a sequence of numbers that follow a rule?
5 What do we call numbers to the power of two?

Quick Check
1 **a)** Add 3 to the last number in the sequence to find the next number.
1, 4, 7, 10, 13, 16, 19
b) Decrease each time to find the next number, by increasing the number used to decrease by one each time.
101, 99, 96, 92, 87, 81, 74
c) Decrease the numbers by dividing by 10 to get the next number in the sequence.
2 700 000, 270 000, 27 000, 2 700, 270, 27
d) Decrease the numbers by dividing by 3 to get the next number in the sequence.
2 916, 972, 324, 108, 36, 12
2 **a)** Add three more squares in the same formation to the shape to make the next shape in the sequence.
b) 15 squares
c) 3, 6, 9, 12, 15
d) $20 \times 3 = 60$ squares

Topic 4 Temperature

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Getting Started
1 Examples:
Hottest: volcano. Coldest: iceberg
2 Thermometer
3 Celsius and Fahrenheit

4

Item being measured	Temperature
Healthy body temperature	37 °C
Boiling point of water	100 °C
Freezing point of water	0 °C
Temperature in The Bahamas in winter	25 °C
Temperature of a cup of tea	60 °C

Unit 1 Working with Temperature

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Let's Think …

1 Fahrenheit and Celsius

2 32 °F, 0 °C

3 121 °F, 50 °C are the hottest.
-40 °F, -40 °C are the coldest.

4 5 °C

5 35 °C

1

Description	°C	°F	Thermometer
Oven temperature for baking	180	356	C
Boiling point for water	100	212	A
Cup of tea	60	140	F
Hot bath	40	104	G
Healthy body temperature	37	98.6	B
Warm summer day in the Caribbean	28	82.4	E
Freezing point of water	0	32	D

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2 **a)** 10 °C = 50 °F
b) 40 °F = 5 °C
c) 50 °C = 121 °F
d) 50°F = 10°C
e) 125 °C = 257 °F
f) 425 °F = 218 °C

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3 **a)** –5 °F
b) –23 °F
c) –50 °F

4 **a)** 23 °C to 0 °C is 23 °C
0 °C to –10 °C is 10 °C
23 °C + 10 °C = 33 °C
The temperature change is 33 °C.

b) 7 °C to 0 °C is 7 °C
0 °C to –12 °C is 12 °C
7 °C + 12 °C = 19 °C
The temperature change is 19 °C.

c) 29 °C to 0 °C is 29 °C
0 °C to –16 °C is 16 °C
29 °C + 16 °C = 45 °C
The temperature change is 45 °C.

Looking Back

1 Degrees Fahrenheit
2 Degrees Celsius
3 Negative temperatures

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Talking Mathematics

Negative temperatures
Hot, cool, warm, cold

Quick Check

1 Degrees Fahrenheit
2 Body temperature: 37 °C, 98.6 °F
Freezing point of water: 0 °C, 32 °F
Boiling point of water: 100 °C, 212 °F
3 0 °F
4 160 °C
5 55 °C to 0 °C is 55 °C
0 °C to –55 °C is 55 °C
55 °C + 55 °C = 110 °C
The temperature change is 110 °C.

Topic 5 Fractions

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Getting Started

2 b, c, f
3 **a)** 8 chocolates
b) 4 chocolates
c) $\frac{2}{16}$ or $\frac{1}{8}$

Unit 1 Revisiting Fractions

Page 23

Let's Think …

The parts are not all the same size.

A is $\frac{3}{8}$ of the big square.

B and C are both $\frac{1}{4}$ of the big square.

D is $\frac{1}{8}$ of the big square.

1 **a)** A – $\frac{1}{4}$

B – $\frac{2}{8}$

C – $\frac{2}{8}$

D – $\frac{5}{8}$

E – $\frac{1}{6}$

F – $\frac{1}{3}$

b) A – $\frac{3}{4}$

B – $\frac{6}{8}$

C – $\frac{6}{8}$

D – $\frac{3}{8}$

E – $\frac{3}{6}$

F – $\frac{2}{3}$

2 $\frac{1}{10}, \frac{2}{10}, \frac{3}{10}, \frac{4}{10}, \frac{5}{10}, \frac{6}{10}, \frac{7}{10}, \frac{8}{10}, \frac{9}{10}$

3 $\frac{3}{6}, \frac{3}{9}, \frac{3}{21}, \frac{3}{12}, \frac{3}{15}$

4 $\frac{1}{3}, \frac{1}{5}, \frac{1}{9}, \frac{3}{5}, \frac{3}{9}, \frac{5}{9}$

5 **a)** $\frac{1}{5}$

b) $\frac{1}{4}$

c) $\frac{3}{4}$

d) $\frac{4}{5}$

e) $\frac{1}{2}$

f) $\frac{1}{3}$

g) $\frac{1}{3}$

h) $\frac{1}{3}$

6 **a)** $\frac{1}{4}, \frac{3}{4}, \frac{3}{4}$

b) $\frac{1}{10}, \frac{4}{10}, \frac{7}{10}$

7 **a)** $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$

b) $\frac{2}{5} = \frac{4}{10} = \frac{6}{15} = \frac{8}{20} = \frac{10}{25} = \frac{12}{30}$

c) $\frac{3}{8} = \frac{6}{16} = \frac{9}{24} = \frac{12}{32} = \frac{15}{40} = \frac{24}{48}$

Looking Back

a) $\frac{6}{36} = \frac{1}{6}$

b) $\frac{4}{36} = \frac{1}{9}$

c) $\frac{9}{36} = \frac{1}{4}$

d) $\frac{1}{36} = \frac{2}{72}$

e) $\frac{5}{36} = \frac{10}{72}$

f) $\frac{3}{36} = \frac{1}{12}$

Unit 2 Order and Compare Fractions

Page 25

Let's Think …

He can change all the fractions to eighths (as denominators) and then place the numbers on the number line. The numbers closer to 1 are the bigger numbers.

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1 **a)** False

b) False

c) False

d) False

e) False

f) True

g) False

h) False

2 b, c, d, e

3 b, c, e

4 **a)** $\frac{2}{3} < \frac{3}{4}$

b) $\frac{6}{10} < \frac{4}{5}$

c) $\frac{1}{2} > \frac{1}{3}$

d) $\frac{1}{3} < \frac{5}{12}$

e) $\frac{2}{3} < \frac{5}{6}$

f) $\frac{4}{5} < \frac{17}{20}$

g) $\frac{2}{5} < \frac{41}{100}$

h) $\frac{1}{4} < \frac{2}{5}$

5 **a)** $\frac{1}{6}, \frac{1}{4}, \frac{1}{3}, \frac{3}{8}, \frac{1}{2}$

b) $\frac{1}{10}, \frac{1}{2}, \frac{4}{5}, \frac{9}{10}$

c) $\frac{1}{3}, \frac{7}{12}, \frac{3}{4}, \frac{5}{6}$

6 **a)** $\frac{5}{6}, \frac{2}{3}, \frac{7}{12}, \frac{1}{2}$

b) $1\frac{4}{5}, 1\frac{3}{4}, 1\frac{6}{10}, 1\frac{1}{2}$

c) $1\frac{4}{5}, 1\frac{3}{4}, 1\frac{7}{10}, 1\frac{2}{5}$

7 **a)** They are not the same amount if you look at the numerators. You will get more pieces of cake if you divide the cake into 8 equal pieces and have 6, instead of 3 pieces cut from 4. Although the sizes will differ, you will have more pieces from $\frac{6}{8}$.

b) Unlimited amount of fractions as there is an unlimited amount of numbers.

Looking Back

1 **a)** $\frac{2}{8} = \frac{1}{4}$

b) $\frac{1}{5} = \frac{2}{10}$

c) $\frac{3}{4} < \frac{7}{8}$

d) $\frac{3}{4} < 1$

2 **a)** $\frac{3}{4}, \frac{2}{3}, \frac{1}{2}, \frac{2}{6}$

b) $1\frac{1}{2}, 1\frac{1}{5}, 1\frac{1}{8}, 1\frac{1}{12}$

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Talking Mathematics

$\frac{12}{20}$
$\frac{15}{20}$
$2\frac{9}{12}$

Quick Check

1 **a)** $\frac{3}{5}$

b) $\frac{2}{3}$

c) $\frac{4}{5}$

d) $\frac{5}{9}$

e) $\frac{7}{20}$

2 **a)** $\frac{32}{108}$

b) $\frac{3}{4}$

3 **a)** $1\frac{3}{4}$ hours

b) $1\frac{1}{4}$ metres

c) $1\frac{1}{2}$ years

4 **a)** $\frac{5}{10} = \frac{1}{2}$

b) $\frac{1}{3} < \frac{4}{10}$

c) $\frac{1}{3} > \frac{3}{10}$

d) $\frac{4}{10} > \frac{3}{12}$

5 **a)** $\frac{3}{12}, \frac{1}{3}, \frac{1}{2}, \frac{7}{10}$

b) $\frac{2}{8}, \frac{1}{3}, \frac{1}{2}, \frac{9}{12}$

c) $1\frac{3}{10}, 1\frac{2}{5}, 1\frac{6}{10}$

d) $1\frac{1}{4}, 1\frac{1}{2}, 2\frac{1}{2}, 3\frac{5}{12}$

Topic 6 Mass

Unit 1 Standard Units of Measure

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Let's Think …

Milligrams
Kilograms
Kilograms
Tonnes

1 **a)** 2 g

b) 1 t

c) 120 g

d) 3 kg

e) 500 mg

f) 5 kg

g) 1 lb

h) 1 oz

i) 1 lb

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2 They are powers of 10.

3 **a)** 3 g = 3 000 mg

b) 2 kg = 2 000 g

c) 4 t = 4 000 kg

4 Multiplied the number given by 1 000.

5 **a)** 2 000 mg = 2 g
b) 5 000 g = 5 kg
c) 3 000 kg = 3 t

6 Divided the number given by 1 000.

7 **a)** 3 000 g
b) 2 500 g
c) 5 250 g
d) 6 100 g

8 **a)** 0.45 kg
b) 7.52 kg
c) 19 kg
d) 11.439 kg

9 **a)** 2 lb = 32 oz
b) 5 lb = 80 oz
c) 20 oz = 1 lb 4 oz
d) 48 oz = 3 lb 0 oz

10 There is a standard difference between the distances and it is easy to calculate as you are working with 10, 100 or 1 000.

11 **a)** 45 ÷ 8 = 5 remainder 5
He will need to make 6 trips to carry all the books.
b) 3 500 ÷ 5 = 700
They can make 700 boxes.
c) 2 500 ÷ 250 = 10
She can make 10 batches.

Looking Back

1 1 000 g in 1 kg.

2 1 000 kg in a tonne.

3 550 g = 0.55 kg
Division

4 8.5 kg = 8 500 g
Multiplication

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Talking Mathematics

1 A kilogram is equal to 1 000 grams so the word kilogram means a thousand grams.

2 It is a unit of money (Britain); an enclosure for animals or vehicles; to hit something hard.

3 **a)** length – all the other words relate to mass.
b) tons – it is a customary measure whereas the others are all metric units.

Quick Check

1 1 000 kg

2 2 000 lbs

3 Milligrams, grams, kilograms, tonnes

4 Ounces, pounds, tons

5 A man
6 A textbook
7 A thick book
8 **a)** 500 g
b) 2 000 g
c) 5 250 g
9 **a)** 1 kg
b) 8.5 kg
c) 4.295 kg
10 123 000 – 90 000 = 33 000
33 000 ÷ 500 = 66
He will reach his target mass in 66 weeks.

Topic 7 Decimals

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Getting Started

1 **a)** A whole number
b) A decimal (tenth)
2 **a)** It is more than 20 g.
b) Decimal place is a hundredth. We know this as it is the number that comes after the tenth.
3 **a)** The money is written as a decimal as the amount before the decimal point is dollars (whole numbers) and the amount after the point is cents, which is of much less value than a whole dollar.
b) $0.85
4 $3.17

Unit 1 Revisit Decimal Place Value

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Let's Think …

0.637

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1 **a)** 0.345 – zero point three four five
Three tenths
b) 0.808 – zero point eight zero eight
Eight thousandths
c) 3.041 – three point zero four one
Four hundredths
d) 2.409 – two point four zero nine
Two ones
e) 3.098 – three point zero nine eight
Nine hundredths
2 **a)** 0.3
b) 0.42

c) 0.009
d) 2.3
e) 9.012

3 **a)** 0.207
b) 2.07
c) 9.431
d) 3.9

4 **a)** 3.371
b) 15.805
c) 2.609
d) 2.359

5 **a)** 0.273/0.723/0.327/0.237/0.732/0.372
b) 20.37/20.73/23.70/27.30/23.07/27.03
c) 27.03
d) 732.0
e) 0.237

6 **a)** 0.180
b) 0.180 kg

Looking Back

1 Smaller, as there are more spaces between the thousandth than the hundredth and the whole number.

2 1 000

3 10

4 0.5 is five tenths, so the number written would represent 500 thousandths.

Unit 2 Compare and Order Decimals

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Let's Think …

The beetle is longer.
Longer as there are digits in the hundredth and thousandth column.

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1 **a)** 0.5 > 0.05
b) 1.25 < 1.255
c) $\frac{7}{10}$ > 0.07
d) 1.500 = 1.5
e) 1.03 < 1.303
f) 0.12 < 0.125
g) 7 < 7.02
h) 0.87 = 0.870
i) 0.002 < 0.02

2 **a)** 4.23
b) 21.09
c) 12.234

d) 9.013
e) 4.2
f) 9.05

3 **a)** 4.99, 4.49, 4.44, 4.105, 4.09
b) 13.21, 13.2, 13.03, 11.231, 11.22

4 **a)** 1.002 m, 1.02 m, 1.111 m, 2.001 m, 2.010 m
b) 7.3 m, 7.32 m, 7.325 m, 7.35 m, 7.53 m

5 0.3 cm, 0.5 cm, 0.13 cm

6 4.509, 4.510, 4.511, 4.512, 4.513 or 4.514

7 **a)** Clay, silt
b) Silt
c) Sand
d) No

Looking Back

a) 2.359, 2.395, 2.539, 2.593, 2.935, 2.953
b) 2.359, 2.395, 2.539, 2.593, 2.935, 2.953

Unit 3 Convert Between Fractions and Decimals

Page 37

Let's Think …

0.3, 0.4, 0.5, 0.8, 0.9, 1.0
The number may only be one decimal place after the point.
0.5 = $\frac{5}{10}$ = $\frac{1}{2}$

Page 38

1 **a)** $\frac{4}{1\,000}$ = $\frac{1}{250}$
b) $\frac{6}{100}$ = $\frac{3}{50}$
c) $8\frac{3}{1\,000}$
d) $\frac{876}{1\,000}$ = $\frac{219}{250}$
e) $5\frac{5}{1\,000}$ = $5\frac{1}{200}$

2 **a)** 0.12
b) 0.012
c) 1.02
d) 0.012
e) 0.500
f) 3.090

3 **a)** 0.9
b) 0.2
c) 3.5
d) 2.6
e) 1
f) 2.8

g) 10.8

h) 0.4

4 **a)** 0.1, 0.4, 0.7, 0.25

$\frac{2}{20}, \frac{1}{4}, \frac{2}{5}, \frac{7}{10}$

b) 0.4, 0.75, 0.5, 0.2

$\frac{1}{5}, \frac{80}{200}, \frac{1}{2}, \frac{3}{4}$

c) 0.8, 0.3, 0.45, 0.045

$\frac{9}{100}, \frac{3}{10}, \frac{9}{20}, \frac{4}{5}$

5 **a)** 0.725, 0.58, 0.68

Jaynae came first, Sheldon came second and Michael came third.

b) Peter (0.64) came first, Nisha (0.625) came second, Elayne (0.6) came third.

c) Jayne would come first overall as she had the highest score.

Looking Back

Convert each number to a fraction with 1 000 as the denominator. By looking at the decimals, you can see that $\frac{80}{25}$ is bigger as it has a whole number.

Page 39

Talking Mathematics

The value of the seven remains the same, and the zeros after the seven are just placeholders.
0.67 is a number with digits in the tenth and hundredth positions, not the thousandths.
You can convert the fractions to decimals and it will be easier to compare the fractions as they will all have the same denominators.

Quick Check

1 **a)** 0.4

b) 0.087

c) 0.09

d) 0.120

e) 0.002

2 **a)** 1.89

b) 3.4

c) 0.043

d) 3.250

e) $10.03

f) 3.300 km

3 0.34 > 0.309

4 **a)** One is one tenth; nine is nine thousandths.

b) 0.149 mm

c) 14.3 mm

Topic 8 Classifying Shapes

Unit 1 Polygons

Page 41

Let's Think …

A figure with three or more sides.
Triangle, square, pentagon, hexagon, and so on
The shapes on the left are irregular whereas the shapes on the right are regular with sides of equal length.

Page 43

1 **a)** Open, simple
b) Closed, not simple
c) Closed, simple
d) Open, not simple
e) Open, not simple

3 **a)** It has no straight lines.
b) It has no straight lines.
c) It is an open figure; all polygons are closed figures.
d) This is a solid and not a plane figure.

4 **a)** Irregular
b) Regular
c) Irregular
d) Regular
e) Regular

5 **a)** Regular triangle
b) Irregular heptagon
c) Regular hexagon
d) Regular octagon
e) Irregular quadrilateral

Looking Back

Student's drawings

Unit 2 Quadrilaterals

Page 44

Let's Think …

Squares and rectangles
Rectangles

Page 45

1 Four
2 Parallelogram
3 A, B and C

Page 46

4 Square, rhombus

5 D

6 **a)** Angle ABC is 110°

b) The two angles where the pairs of sides meet are equal.

7 They are the same shape, just different words used in different countries.

Looking Back

1 It has opposite sides parallel and equal in length, but all the sides are equal in size.

2 It has opposite sides parallel, but all sides equal in length and all the sides are equal in size.

3 Yes

4 Student's drawing

Unit 3 Solids

Page 47

Let's Think …

It would look similar to a cube.

Page 49

1 **a)** Triangular prism

b) Rectangular prism

c) Cube

d) Sphere

e) Square pyramid

f) Cylinder

g) Triangular pyramid

h) Cone

2 **a)** b, c

b) a, d, e, f, g, h

c) d, f, h

d) a, b, c, f

e) g

f) a, b, c, f

g) e, g

h) d, f, h

Looking Back

It has no straight lines.

It has no straight lines.

It is circular in shape.

They are similar in design.

Page 50

Talking Mathematics

a) closed, not simple
b) regular hexagon
c) four
d) parallelogram
e) kite
f) solids
g) face, edge, vertex
h) cube
i) square pyramid
j) rectangular prism

Quick Check

1 Ten
2 Not all angles and sides are equal.
3 Square, rectangle, rhombus
4 A quadrilateral with one set of opposite sides parallel.
5 Cylinder, cone, sphere
6 Sphere
7 Four triangular faces/three triangular faces with a square base.

Topic 9 Rounding and Estimating

Page 51

Getting Started

1 **a)** No, it is a rough estimate of how many children are in the school. The total could be less or more, but it is around 400.
b) Yes, as you would round 350 up to 400.
c) No, when you round 450, you would get 500.
2 **a)** Yes, as he rounded the mass to the nearest tenth.
b) 10 bananas if one weighs 0.1 kg.

Unit 1 Round Whole Numbers and Decimals

Page 52

Let's Think …

4.36

Page 53

1 **a)** Round to the nearest thousand
b) Round to the nearest hundred thousand
c) Round to the nearest hundred thousand
d) Round to the nearest hundred

e) Round to the nearest one (nearest kilometre)
f) Round to the nearest one (nearest kilogram)

2 **a)** 16.32; 16.3; 16
b) 75.65; 75.7; 76
c) 10.01; 10.0; 10
d) 172.30; 172.3; 172
e) 45.30; 45.3; 45

3 **a)** $14.70; $15.00
b) $18.10; $18.00
c) $9.60; $10.00
d) $1.00; $1.00

4 **a)** The Bahamas – 387 500; 388 499
Barbados – 282 500; 283 499
Trinidad – 1 356 500; 1 357 499
Jamaica – 2 728 500; 2 729 499
Cuba – 11 251 500; 11 252 499
b) Jamaica

Looking Back

Trinidad – 1 000 000
Jamaica – 3 000 000
Cuba – 11 000 000
Barbados

Unit 2 Estimate Answers

Page 54

Let's Think …

Change the amounts to the nearest dollars.
No

1 **a)** 40 + 40 = 80
b) 30 + 200 = 230
c) 200 + 100 + 100 = 400
d) 30 000 + 10 000 = 40 000
e) 500 – 70 = 430
f) 100 – 10 + 20 = 110
g) 30 × 10 = 300
h) 60 × 20 = 1 200
i) 30 000 – 10 000 = 20 000
j) 4 + 10 + 6 = 20
k) 20 – 10 = 10
l) 200 – 60 = 140

2 20 + 40 + 20 + 60 = 140 km

Page 55

3 **a)** $29 + $50 = $79
b) $12 + $12 + $24 + $55 = $103
c) $20 + $20 + $10 = $50

4 **a)** 10 000 + 30 000 + 20 000 + 20 000 + 20 000 = 100 000
b) 14 000 + 26 000 + 19 000 + 19 000 + 22 000 = 100 000
c) They both work out to the same amount.
d) **i)** 3 000 more
ii) 48 000
iii) 12 000

5 **a)** 90 000 + 90 000 = 180 000 seconds
b) 90 000 × 7 = 630 000 seconds

6 **a)** 4 000 + 6 000 + 7 000 = 17 000
b) 17 000 × 10 = $170 000

7 20 000 ÷ 200 = 100 sets

Looking Back

a) 175 km
b) 275 km
c) 450 km

Page 56

Talking Mathematics

1 Examples: students at school, tourists in town, attendance of spectators to a match

2 There is a 9 in the tenth position that rounds up to 10, therefore the one will go in the ones place.

Quick Check

1 **a)** 18 000
b) 2 000
c) 46 000
d) 293 000
e) 96 000

2 **a)** 2.94
b) 7.10
c) 4.36
d) 1.21
e) 23.88

3 13 300 000

4 **a)** 138 + 272 = 410
b) 45 + 81 = 126
c) 11 + 13 + 10 = 34

5 **a)** 600 + 700 + 10 000 = 11 300
b) 8 000 – 5 000 = 3 000
c) 20 000 ÷ 2 = 10 000
d) 400 x 30 = 12 000

6 **a)** $10 \times 30 = 300\ cm^2$

b) $20 \times 20 = 400\ cm^2$

Topic 10 Factors and Multiples

Page 57

Getting Started

1 **a)** $4 \times 9 = 36$

b) $2 \times 8 = 16$

c) $1 \times 13 = 13$

d) $4 \times 4 = 16$

2 1, 2, 3, 4, 6, 8, 12, 24

3 A multiple is a number that is divisible by the number being spoken about; in this case it is 5.

Unit 1 Factors and Multiples

Page 58

Let's Think …

1 and 24

2 and 12

4 and 6

Page 59

1 **a)** True

b) False

c) True

d) True

e) True

f) False

2 **a)** Multiples of 5: 5, 10, 15, 20, 25

b) Multiples of 9: 9, 18, 27, 36, 45

c) Multiples of 7: 7, 14, 21, 28, 35

d) Multiples of 10: 10, 20, 30, 40, 50

e) Multiples of 2: 2, 4, 6, 8, 10

3 **a)** Multiples of 4: 28, 32, 36, 40, 44

b) Multiples of 100: 500, 600, 700, 800, 900

4 **a)** 12

b) 18

c) 24

d) 14

e) 40

f) 42

5 **a)** 1, 4, 2, 2

b) 1, 7

c) 1, 10, 2, 5

d) 1, 14, 2, 7
e) 1, 20, 2, 10, 4, 5
f) 1, 25, 5, 5
g) 1, 28, 2, 14, 4, 7
h) 1, 30, 2, 15, 3, 10, 5, 6

6 **a)** 5
b) 4
c) 3
d) 7
e) 4
f) 12
g) 10
h) 5

7 7

Looking Back

1 Factors of 21: 1, 3, 7, 21

2 $9 \times 11 = 99$ but 99 is not divisible by 10.

Unit 2 Prime Numbers and Prime Factors

Page 60

Let's Think …

Factors of 7: 1, 7
Factors of 11: 1, 11
Factors of 17: 1, 17
Factors of 23: 1, 23
The only factors each number has are one and itself.

Page 61

1 13, 17, 19, 23, 29

2 12, 14, 15, 16, 18

3 **a)** 2
b) They are also divisible by 2

4 $50 = 2 \times 5 \times 5$
$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

5 **a)** $25 = 5 \times 5$
b) $30 = 2 \times 3 \times 5$
c) $18 = 2 \times 3 \times 3$
d) $44 = 2 \times 2 \times 11$
e) $84 = 2 \times 2 \times 3 \times 4 \times 7$
f) $64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$
g) $130 = 2 \times 5 \times 13$

Looking Back

1 3, 5, 7, 11, 13, 17, 19

2 12, 14, 16, 18, 20, 22, 24

3 $36 = 2 \times 2 \times 3 \times 3$

Page 62

Talking Mathematics

1 What do we call numbers that have more than two factors?

2 A ____ of a number is the result of multiplying it by another whole number.

3 What is the only even prime number?

4 A ____ is a whole number that can divide into a number without leaving a remainder.

5 A ____ number is a number with only two factors.

6 A factor ____ will help you find the prime factors of a number.

Quick Check

1 **a)** Factors of 40: 1, 2, 4, 5, 8, 10, 20 40

b) Factors of 48: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

c) 1, 2, 4, 8

d) 2

2 **a)** Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48, 59, 60

b) Multiples of 8: 8, 16, 24, 32, 40, 48, 56, 64, 72, 80

c) 24

3 **a)** 5, 7, 11, 15, 41

b) 2, 12, 20, 36

c) 2, 5, 7, 11, 41

d) 12, 15, 20, 36

e) $12 = 2 \times 2 \times 3$

$15 = 3 \times 5$

$20 = 2 \times 2 \times 5$

$36 = 2 \times 2 \times 3 \times 3$

Topic 11 Lines and Angles

Page 63

Getting Started

1 A line is straight and has no endpoint. A line segment is part of a line and has two endpoints. A ray is part of a line and has a starting point and the other end continues forever.

2 Parallel lines are lines that never intersect but are always the same distance from each other. An example is railway tracks that never meet. Perpendicular lines intersect at a right angle. An example is where two roads cross each other.

3 Acute angle, obtuse angle and right angle

4 Protractor

Unit 1 Points, Lines and Planes

Page 64

Let's Think …

Point
Line
Plane
Rectangular (Sides may differ from school to school.)

Page 65

1 **a)** Ray AB
b) Parallel lines IJ//KL
c) Plane EFG
d) Point H
e) Line CD
f) Perpendicular lines MN ⊥ OP
g) Line segment QR

Page 66

2 **a)** Intersecting lines
b) Perpendicular lines
c) Parallel lines
d) Line
e) Ray
f) Does not meet
g) AB ⊥ EF, CD ⊥ EF, AB ⊥ IJ, CD ⊥ IJ
h) AB ⊥ EF

3 Student's drawings

Unit 2 Angles

Page 67

Let's Think …

Right angle
Yes
It goes all the way back to the start.

Page 68

1 **a)** Obtuse angle
b) Straight angle
c) Right angle
d) Obtuse angle
e) Acute angle
f) Right angle
g) Full rotation
h) Acute angle

2 **a)** Obtuse angle
b) Acute angle
c) Obtuse angle
d) Straight angle
e) Full rotation
f) Acute angle
g) Right angle
h) Obtuse angle

Page 69

3 **a)** Vertex B, AB and BC are the sides.
Vertex L, KL and LM are the sides.
b) 360°
c) East
d) M
e) 90° – right angle

Unit 3 Measuring Angles

Page 70

Let's Think …

It involves more than a straight line and is measured in degrees and not cm or mm.
There are two sets of numbers on the protractor. Outer set of numbers starts with 0° on the left and the inner set of numbers starts with 0° on the right.
The numbers 0–180, at intervals of 10 are on the protractor. There are lines between the numbers.
Yes. The longer lines mark intervals of 5; the shorter lines mark intervals of 1.

Page 71

1 **a)** 40°
b) 115°
c) 73°

Page 72

2 **a)** Obtuse angle – 120°
b) Right angle – 90°
c) Acute angle – 83°
d) Straight angle – 180°
e) Obtuse angle – 153°
f) Acute angle – 23°

Page 73

Talking Mathematics

a) Acute angle
b) Line segment
c) Perpendicular lines
d) Protractor

e) Straight angle
f) Vertex
g) Line
h) Full rotation
i) Parallel lines
j) Obtuse angle

Quick Check

Student's drawings

Topic 12 Number Facts

Unit 1 Know Your Facts

Page 75

Let's Think …

The number added or multiplied is either subtracted or divided by the same number, which means the operations cancel each other out and leave you with your starting number.
Example: $24 \times 2 \div 2 = 24$, $24 + 2 - 2 = 24$

1 **Set 1:**
a) 15
b) 40
c) 0
d) 80
e) 40
f) 48
g) 30
h) 36
i) 6
j) 16
k) 3
l) 4
m) 21
n) 12
o) 0
p) 5
q) 9
r) 8
s) 10
t) 7

Set 2:
a) 20
b) 10
c) 10

d) 0
e) 21
f) 18
g) 6
h) 9
i) 22
j) 15
k) 10
l) 12
m) 12
n) 15
o) 2
p) 0
q) 16
r) 8
s) 10
t) 22

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2 **a)** 28 days
b) 11
c) 40 sides
d) $15.00
e) 6 sweets
f) 8 groups
g) 72 seats
h) 24 cm
i) 21 cm
j) 7 minutes

3 **a)** 18 cm
b) 36 cm
c) 48 cm^2
d) 81 cm^2
e) 16 cm
f) 12 cm

Looking Back

1 **a)** 8
b) 15
c) 36
d) 10
e) 9
f) 14
g) 42
h) 18
i) 2

j) 18
k) 72
l) 5
m) 9
n) 20
o) 7
p) 5

2 2:17

3 35 cm

Page 77

Talking Mathematics

1 Factors: 4, 9
Divisors: 4, 9
Product: 36
Quotient: 4, 9

2 12
7 + 12 = 19
12 + 7 = 19
19 – 12 = 7
19 – 7 = 12

Quick Check

1 **a)** 15 – 7 = 8, 7 + 8 = 15, 8 + 7 = 15
b) 25 – 14 = 9, 14 + 9 = 25, 9 + 14 = 25
c) 23 – 17 = 6, 17 + 6 = 23, 6 + 17 = 23
d) 8 + 9 = 17, 17 – 8 = 9, 17 – 9 = 8
e) 32 – 15 = 8, 15 + 8 = 32, 8 + 15 = 32
f) 18 – 5 = 13, 13 + 5 = 18, 5 + 13 = 18
g) 24 ÷ 3 = 8, 3 × 8 = 24, 8 × 3 = 24
h) 40 ÷ 8 = 5, 5 × 8 = 40, 8 × 5 = 40
i) 56 ÷ 7 = 8, 8 × 7 = 56, 7 × 8 = 56
j) 9 × 6 = 54, 6 × 9 = 54, 54 ÷ 9 = 6, 54 ÷ 6 = 9
k) 9 × 3 = 27, 27 ÷ 9 = 3, 27 ÷ 3 = 9
l) 8 × 6 = 48, 48 ÷ 8 = 6, 48 ÷ 6 = 8

2 **a)** True
b) False
c) True
d) False
e) False
f) True
g) True
h) True
i) False
j) True

k) False
l) True
m) True
n) True
o) True
p) True
q) True
r) False
s) True
t) True

3 **a)** 6.25 cm
b) One side is 10 cm and two other sides are 5 cm each.
c) 54 cm^2

Topic 13 Adding and Subtracting

Page 78

Getting Started

1 **a)** 833 + 2 394 = 3 227
b) 5 412 – 2 744 = 2 668
c) 2 744 – 833 = 1 911
d) 2 744 + 833 = 3 577
5 412 + 2 394 = 7 806

Unit 1 Revisit Addition of Larger Numbers

Page 79

Let's Think …

10 000 + 10 000 = 20 000

Page 80

1 **a)** 455 + 223 = 678
500 + 200 = 700
b) 160 + 725 = 885
200 + 700 = 900
c) 2 345 + 1 054 = 3 399
2 000 + 1 000 = 3 000
d) 4 281 + 1 110 = 5 391
4 000 + 1 000 = 5 000
e) 6 330 + 1 234 = 7 564
6 000 + 1 000 = 7 000
f) 342 + 11 013 = 11 355
300 + 11 000 = 11 300
g) 11 321 + 33 107 = 44 428
10 000 + 30 000 = 40 000

h) 423 + 11 024 = 11 447
400 + 10 000 = 10 400

i) 105 + 89 235 = 89 340
100 + 90 000 = 90 100

j) 129 300 + 489 = 129 789
100 000 + 500 = 100 500

k) 40 + 125 608 = 125 648
40 + 100 000 = 100 040

l) 562 + 987 417 = 987 979
600 + 1 000 000 = 1 000 600

2 **a)**
```
   12
   60
+  13
   85
```

b)
```
  123
   23
+ 4 000
  4 146
```

c)
```
  241
 2 400
+ 10 000
  12 641
```

d)
```
 12 400
    238
+ 200 000
  212 638
```

e)
```
   32
  400
 32 000
+   12
 32 454
```

f)
```
   50
  500
+ 50 200
  50 750
```

3 **a)** 400 + 900 = 1 300
437 + 876 = 1 313

b) 400 + 1 000 = 1 400
398 + 1 209 = 1 607

c) 5 000 + 3 000 = 8 000
5 427 + 2 686 = 8 113

d) 10 000 + 5 000 = 15 000
12 987 + 4 567 = 17 554

e) 5 000 + 20 000 = 25 000
5 412 + 19 234 = 24 646

f) 30 000 + 30 000 = 60 000
28 435 + 32 876 = 61 311

g) 200 000 + 50 000 = 250 000
178 796 + 54 321 = 233 117

h) 100 000 + 10 000 = 110 000
123 987 + 12 450 = 136 437

i) 100 000 + 700 000 = 800 000
124 999 + 654 230 = 779 229

j) 300 000 + 30 000 = 330 000
345 076 + 32 987 = 378 063

4 **a)** 10 000 + 10 000 = 20 000
12 345 + 14 098 = 26 443

b) 129 452 + 897 806 = 1 027 258

c) 1 345 + 12 304 + 13 098 = 26 747

d) 45 678 + 890 121 = 935 799

e) 13 454 + 13 454 = 26 908

Looking Back

a) 26 + 6 543 + 8 + 405 = 6 982

b) 4 309 + 19 + 32 456 + 5 = 36 789

c) 3 243 + 681 = 3 924

d) 233 793 + 26 134 = 259 927

Unit 2 Revisit Subtraction of Larger Numbers

Page 81

Let's Think …

5 409 – 4 023 = 1 386

Page 82

1 **a)** 700 – 300 = 400
689 – 325 = 364

b) 800 – 300 = 500
827 – 304 = 523

c) 10 000 – 900 = 100
999 – 888 = 111

d) 1 400 – 1 200 = 200

e) 3 000 – 200 = 2 800
3 225 – 224 = 3 001

f) 8 000 – 4 000 = 4 000
8 234 – 4 317 = 3 917

g) 24 000 – 20 000 = 4 000
24 245 – 19 321 = 4 924

h) 300 000 – 200 000 = 100 000
313 098 – 200 450 = 112 648

i) 300 000 – 100 000 = 200 000
342 512 – 124 755 = 217 757

j) 900 000 – 40 000 = 860 000
876 312 – 35 980 = 840 332

k) 900 000 – 12 000 = 888 000
899 765 – 12 098 = 887 667

l) 700 000 – 300 000 = 400 000
748 982 – 345 897 = 403 085

2 **a)** New York, Los Angeles, Chicago, Houston, Philadelphia, Phoenix

b) 8 143 197 – 3 844 829 = 4 298 368

c) 1 463 281 – 1 461 575 = 1 706

d) 4 859 100 – 2 016 582 = 2 842 518
Chicago

e) 2 842 518 – 1 461 575 = 1 380 943

Looking Back

a) 3 816 581 – 2 837 924 = 978 657

b) 1 410 973 – 485 728 = 925 245

Unit 3 Mixed Problems

Page 83

Let's Think …

You would add 15 308 and 8 745 and then subtract 189 450 from 321 456. Once you have worked out the answers, subtract the smaller total from the larger and you will have the answer.
15 308 + 8 745 = 24 053
321 456 – 189 450 = 132 006
132 006 – 24 053 = 107 953
The difference is greater by 107 953.

Page 84

1 13 453 + 8 765 = 22 218
22 218 – 237 = 21 981

2 $25 000.00 – $23 456.00 = $1 544.00

3 **a)** 11 238 + 14 519 = 25 757 km

b) 14 519 – 11 238 = 3 281 km

4 $127 800.00 + $1 500.00 = $129 300.00
$80 275.00 + $65 225.00 = $145 500.00
$145 500.00 – $129 300.00 = $16 200.00
She made $16 200.00 on the deal.

5 13 753 + 18 348 = 32 101
32 101 – 2 367 = 29 734
There are 29 734 trees left.

6 $28 617.00 – $26 732.00 = $1 885.00
She had $1 885.00 more in her account.

7 87 750 + 19 250 = 107 000
125 000 – 107 000 = 18 000
18 000 books are left in stock.

Looking Back

2 309 + 1 306 + 407 = 4 022
4 022 – 298 = 3 724
There are 3 724 passengers on board for the return cruise.

Page 85

Quick Check

1 **a)** 3 437
b) 221 829
c) 12 847
d) 423 402

2 **a)** 3 437 + 12 847 = 16 284
b) 16 284 + 221 829 + 423 402 = 661 515
c) 3 437 + 221 829 = 225 266
12 847 + 423 402 = 436 249
436 249 – 225 266 = 210 983

3 **a)** 10 991 + 234 + 4 568 = 15 793
b) 132 819 + 343 214 = 476 033
c) 112 345 + 123 145 = 235 490
d) 11 285 – 9 873 = 1 412
e) 29 876 – 14 388 = 15 488
f) 234 000 – 39 453 = 194 547

4 10 000 + 20 000 + 50 000 + 10 000 = 90 000
11 270 + 22 701 + 54 688 + 13 431 = 102 090
102 090 – 90 000 = 12 090

5 5 623 + 6 722 = 12 345
7 563 + 4 782 = 12 345
9 123 + 3 222 = 12 345
9 782 + 2 563 = 12 345

6 654 832 – 651 956 = 2 876

Topic 14 Statistics

Page 86

Getting Started

Cellphone questionnaire; observation; question interviews
Table, graph, Venn diagram
Mean – add all the numbers and divide the answer by the number of values you have.
Median – the middle number in an ordered set of data.
Mode – the set of data that occurs most often.
Range – the difference between the greatest and least values.

Unit 1 Mean, Median, Mode and Range

Page 87

Let's Think …

No: 7 °C
Yes: Jan/Feb; Mar/Dec; Apr/Nov; Jun/Sep; Jul/Aug
To visit between June and September.

Page 88

1 **a)** 55 + 34 + 34 + 90 + 87 = 300 ÷ 5 = 60%
b) 55%
c) 34%
d) 90 – 34 = 56%

2 **a)** 126 r 10
b) 104 r 6
c) Tokyo Disneyland
d) 198 mm
e) 153 r 2
f) Disney World

3 **a)** Mean – 9
Mode – 8
Median – 9
b) Mode

Looking Back

Mean – 27 r 5
Median – 26, 28
Mode – 24, 25, 26, 30, 31
Range – 7

Unit 2 Analysing and Representing Data

Page 89

Let's Think …

Bar graph and line graph
Bar graph shows comparisons between data.
Line graph shows changes over time.

Page 90

1 **a)** Line graph
b) Bar graph
c) Bar graph
d) Bar graph
e) Line graph

2 **a)** The water level increased.
b) The water level decreased dramatically.
c) The water level increased, then remained stable and then increased again.

3 **a)** False
b) True
c) False
d) True

Looking Back

Bar graphs are used to compare data. The bars let you compare the numbers in different categories and help you to see relationships between the data. Bar graphs can be vertical or horizontal.
Line graphs can show changes over time. They allow you to see increase or decrease in data over time.

Unit 3 More Visual Representations of Data

Page 91

Let's Think …

The information is presented in bars. If one bar is longer than another it means that it is higher and of greater value than the other bar.
A Venn diagram represents information in circles that overlap. The information that applies to both circles is found where the two circles overlap.

Page 92

1 **a)** Favourite is pop and the least favourite is jazz.
b) Favourites are reggae and soul, and the least favourite is pop.
c) Reggae is enjoyed by both adults and children the same.

Page 93

2 Most of the students did better in the prepared test than the unprepared test.
90% was the highest score for the prepared test.
75% was the highest score for the unprepared test.
70% was the lowest score for the prepared test.

45% was the lowest score for the unprepared test.
Jaden scored very similar marks for his prepared and unprepared tests.
Lisa scored the highest results for both the prepared and unprepared tests.
Andrea showed the greatest improvement between her unprepared and prepared tests.
Jarrod did better in the unprepared test than the prepared test.
All prepared and unprepared test results were higher than 40%.

3 **a)** 12 students
b) 10 students
c) 7 students
d) 29 students

4 **a)** True
b) False
c) 3, 5, 7
d) 1, 2, 9
e) 1, 9
f) 4, 6, 8

Looking Back

Double bar graph is a bar graph that shows information about two related sets of data, allowing you to compare the data for the two different groups.
Venn diagram shows the relationship between two overlapping sets of data.

Page 94

Talking Mathematics

Element or member
Mode
Bar graph
Median
Double bar graph
Line graph
Range

Quick Check

1 Order the numbers and count how much data you have collected.
2 Trends are clearly marked by changes in the graph.
3 Find the sum of all the values in the set and divide it by the number of values in the set.
4 Shows information about two related sets of data, so that you can compare the data for the different groups.
5 Information that is common to the two sets of data.

Topic 15 Problem Solving

Page 95

Getting Started

1 579

2 3 000

Unit 1 Problem Solving Strategies

Page 96

Let's Think …

14 years old

Page 97

1 **a)** 3 pairs add up to 8.

b) 4 ways (7 + 1 + 2, 6 + 3 + 1, 5 + 3 + 2, 4 + 1 + 5)

2 15 × 5 = 75 dinghies a week.

75 × 48 = 3 600 dinghies a year.

3 Example: the students could make a square 3 × 3 × 3 × 3 matchsticks with 3 stones inside.

4 **a)** 1.904 m is longer by 0.009 m

b) 1.895 + 1.904 = 3.799m

4.5 – 3.799 = 0.701

0.701 m is still needed.

5 **a)** A = 4, B = 5

b) C = 9, D = 1, E = 0

c) M = 5, L = 1

d) 5 456 – 2 980 = 2 476/ 5 453 – 2 980 = 2 473

e) 79 422 + 3 104 = 82 526/ 79 244 + 5 102 = 84 346

Looking Back

She has 9 different options:
Andrew, Byron, Colin
Andrew, Colin, David
Andrew, David, Ethan
Andrew, Byron, David
Andrew, Byron, Ethan
Byron, Colin, David
Byron, David, Ethan
Byron, Colin, Ethan
Colin, David, Ethan

Unit 2 Expressions and Variables

Page 98

Let's Think …

_ + 2 = _
_ – 3 = _
_ × 3 = _
4 × _ = _

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1 **a)** 6 more than a number
b) 2 less than a number
c) 4 times as much as a number
d) 40 plus a number
e) 3 times a number plus 2
f) A number divided by 6
g) $1\frac{1}{2}$ plus a number
h) The sum of two unknown numbers

2 **a)** $a - 4 = b$
$8 - 4 = 4$
If his sister is 8, then Joshua will be 4.
a is the variable.
b) $c \times 4 = d$
$3 \times 4 = 12$
If c is 3 then d will be 12.
c) $d \div 3 = e$
$12 \div 3 = 4$
If d is 12 then e will be 4.
d) m – \$5.00 = n
\$20.00 – \$5.00 = \$15.00
If m is \$20.00 then n will be \$15.00.

3 **a)** $x + 2 = y$
b) $m + n$
c) $a - 3$
d) $f + 4$
e) $3 \times s$
f) $t + t / 2 \times t$
g) $d \div 2$
h) $l - 10$
i) $k \times 3 \div 4$

4 **a)** $x + y + z$
b) $x \times y = z$
c) $x + y = z$
d) $x^2 / x \times x = y$
e) $x + y + 5 = z$

f) $x \times z - 3 = y$
g) $z - y = x$
h) $x + y + z \div 2$

5 **a)** 3 more than x
b) 2 less than y
c) x less than 5
d) The product of 4 and y
e) y divided by 3
f) 10 divided by y

Looking Back

a) $x + y = z$
b) $x + 2$
c) $y - x$

Unit 3 Solve Simple Equations

Page 100

Let's Think …

$n = 16$
$n = 5$
$n = 80$
$n = 10$
$n = 15$

Page 101

1 **a)** $x = 4$
b) $y = 7$
c) $y = 8$
d) $x = 49$
e) $x = 10$
f) $x = 4$
g) $x = 11$
h) $y = 35$
i) $y = 1\frac{1}{2}$
j) $x = 9$
k) $x = 6$
l) $y = 3$
m) $x = 3$
n) $x = 80$
o) $y = 5$

2 **a)** $a = 12$
b) $x = 48$
c) $x = 20$
d) $x = 40$
e) $a = 15$

f) $m = 5$

g) $s = 22$

h) $m = 11$

3 **a)** $5 + x = 14$

$x = 9$

b) $10 + y = 200$

$y = 190$

c) $a - 3 = 121$

$a = 124$

d) $45 - b = 0$

$b = 45$

e) $x \div 2 = 32$

$x = 64$

f) $2 \times y = 50$

$y = 25$

4 **a)** $2 \times x + 11 = 25$

$x = 7$

b) $x \times 10 - 12 = 48$

$x = 6$

c) $(x + 10) \times 5 = 500$

$x = 90$

d) $3 \times x - 15 = 12$

$x = 9$

e) $5 \times x - 100 = 150$

$x = 50$

f) $x \times 2 + 14 = 30$

$x = 8$

5 **a)** $m \times n = 8$

$2 \times 4 = 8$

$4 \times 2 = 8$

b) $15 = m + n$

$14 + 1 = 15$, $1 + 14 = 15$, $2 + 13 = 15$, $13 + 2 = 15$, $12 + 3 = 15$, $3 + 12 = 15$, $11 + 4 = 15$, $4 + 11 = 15$, $10 + 5 = 15$, $5 + 10 = 15$, $9 + 6 = 15$, $6 + 9 = 15$, $8 + 7 = 15$, $7 + 8 = 15$, $5 + 10 = 15$, $10 + 5 = 15$

c) $60 = m \times n$

$60 = 30 \times 2$, $60 = 2 \times 30$, $60 = 20 \times 3$, $60 = 3 \times 20$, $60 = 15 \times 4$, $60 = 4 \times 15$, $60 = 12 \times 5$, $60 = 5 \times 12$, $60 = 10 \times 6$, $60 = 6 \times 10$

d) $80 = 2 \times m + n$

$80 = 2 \times 0 + 80$, $80 = 2 \times 1 + 78$, $80 = 2 \times 2 + 76$, $80 = 2 \times 3 + 74$, $80 = 2 \times 4 + 72$, $80 = 2 \times 5 + 70$, $80 = 2 \times 6 + 68$, $80 = 2 \times 7 + 66$, $80 = 2 \times 8 + 64$, $80 = 2 \times 9 + 62$, $80 = 2 \times 10 + 60$, $80 = 2 \times 11 + 58$, $80 = 2 \times 12 + 56$, $80 = 2 \times 13 + 54$, $80 = 2 \times 14 + 52$, $80 = 2 \times 15 + 50$, $80 = 2 \times 16 + 48$, $80 = 2 \times 17 + 46$, and so on

Looking Back

a) $11 + y = 20$
$11 + 9 = 20$

b) $7 - x = 4$
$7 - 3 = 4$

c) $m - 11 = 9$
$20 - 11 = 9$

d) $8 \times n = 32$
$8 \times 4 = 32$

e) $2 \times m = 4 + 20$
$2 \times m = 24$
$2 \times 12 = 24$

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Talking Mathematics

First, read the problem carefully.
Then, list what you know.
Next, decide what you have to do and choose a suitable strategy to solve it.
When you have an answer, make sure you have solved the problem.
Always double check your answer.

Quick Check

1 **a)** +
b) ×
c) ÷
d) =
e) +
f) ×
g) –
h) –

2 **a)** $m + 12 = n$
b) $20 - k = m$
c) $r \times 9 = s$
d) $v \div 2$

3 **a)** $n + 4 = 13$
$9 + 4 = 13$
b) $n + 9 = 17$
$8 + 9 = 17$
c) $n - 7 = 12$
$19 - 7 = 12$
d) $n \times 8 = 56$
$7 \times 8 = 56$
e) $2 \times n + 3 = 21$
$2 \times 9 + 3 = 21$

4 $x \div 3 = y$
y is one side of the triangle.

5 $x \times 3 = y$
$y + 5 = 17$
$y = 12$
$x \times 3 = 12$
$x = 4$

Topic 16 Length

Page 103

Getting Started

1 **a)** millimetre
b) metre
c) millimetre/centimetre
d) kilometre

Unit 1 Working With Metric Units

Page 104

Let's Think …

a) km
b) m
c) mm
d) cm
e) m

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5 **a)** 1 dm = 0.1 m
b) 2 dm = 0.2 m
c) 5 dm = 0.5 m
d) 1 cm = 0.01 m
e) 3 cm = 0.03 m
f) 15 cm = 0.15 m
g) 200 cm = 2 m
h) 375 cm = 3.75 m

6 **a)** 6.89 m = 6 m + 8 dm + 9 cm
b) 12.43 m = 12 m + 4 dm + 3 cm
c) 1.099 m = 1 m + 0 dm + 9 cm + 9 mm
d) 14.032 m = 14 m + 0 dm + 3 cm + 2 mm

Looking Back

1 **a)** 1 cm
b) 1 dkm
c) 1 mm
d) 1 m

2 **a)** 5.2 cm
b) 0.002147 km
c) 0.202 m
d) 6.5 m

Unit 2 Creating and Solving Problems

Page 106

Let's Think …

1 **a)** km, hm, dkm
b) dm, cm, mm

1 **a)** millimetre, centimetre, decimetre, metre, dekametre, hectometre, kilometre
b) mm, cm, dm, m, dkm, hm, km

2 Examples:
a) Tissue box
b) Width of a pencil
c) Glue stick
d) Door mat

Page 107

3 **a)** 62 dm ÷ 10 = 6.2 m
b) 85 dm ÷ 10 = 8.5 m
c) 45 dm × 5 = 225 dm
225 dm × 10 = 2 250 cm
2 250 ÷ 100 = 2.25 m
She has 9.75 m left.
d) 2 x 25 cm = 50 cm
2 × 12 cm = 24 cm
50 cm + 24 cm = 74 cm
74 cm ÷ 10 = 7.4 dm
8.8 dm – 7.4 dm = 1.4 dm
A length of 1.4 dm is left.

5 **a)** 8 mm × 8 = 64 mm
b) How many blocks there are per row.

6 **a)** 3 m > 30 cm
b) 45 mm = 4.5 cm
c) 25 dm > 20 cm
d) 25 m > 625 mm
e) 9 cm = 90 mm
f) 12 mm > 1 cm

g) 100 m < 1 km
h) 9 500 m > 9 km
i) 220 cm < 2.3 m

Looking Back

1 **a)** 15 mm × 8 = 120 mm
b) 120 mm ÷ 10 = 12 cm
25 cm – 12 cm = 13 cm
Therefore, I can fit another 8 planks in the space.
2 **a)** 18 cm < 180 cm
b) 4.5 m > 425 cm
c) 33 m > 200 cm

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Talking Mathematics

1 They all have their origin in the Latin word *deci*, which means ten.
2 Group 1: taller, shorter, higher, smaller, bigger
Group 2: thicker, thinner, narrower, wider, longer, smaller, bigger
Group 1 relates to height.
Group 2 relates to width.

Quick Check

1 **a)** 1 dm
b) 1 km
c) m
d) mm
e) cm
2 **a)** 7.92 m = 7 m + 9 dm + 2 cm
b) 11.381 m = 11 m + 3 dm + 8 cm + 1 mm
c) 2.713 km = 2 km + 7 hm + 1 dkm + 3 m
3 **a)** 2 m × 100 = 200 cm
200 cm ÷ 23 = 8 r 16
The frog will jump 9 times.
b) 207 cm
4 **a)** 31.5 cm + 27.9 cm + 42.4 cm + 39.8 cm = 141.6 cm
b) 1.416 m
c) 3 m – 1.416 m = 1.584 m

Topic 17 Multiplying and Dividing

Page 109

Getting Started

To find the product.
To find the quotient.
$(725 \div 115) \times 8$
50×30

Unit 1 Revisit Multiplying and Dividing

Page 110

Let's Think …

It is the inverse operation and the number has just increased to 300 from 30, so the 5 must change to 50 for the sum to work out.
$12 \times 19 = 228$
We know this as division and multiplication are inverse operations.

1
a) 28
b) 42
c) 72
d) 8
e) 30
f) $63 \div 7 = 9$
g) 8
h) 6
i) 7
j) 9
k) 45
l) 100
m) 63
n) 16
o) 18
p) 12
q) 2
r) 2
s) 4
t) 5
u) 81
v) 6
w) 9
x) 7

2
a) 2 r 4
b) 4 r 6
c) 7 r 4
d) 7 r 2

e) 13 r 1
f) 7 r 5
g) 11 r 4
h) 7 r 4
i) 8 r 4
j) 8 r 1
k) 6 r 5
l) 7 r 2

3 $2 \times 3 = 6$
$3 \times 2 = 6$
$2 \times 7 = 14$
$7 \times 2 = 14$
$2 \times 8 = 16$
$8 \times 2 = 16$
$2 \times 10 = 20$
$10 \times 2 = 20$
$3 \times 7 = 21$
$7 \times 3 = 21$
$3 \times 8 = 24$
$8 \times 3 = 24$
$3 \times 10 = 30$
$10 \times 3 = 30$
$7 \times 8 = 56$
$8 \times 7 = 56$
$7 \times 10 = 70$
$10 \times 7 = 70$
$8 \times 10 = 80$
$10 \times 8 = 80$

4 **a)** $63 \div 6 = 10$ r 3
b) $56 \div 7 = 8$
c) $27 \div 3 = 9$
d) $120 \div 10 = 12$

Page 111

5 **a)** $7 \times 26 = 182$
$26 \times 7 = 182$
$182 \div 7 = 26$
$182 \div 26 = 7$
b) $5 \times 39 = 195$
$39 \times 5 = 195$
$195 \div 39 = 5$
$195 \div 5 = 39$

c) 234 ÷ 9 = 26
234 ÷ 26 = 9
26 × 9 = 234
9 × 26 = 234

d) 950 ÷ 19 = 50
950 ÷ 50 = 19
50 × 19 = 950
19 × 50 = 950

6 4 × 30 = 120
588 ÷ 98 = 6
588 ÷ 147 = 4
287 ÷ 41 = 7

7 **a)** 41 × 7 = 287

b) 120 ÷ 4 = 30

c) 588 ÷ 98 = 6

d) 588 ÷ 147 = 4

8 A = 30 × 4 = 120 cm^2
B = 50 × 30 = 1 500 cm^2
C = 160 × 2 = 320 cm^2

9 120 ÷ 24 = 5 cm
96 ÷ 16 = 6 cm
153 ÷ 3 = 51 cm

Looking Back

a) *a* = 48
b = 8
c = 6

b) *a*, as they are a fact family.

c) 6 × 9 = 54, as they are part of a fact family.

Unit 2 Divisibility Rules

Page 112

Let's Think …

It needs to be an even number.
124, 988, 10 000, 954 can be divided by 2 without a remainder.

Page 113

1 a), c), d) are divisible by 3.

2 **a)** 128 – not a multiple of 3

b) 129 – not an even number

c) 234 – divisible by 6

d) 1 242 – divisible by 6

e) 906 – divisible by 6

f) 315 – not an even number

g) 912 – divisible by 6
h) 2 391 – not an even number

3 **a)** No
b) Yes
c) No
d) No
e) No
f) No
g) No
h) Yes
i) No
j) Yes
k) No
l) Yes
m) Yes
n) No
o) Yes
p) No

4 **a)** 20
b) 360

5 Yes, as the last two digits are multiples of 4.

6 $42.00 + $35.50 + $62.50 = $140
Yes you can.
(100 × $10.00) + (8 × $5.00)

Looking Back

a) 85 310, 13 850, 13 805, 83 105, and so on
b) 85 310, 58 310, 31 850, 31 580, 13 580, 13 850
c) 3 180, 5 180
d) 10 358, 13 058, 53 180, 85 130
50, 150, 83 150

Unit 3 Multiple and Powers of Ten

Page 114

Let's Think …

When multiplying by 10, 100 or 1 000, there is a zero, two zeros or three zeros at the end.
When dividing by 10, 100 or 1 000, one of the zeros, two of the zeros or three of the zeros are taken away.

Page 115

1 **a)** 50
b) 230
c) 870
d) 1 240
e) 2 000
f) 6 540

g) 12 350
h) 75 000
i) 89 990

2 **a)** 800
b) 2 300
c) 8 000
d) 32 500
e) 65 000
f) 85 400
g) 123 000
h) 230 000
i) 704 500
j) 23 000
k) 29 000
l) 36 000
m) 124 000
n) 328 000
o) 450 000

3 **a)** 54
b) 70
c) 35
d) 120
e) 765
f) 300
g) 12
h) 45
i) 99
j) 1.2

4 **a)** 60
b) 240
c) 640
d) 450
e) 320
f) 540
g) 1 800
h) 1 500
i) 3 200
j) 2 700

5 **a)** True
b) False
c) False

6 **a)** 12
b) 350
c) 0.28

Looking Back

a) 279 000
b) 140
c) 2 080
d) 278
e) 27.8
f) 990
g) 340
h) 7 200

Unit 4 Multiply Larger Numbers

Page 117

1 **a)** $200 \times 70 = 14\,000$
$234 \times 65 = 15\,210$

b) $400 \times 10 = 4\,000$
$378 \times 14 = 5\,292$

c) $500 \times 80 = 40\,000$
$534 \times 75 = 40\,050$

d) $900 \times 70 = 63\,000$
$903 \times 66 = 59\,598$

e) $200 \times 50 = 10\,000$
$220 \times 48 = 10\,560$

f) $300 \times 70 = 21\,000$
$297 \times 70 = 20\,790$

g) $100 \times 300 = 30\,000$
$98 \times 322 = 31\,556$

h) $10 \times 400 = 4\,000$
$12 \times 350 = 4\,200$

2 $368 \times 24 = 8\,832$

×	20	4	
300	6 000	1 200	7 200
60	1 200	240	1 440
8	160	32	192
			= 8 832

There are 8 832 bottles

3 $\$245.00 \times 12 = \$2\,940.00$

×	10	2	
200	2 000	400	2 400
40	400	80	480
5	50	10	60
			= 2 940

They will have saved $2 940.00 by the end of a year.

4 **a)** $576 \times 480 = 276\,480$ g

×	400	80	
500	200 000	40 000	240 000
70	28 000	5 600	33 600
6	2 400	480	2 880
			= 276 480

Each truck carries 276 480 g

b) $14 \times 2 = 28$

$576 \times 28 = 16\,128$

×	20	8	
500	10 000	4 000	14 000
70	1 400	560	1 960
6	120	48	168
			= 16 128

Each truck will carry 16 128 bananas.

5 $52 - 3 = 49$

$321 \times 49 = 15\,729$

×	40	9	
300	12 000	2 700	14 700
20	800	180	980
1	40	9	49
			= 15 729

They will make 15 729 T-shirts in a year.

6 $4 \times 5 = 20$

$960 \times 20 = 19\,200$

×	20
900	18 000
60	1 200
	= 19 200

She will take 19 200 steps in four weeks.

7 $275 \times 11 = 3\,025$ km

×	10	1	
200	2 000	200	2 200
70	700	70	770
5	50	5	55
			= 3 025

She will travel 3 025 km in total.

Looking Back

a) 41 × 24 = 984
b) 65 × 14 = 910
c) 158 × 18 = 2 844
d) 124 × 34 = 4 216

Unit 5 Dividing Larger Amounts

Page 118

Let's Think …

a) 3
b) 4
c) 18 r 3
d) 75

Page 119

1 **a)** 868 ÷ 15 = 57 r 12
86 ÷ 15 = 5
86 – 75 = 11(7)
117 ÷ 15 = 7
117 – 105 = 12

b) 636 ÷ 21 = 30 r 6
63 ÷ 21 = 3
63 – 63 = 0(6)
6 ÷ 21 = 0

c) 906 ÷ 52 = 17 r 42
90 ÷ 52 = 1
90 – 52 = 40(6)
406 ÷ 52 = 7
406 – 364 = 42

d) 456 ÷ 16 = 28 r 8
45 ÷ 16 = 2
45 – 32 = 13(6)
136 ÷ 16 = 8
136 – 128 = 8

e) 987 ÷ 41 = 24 r 3
98 ÷ 41 = 2
98 – 82 = 16(7)
167 ÷ 41 = 4
167 – 164 = 3

f) 843 ÷ 27 = 31 r 6
84 ÷ 27 = 3
84 – 81 = 3(3)
33 ÷ 27 = 1
33 – 27 = 6

2 **a)** 3 412 ÷ 15 = 227 r 7
34 ÷ 15 = 2
34 – 30 = 4(1)
41 ÷ 15 = 2
41 – 30 = 11(2)
112 ÷ 15 = 7
112 – 105 = 7

b) 6 712 ÷ 31 = 216 r 16
67 ÷ 31 = 2
67 – 62 = 5(1)
51 ÷ 31 = 1
51 – 31 = 20(2)
202 ÷ 31 = 6
202 – 186 = 16

c) 9 873 ÷ 18 = 548 r 9
98 ÷ 18 = 5
98 – 90 = 8(7)
87 ÷ 18 = 4
87 – 72 = 15(3)
153 ÷ 18 = 8
153 – 144 = 9

d) 1 235 ÷ 24 = 51 r 11
123 ÷ 24 = 5
123 – 120 = 3(5)
35 ÷ 24 = 1
35 – 24 = 11

e) 2 346 ÷ 21 = 111 r 15
23 ÷ 21 = 1
23 – 21 = 2(4)
24 ÷ 21 = 1
24 – 21 = 3(6)
36 ÷ 21 = 1
36 – 21 = 15

f) 1 987 ÷ 23 = 86 r 9
198 ÷ 23 = 8
198 – 184 = 14(7)
147 ÷ 23 = 6
147 – 138 = 9

3 3 885 ÷ 37 = 105
Each bag weighs 105 kg.

4 168 × 46 = 7 728
7 728 ÷ 29 = 266 r 14

Looking Back

a) 14 365 ÷ 60 = 239 r 25
239 hours and 25 minutes.

b) 14 365 – 5 414 = 8 951
8 951 ÷ 60 = 149 r 11
149 hours and 11 minutes have passed.

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Talking Mathematics

Micah's answer: 3 040 (63 × 48 + 16)
Jessica's answer: Yes, she is correct, but she has forgotten to add the remainder.

Quick Check

1 2 462 ÷ 80 = 30 r 62
He can fill 30 boxes and will have 62 elastic bands left over.

2 320 × 100 = 320 000
Andy has 320 000 points.

3 23 × 10 = 230 cm length.
23 × 230 = 5 290 cm^2
The area of the rectangle is 5 290 cm^2.

4 35 × 2 = 70
70 × 9 = 630
They will collect $630.00 in ticket fees.

5 1 265 ÷ 12 = 105 r 5
1 265 ÷ 14 = 90 r 5
1 265 ÷ 15 = 84 r 5
1 265 ÷ 16 = 79 r 1
1 265 ÷ 18 = 70 r 5
1 265 ÷ 20 = 63 r 5
Bags that contain 16 mangoes are the best as there are fewer left over.

Topic 18 Order of Operations

Page 121

Getting Started

They got different answers because the first girl did calculations from left to right whereas the second girl multiplied first and then added.
The second girl's answer will be correct as you need to multiply 3 by $5 to work out how much the $5 bills come to altogether, before adding the 2 dollar coins.
Janet placed 2 mangoes and 3 bananas into 5 baskets. How much fruit did she have altogether?

Unit 1 Grouping Symbols

Page 122

Let's Think …

In the first problem, you are working out how many sweets there are altogether.
In the second problem, you are working out how many sweets are needed to fill the bags.
$(5 \times 6) + 2 = 30 + 2 = 32$
$(5 + 2) \times 6 = 7 \times 6 = 42$
The answers are different, even though the numbers and operations used are the same. The order in which they were added and multiplied was different, which resulted in different answers.

1

a) $(3 + 3) \times 10$
$= 6 \times 10$
$= 60$

b) $(18 – 3) \div 5$
$= 15 \div 5$
$= 3$

c) $25 – (5 + 7)$
$= 25 – 12$
$= 13$

d) $8 \times (4 + 2)$
$= 8 \times 6$
$= 48$

e) $(3 + 4) \times 7$
$= 7 \times 7$
$= 49$

f) $(20 – 12) \div 8$
$= 8 \div 8$
$= 1$

g) $12 + (42 \div 7)$
$= 12 + 6$
$= 18$

h) $(20 – 4) \div 4$
$= 16 \div 4$
$= 4$

i) $7 \times (11 – 6)$
$= 7$ x 5
$= 35$

j) $(3 – 2) \times 4$
$= 1 \times 4$
$= 4$

k) $(6 + 7) \times 3$
$= 13 \times 3$
$= 39$

l) $(12 - 8) \times 9$
$= 4 \times 9$
$= 36$

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2 **a)** $(3 + 3) \times (14 - 4)$
$= 6 \times 10$
$= 60$

b) $(9 - 5) \times (2 + 7)$
$= 4 \times 9$
$= 36$

c) $(4 + 16) \div (12 - 7)$
$= 20 \div 5$
$= 4$

d) $(26 + 4) - (3 \times 3)$
$= 30 - 9$
$= 21$

e) $(10 \times 10) \div (5 + 5)$
$= 100 \div 10$
$= 10$

f) $(3 - 2) \times (8 + 4)$
$= 1 \times 12$
$= 12$

g) $(4 \times 6) + (18 \div 6)$
$= 24 + 3$
$= 27$

h) $(9 - 5) \times (19 - 10)$
$= 4 \times 9$
$= 36$

i) $(17 - 8) \div (3 \times 3)$
$= 9 \div 9$
$= 1$

j) $(4 + 8) \times (17 - 16)$
12×1
$= 12$

k) $(14 - 13) + (20 \div 20)$
$= 1 + 1$
$= 2$

l) $(7 + 8) \times (12 \div 12)$
$= 15 \times 1$
$= 15$

3 **a)** $3 + [8 - (2 \times 4)]$
$= 3 + (8 - 8)$
$= 3 + 0$
$= 3$

b) $15 - [4 + (6 \div 2)]$
$= 15 - (4 + 3)$
$= 15 - 7$
$= 8$

c) $[(24 \div 6) + 5] - 7$
$= (4 + 5) - 7$
$= 9 - 7$
$= 2$

d) $48 - [25 - (4 \times 6)]$
$= 48 - (25 - 24)$
$= 48 - 1$
$= 47$

e) $[8 \times (5 + 2)] \times 10$
$= (8 \times 7) \times 10$
$= 15 \times 10$
$= 150$

f) $[(14 \div 2) + 2] \times 3$
$= (7 + 2) \times 3$
$= 9 \times 3$
$= 27$

g) $16 \div [54 - (5 \times 10)]$
$= 16 \div (54 - 50)$
$= 16 \div 4$
$= 4$

h) $[100 \div (5 + 5)] \times 2$
$= (100 \div 10) \times 2$
$= 10 \times 2$
$= 20$

i) $2 \times [35 \div (4 + 3)]$
$= 2 \times (35 \div 7)$
$= 2 \times 5$
$= 10$

j) $[(7 + 5) \times 3] \div 9$
$= (12 \times 3) \div 9$
$= 36 \div 9$
$= 4$

4 **a)** $(6 \times 5) + 3$
$= 30 + 3$
$= 33$ markers

b) $19 - (21 \div 3)$
$= 19 - 7$
$= 12$

c) $(8 - 2) \times 5$
$= 6 \times 5$
$= 30$

d) ($12.00 – $3.00) × 4
= $9.00 × 4
= $36.00

Looking Back

a) 4 × (13 – 5)
= 4 × 8
= 32

b) 5 × (6 – 3)
= 5 × 3
= 15

c) (6 × 8) – (10 + 10)
= 48 – 20
= 28

d) (6 + 7) – (12 ÷ 4)
= 13 – 3
= 10

e) [8 ÷ (16 – 14)] × 3
= (8 ÷ 2) × 3
= 4 × 3
= 12

f) [11 × (30 ÷10)] + 5
= (11 × 3) + 5
= 33 + 5
= 38

Unit 2 Order of Operations

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Let's Think …

10 – (6 ÷ 2)
= 10 – 3
= 7
(10 – 6) ÷ 2
= 4 ÷ 2
= 2
The answers are different depending on which operation you complete first.

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1 **a)** False
b) True
c) True
d) True
e) False
f) False

2 **a)** $2 + 4 \times 5$
$= 2 + 20$
$= 22$

b) $(2 + 4) \times 5$
$= 6 \times 5$
$= 30$

c) $10 - 4 \times 2$
$= 10 - 8$
$= 2$

d) $6 + 12 \div 3$
$= 6 + 4$
$= 10$

e) $5 \times 10 \div 2 + 3$
$= 50 \div 2 + 3$
$= 25 + 3$
$= 28$

f) $20 - 6 \times 3 + 15$
$= 20 - 18 + 15$
$= 17$

3 **a)** $(8 - 2) + 4$
$= 6 + 4$
$= 10$

b) $18 - 4 \times 2 - 3$
$= 18 - 8 - 3$
$= 7$

c) $(12 - 9) \times (24 - 22)$
$= 3 \times 2$
$= 6$

d) $14 - 21 \div 3$
$= 14 - 7$
$= 7$

e) $3 + 2 \times 8$
$= 3 + 16$
$= 19$

f) $29 - 2 \times 10$
$= 29 - 20$
$= 9$

g) $3 \times 4 - 2$
$= 12 - 2$
$= 10$

h) $(20 + 5) \times 3$
$= 25 \times 3$
$= 75$

i) $5 \times 4 + 30 \div 10$
$= 20 + 3$
$= 23$

j) $24 \div 8 \times 6 - 5$
$= 3 \times 6 - 5$
$= 18 - 5$
$= 13$

k) $25 + 14 \div 2 - 20$
$= 25 + 7 - 20$
$= 12$

l) $3 \times 3 - 4 \times 2$
$= 9 - 8$
$= 1$

m) $15 \div 3 - 3 - 2$
$= 5 - 3 - 2$
$= 0$

n) $7 - 24 \div 6$
$= 7 - 4$
$= 3$

o) $8 \times 3 \div 4$
$= 24 \div 4$
$= 6$

p) $5 + 36 \div 6$
$= 5 + 6$
$= 11$

q) $54 - 3 \times 8$
$= 54 - 24$
$= 30$

r) $40 - 10 \times 3$
$= 40 - 30$
$= 10$

4 **a)** $4 + 8 \times 2 - 25 \div 5 \times 2 + 4$
$= 4 + 16 - 5 \times 2 + 4$
$= 20 - 10 + 4$
$= 14$

b) $100 - 10 \times 5 - 30 \div 3 \div 5 + 12$
$= 100 - 50 - 10 \div 5 + 12$
$= 50 - 2 + 12$
$= 60$

c) $3 + 21 \div 7 + 4$
$= 3 + 3 + 4$
$= 10$

d) $3 + 18 \div 9 + 7$
$= 3 + 2 + 7$
$= 12$

e) $18 + 5 \times 1 - 6 \times 3$
$= 18 + 5 - 18$
$= 5$

f) $12 - 2 - 5 \times 2 + 8$
$= 10 - 10 + 8$
$= 8$

g) $8 - (13 - 8 - 2) \times 3$
$= 8 - 3 \times 3$
$= -1$

h) $(6 + 4 \times 5) - 2 \times 4$
$= (6 + 20) - 8$
$= 26 - 8$
$= 18$

5 $4 - 4 + 4 \div 4 = 1$
$4 \div 4 + 4 \div 4 = 2$
$(4 \times 4 - 4) \div 4 = 3$
$4 \times (4 - 4) + 4 = 4$
$(4 \times 4 + 4) \div 4 = 5$
$(4 + 4) \div 4 + 4 = 6$
$(4 + 4) - 4 \div 4 = 7$
$4 + 4 + 4 - 4 = 8$
$(4 + 4) + 4 \div 4 = 9$

Looking Back

$2 \times (8 - 3) - 2 \times 2$
$= 2 \times 5 - 4$
$= 10 - 4$
$= 6$

Toniqua is correct.

Kamaya worked out the brackets, then multiplied the answer by 2, then multiplied the new answer by 2 before adding 2 instead of subtracting.

Leroy worked out the brackets, then subtracted the 2 before multiplying the remaining numbers.

Sam worked out the brackets first and then worked out the sum from left to right.

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Talking Mathematics

a) Multiply the 20 by the 3 and add 4 to your answer.

b) Work out $8 \div 2$ before adding 4 to the answer.

c) Work out the 6×2 before adding 5 and subtracting 2 from the answer.

d) Work out the brackets, then multiply the answer by 3 before subtracting the new answer from 15.

Quick Check

1 **a)** Correct

b) $39 - 2 \times 6 = 39 - 12 = 27$

c) Correct

d) Correct

e) $(3 \times 2) + 7 \times 3 = 6 + 21 = 27$

f) $5 \times 4 + 30 \div 10 - 3 = 20 + 3 - 3 = 20$

2 **a)** $(1 + 4) \times 20 \div 5$
$= 5 \times 4$
$= 20$

b) $1 + (4 \times 20) \div 5$
$= 1 + 80 \div 5$
$= 1 + 16$
$= 17$

c) $6 \times (4 \div 2) \times 3$
$= 6 \times 2 \times 3$
$= 36$

d) $(6 \times 4) \div 2 \times 3$
$= 24 \div 6$
$= 4$

e) $3 + (5 - 2) \times 3$
$= 3 + 3 \times 3$
$= 3 + 9$
$= 12$

f) $3 + 5 - (2 \times 3)$
$= 3 + 5 - 6$
$= 2$

g) $50 + 10 \div 10$
$= 50 + 1$
$= 51$

h) $(50 + 10) \div 10$
$= 60 \div 10$
$= 6$

i) $10 \times 5 + 0$
$= 50 + 0$
$= 50$

j) $10 \times (5 + 0)$
$= 10 \times 5$
$= 50$

k) $42 \div 6 \times (3 - 3)$
$= 7 \times 0$
$= 0$

l) $42 \div 6 \times 3 - 3$
$= 7 \times 3 - 3$
$= 21 - 3$
$= 18$

Topic 19 Working with Time

Unit 1 Estimate, Compare and Measure Time

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2 **a)** century
b) year
c) decade
d) year
e) day

3 **a)** 3 hrs = 180 min
b) 4 d = 96 hrs
c) 8 hrs = 480 min
d) 2.5 d = 60 hrs
e) 185 seconds = 3 min and 5 seconds
f) 32 hrs = 1 d and 8 hrs

5 **a)** 2017/05/04
b) 2007/09/08
c) 1999/12/01
d) 1865/02/11

Looking Back

3 **a)** century
b) year
c) day

Unit 2 Telling the Time

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Let's Think …

60 minutes
12 hours
60 seconds/1 minute
Between the 2 and the 3 as it is no longer 2:00 but the hour hand is moving towards the 3 for 3:00.

1 7:15, 19:15
11:35, 23:35
12:05, 00:05
4:50, 16:50

2 **a)** 17:23
b) 01:30
c) 05:55
d) 12:00

3 **a)** Fifteen minutes before one o'clock in the afternoon
b) Five minutes before three o'clock in the morning
c) Fifteen minutes past one o'clock in the afternoon
d) Twenty-eight minutes past nine in the evening

4 **a)** 12:45
b) 02:55
c) 13:15
d) 21:28

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5 **a)** 12:35 p.m.
b) 8:50 p.m.
c) 1:45 p.m.
6 **a)** 4:15 p.m.
b) 5:20 p.m.
7 **a)** 35 minutes
b) 1 hour 33 minutes
c) 47 minutes

Looking Back

Subtract how long it took from the end time.
Take the starting time and add how long it took to that.
Subtract the starting time from the end time.

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Talking Mathematics

Do something now, when you have time rather than waiting to do it later.
I am just waiting for the time to go by.
We should stop doing what we are doing.
It is an important time to get something done.
Someone giving advice on how to do something so time is not wasted on unnecessary things.

Quick Check

1 8 o'clock at night = 20:00
Ten to 1 = 12:50
9:00 p.m. = 21:00
Half past 12 = 00:30
NB: 18:00 is 6:00 p.m. so does not match 06:00 a.m.
2 **a)** 14 days
b) 366 days
3 59 years old
4 **a)** 6.5 minutes = 390 seconds
b) 3.5 days = 84 hours
c) 72 hours = 3 days
5 YYYY/MM/DD (answer will be dependent on when it is completed)
6 1 hour and 25 minutes

Topic 20 Calculating with Fractions and Decimals

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Getting Started

1 **a)** seven

b) $1\frac{3}{4}$

c) nine

d) $1\frac{4}{5}$

2 **a)** seven

b) $\frac{2}{3}$

Unit 1 Add and Subtract Fractions and Mixed Numbers

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Let's Think …

9 quarters

18 tenths

I would add the whole numbers together and then calculate the fractions by finding a common denominator and then working out the numerators, before adding the numerators. Once I have the answer, I would simplify the fraction.

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1 **a)** $\frac{3}{8}$

b) $\frac{1}{4}$

c) $\frac{1}{6}$

d) $\frac{6}{7}$

e) 1

f) $5\frac{2}{3}$

g) $4\frac{5}{10} = 4\frac{1}{2}$

h) $8\frac{7}{9}$

i) 2

2 **a)** $\frac{4}{5} + \frac{2}{3}$

$\frac{12}{15} + \frac{10}{15}$

$= \frac{22}{15} = 1\frac{7}{15}$

b) $\frac{7}{4} + \frac{4}{3}$

$\frac{21}{12} + \frac{16}{12}$

$= \frac{37}{12} = 3\frac{1}{12}$

c) $\frac{12}{7} - \frac{13}{14}$

$\frac{24}{14} - \frac{13}{14}$

$= \frac{11}{14}$

d) $\frac{1}{2} - \frac{2}{5}$

$\frac{5}{10} - \frac{4}{10}$

$= \frac{1}{10}$

e) $\frac{3}{10} + \frac{4}{5}$

$\frac{3}{10} + \frac{8}{10}$

$= \frac{11}{10} = 1\frac{1}{10}$

f) $\frac{7}{3} + \frac{3}{2}$

$\frac{14}{6} + \frac{9}{6}$

$= \frac{23}{6} = 3\frac{5}{6}$

g) $\frac{2}{6} + \frac{3}{9}$

$\frac{6}{18} + \frac{6}{18}$

$= \frac{12}{18} = \frac{2}{3}$

h) $\frac{8}{3} - \frac{5}{6}$

$\frac{16}{6} - \frac{5}{6}$

$= \frac{11}{6} = 1\frac{5}{6}$

i) $2\frac{2}{15} - \frac{4}{3}$

$\frac{32}{15} - \frac{20}{15}$

$= \frac{12}{15} = \frac{4}{5}$

3 **a)** $1\frac{1}{4} + 1\frac{1}{2}$

$2\frac{1}{4} + \frac{2}{4}$

$= 2\frac{3}{4}$

b) $\frac{1}{5} + \frac{2}{3}$

$\frac{3}{15} + \frac{10}{15}$

$= \frac{13}{15}$

c) $\frac{4}{5} - \frac{1}{2}$

$\frac{8}{10} - \frac{5}{10}$

$= \frac{3}{10}$

d) $4\frac{7}{12} - 3\frac{3}{8}$

$1\frac{14}{24} - \frac{9}{24}$

$= 1\frac{5}{24}$

e) $2\frac{1}{3} + 2\frac{4}{7}$

$4\frac{7}{21} + \frac{12}{21}$

$= 4\frac{19}{21}$

f) $6\frac{3}{4} - 3\frac{5}{6}$

$6\frac{9}{12} - 3\frac{10}{12}$

$= 2\frac{11}{12}$

g) $\frac{7}{5} + 2\frac{3}{5}$

$1\frac{2}{5} + 2\frac{3}{5}$

$= 3\frac{5}{5} = 4$

h) $\frac{5}{6} - \frac{1}{4}$

$\frac{10}{12} - \frac{3}{12}$

$= \frac{7}{12}$

i) $1\frac{5}{11} - \frac{10}{11}$

$\frac{16}{11} - \frac{10}{11}$

$= \frac{6}{11}$

j) $4\frac{1}{6} - 3\frac{4}{9}$

$3\frac{21}{18} - 3\frac{8}{18}$

$= \frac{13}{18}$

k) $5\frac{3}{8} - 3\frac{1}{12}$

$5\frac{9}{24} - 3\frac{2}{24}$

$= 2\frac{7}{24}$

l) $6\frac{7}{8} + 3\frac{3}{4}$

$9\frac{7}{8} + \frac{6}{8}$

$= 9\frac{13}{8} = 10\frac{5}{8}$

m) $6\frac{4}{5} - 3\frac{2}{8}$

$3\frac{32}{40} - \frac{10}{40}$

$= 3\frac{22}{40} = 3\frac{11}{20}$

n) $2\frac{1}{4} + 8\frac{2}{5}$

$10\frac{5}{20} + \frac{8}{20}$

$= 10\frac{13}{20}$

o) $4\frac{1}{6} + 5\frac{3}{4}$

$9\frac{2}{12} + \frac{9}{12}$

$= 9\frac{11}{12}$

p) $4\frac{7}{12} - \frac{12}{12}$

$= 3\frac{7}{12}$

q) $\frac{6}{13} + \frac{1}{2}$

$\frac{12}{26} + \frac{13}{26}$

$= \frac{25}{26}$

r) $8\frac{4}{5} - 6\frac{3}{10}$

$2\frac{8}{10} - \frac{3}{10}$

$= 2\frac{5}{10} = 2\frac{1}{2}$

4 **a)** $2\frac{1}{4} + 3\frac{1}{5} - 2\frac{1}{3}$

$3\frac{15}{60} + \frac{12}{60} - \frac{20}{60}$

$= 3\frac{7}{60}$

b) $3\frac{1}{3} + 2\frac{3}{4} - 1\frac{2}{5}$

$4\frac{20}{60} + \frac{45}{60} - \frac{24}{60}$

$= 4\frac{41}{60}$

c) $2\frac{1}{2} - \frac{2}{5} + 3\frac{3}{10}$

$2\frac{5}{10} - \frac{4}{10} + 3\frac{3}{10}$

$= 5\frac{4}{10} = 5\frac{2}{5}$

d) $4\frac{2}{3} - 2\frac{1}{10} + \frac{3}{4}$

$2\frac{80}{120} - \frac{12}{120} + \frac{90}{120}$

$= 2\frac{158}{120} = 3\frac{112}{120} = 3\frac{14}{15}$

e) $10\frac{2}{25} - 6 - 1\frac{1}{2}$

$10\frac{4}{50} - 6 - 1\frac{25}{50}$

$2\frac{54}{50} - \frac{25}{50}$

$= 2\frac{29}{50}$

f) $4\frac{13}{20} - 1 - 3\frac{49}{50}$

$4\frac{65}{100} - 1 - 3\frac{98}{100}$

$\frac{465}{100} - \frac{100}{100} - \frac{398}{100}$

$= \frac{-33}{100}$

NB: This results in a minus number

Looking Back

1 **a)** $1\frac{3}{5}$

b) $1\frac{1}{5}$

c) $3\frac{3}{5}$

2 **a)** $\frac{13}{5}$

b) $\frac{6}{5}$

c) $\frac{23}{5}$

Unit 2 Add and Subtract Decimals

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Let's Think …

3 weeks = 1.9 cm
4 weeks = 3.5 cm
8 weeks = 4 cm
12 weeks = 3.7 cm
14 weeks = 3.6 cm

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1 **a)**
$$\begin{array}{r} 0.40 \\ +\ 0.37 \\ \hline 0.77 \end{array}$$

b)
$$\begin{array}{r} 1.000 \\ +\ 0.897 \\ \hline 1.897 \end{array}$$

c)
$$\begin{array}{r} 0.10 \\ +\ 2.39 \\ \hline 2.49 \end{array}$$

d)
$$\begin{array}{r} 4.601 \\ +\ 0.220 \\ \hline 4.821 \end{array}$$

e)
$$\begin{array}{r} 0.3 \\ +\ 1.3 \\ \hline 1.6 \end{array}$$

f)
$$\begin{array}{r} 21.30 \\ +\ 34.24 \\ \hline 55.54 \end{array}$$

2 **a)**
$$\begin{array}{r} 18.220 \\ +\ 71.666 \\ \hline 89.886 \end{array}$$

b)
$$\begin{array}{r} 0.47 \\ 13.30 \\ +\ \ 8.00 \\ \hline 21.77 \end{array}$$

c) 17.54
11.00
+ 0.70
29.24

d) 7.000
6.342
+ 5.090
18.432

e) 72.100
82.450
+ 23.124
177.674

f) 420.020
3.876
+ 0.200
424.096

3 **a)** 65.47
– 13.25
52.22

b) 14.26
– 8.01
6.25

c) 59.00
– 36.05
22.95

d) 1.75
– 0.60
1.15

e) 1.760
– 0.998
0.762

f) 1.750
– 0.356
1.394

4 **a)** Estimate: 4 + 10 + 6 = 20
3.63
9.80
+ 6.21
19.64

b) Estimate: 14 + 7 + 10 = 31
14.30
6.70
+ 9.69
30.69

c) Estimate: 99 – 54 = 45

$$\begin{array}{r} 98.76 \\ -\ 54.12 \\ \underline{\quad 44.64} \end{array}$$

d) Estimate: 18 – 10 = 8

$$\begin{array}{r} 18.23 \\ -\ 10.15 \\ \underline{\quad\ 8.08} \end{array}$$

e) Estimate: 1 + 1 – 1 + 1 – 0 = 2

$$\begin{array}{r} 0.57 \\ +\ 0.66 \\ \underline{\quad 1.23} \end{array}$$

$$\begin{array}{r} 1.23 \\ -\ 1.00 \\ \underline{\quad 0.23} \end{array}$$

$$\begin{array}{r} 0.23 \\ +\ 0.92 \\ \underline{\quad 1.15} \end{array}$$

$$\begin{array}{r} 1.15 \\ -\ 0.03 \\ \underline{\quad 1.12} \end{array}$$

f) Estimate: 64 – 24 + 39 = 79

$$\begin{array}{r} 64.37 \\ -\ 24.39 \\ \underline{\quad 39.98} \end{array}$$

$$\begin{array}{r} 39.98 \\ +\ 38.50 \\ \underline{\quad 78.48} \end{array}$$

5

$$\begin{array}{r} 1.84 \\ -\ 1.60 \\ \underline{\quad 0.24\text{ m}} \end{array}$$

Peter is 0.24 m taller than his sister.

6

$$\begin{array}{r} 23.47 \\ 38.05 \\ +\ 29.00 \\ \underline{\quad 90.52\text{ km}} \end{array}$$

The total distance travelled by the taxi was 90.52 km.

Looking Back

Linda has set it out correctly.
Tamaya forgot to add zeros as placeholders.
Joshua added too many placeholders in incorrect places, and copied the sum down incorrectly.
Kaylene wrote the numbers as whole numbers instead of decimals.
James forgot to add the zero placeholders.

Unit 3 Mixed Problems

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Let's Think …

He would get $6.24 in change.

You need to add all five prices of the items he bought together. Then, you subtract the amount from $20.00.

1 0.5 km + 5.89 km = 6.39 km

He travels 6.39 km.

2 63 kg + 57.32 kg + 74.25 kg = 194.57 kg

Their total mass is 194.57 kg.

3 89.205 L – 36.387 L = 52.818 L

The difference is 52.818 L

4 $1 - (\frac{1}{6} + \frac{1}{2})$

$\frac{1}{6} + \frac{1}{2}$

$\frac{2}{12} + \frac{6}{12}$

$= \frac{8}{12}$

$\frac{12}{12} - \frac{8}{12}$

$= \frac{4}{12} = \frac{1}{3}$

$\frac{1}{3}$ of the cake was left over.

5 $1\frac{3}{4}$ hours + $2\frac{3}{5}$ hours

$3\frac{15}{20} + \frac{12}{20}$

$= 3\frac{27}{20} = 4\frac{7}{20}$ hours

Shaundra spent $4\frac{7}{20}$ hours at the beach.

6 $2\frac{1}{2} + 1\frac{3}{4} + \frac{3}{4}$

$3\frac{2}{4} + \frac{3}{4} + \frac{3}{4}$

$= 3\frac{8}{4} = 5$ km

Her total distance was 5 km.

7 **a)** $3\frac{1}{3} + 1\frac{1}{4}$

$4\frac{4}{12} + \frac{3}{12}$

$= 4\frac{7}{12}$ hours

Ben spent total of $4\frac{7}{12}$ hours on both activities.

b) $3\frac{1}{3} - 1\frac{1}{4}$

$2\frac{4}{12} - \frac{3}{12}$

$= 2\frac{1}{12}$ hours

He spent $2\frac{1}{12}$ hours less on homework than watching TV.

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8 4.7 + 5.225 + 4.75 + 2.08 + 5.225 + 4.75
= 26.73 m
The perimeter is 26.73 m.

9 2 L – 1.045 L
= 0.955 L
955 mL of juice is left over.

10 1.773 kg – (450 g + 0.987 g)
450 g + 0.987 g = 450.987 g
1.733 kg – 0.450987 kg = 1.282013 kg
The mass of the pan is 1.282013 kg.

11 510.3 km – 234.8 km = 275.5 km
He travelled 275.5 km during this time.

12 2.25 kg – 1.485 kg = 0.765 kg
765 g of flour has been used.

13 1.2 m – (32.5 cm + 41.8 cm)
32.5 cm + 41.8 cm = 74.3 cm
120 – 74.3 = 45.7 cm
No, she does not have enough space to put a 50 cm wide box next to them as there is only 45.7 cm of space left over.

Looking Back

$10.00 – ($2.62 + $1.89 + $2.00)
$2.62 + $1.89 + $2.00 = $6.51
$10.00 – $6.51 = $3.49
Micah would get $3.49 in change.

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Talking Mathematics

Read the problem carefully, look for clues that tell you whether to add, subtract, or both and make sure you work it out carefully.

Quick Check

1 **a)** $\frac{1}{4} + \frac{1}{3}$
$\frac{3}{12} + \frac{4}{12}$
$= \frac{7}{12}$

b) $\frac{5}{8} - \frac{1}{2}$
$\frac{5}{8} - \frac{4}{8}$
$= \frac{1}{8}$

c) $2\frac{1}{6} + 1\frac{1}{2}$

$3\frac{1}{6} + \frac{3}{6}$

$= 3\frac{4}{6} = 3\frac{2}{3}$

d) $3\frac{1}{9} - 2\frac{1}{4}$

$1\frac{4}{36} - \frac{9}{36}$

$= \frac{40}{36} - \frac{9}{36}$

$= \frac{31}{36}$

2 **a)** 23.47 + 38.43 + 13 = 74.9

b) 12.09 + 14.765 = 26.855

c) 143.09 – 14.245 = 128.845

d) 35 – 19.99 = 15.01

3 2.5 kg – 1.025 kg = 1.475 kg

The mass of the water is 1.475 kg.

4 2.5 L – 1.025 L = 1.475 L

1.475 L of water is left.

Topic 21 Capacity and Volume

Page 141

Getting Started

1 No, as some short containers are wide and so they can hold more.

Containers that are shorter are easier to pack.

Wide containers take up the most space.

We need bottles and jars of different sizes to hold contents of different amounts.

Unit 1 Measuring Volume

Page 142

Let's Think …

The first one.

5 blocks, 5 blocks and 4 blocks.

The last shape is the longest.

The second and third shapes take up the same amount of space.

No, as it only has 4 blocks and there are others which have 5 blocks.

1 **a)** 6 cm^3

b) 12 cm^3

c) 16 cm^3

d) 9 cm^3

2 **a)** $8 \times 5 \times 1 = 40$ cm^3

b) $15 \times 10 \times 3 = 450$ cm^3

c) $12 \times 12 \times 12 = 1\,728$ cm^3

Unit 2 Measuring Capacity

Page 143

Let's Think …

The bottle holds more.
It tells us it contains 1L whereas the jug only contains 500 mL.

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2 $\frac{3}{4}$ cup = 180 mL
$1\frac{1}{2}$ tbsp = 22.5 mL
$\frac{1}{2}$ cup = 125 mL
$1\frac{1}{4}$ cup = 310 mL
2 tbsp = 30 mL
$\frac{1}{2}$ tsp = 2.5 mL

3 **a)** $\frac{1}{2}$ cup = 4 fl oz

b) $2\frac{1}{2}$ quarts = 5 pints

c) $5\frac{1}{2}$ gallons = 44 pints

d) 1 quart = $\frac{1}{4}$ gallon

4 1 quart

6 **a)** Mila will need 8 pints.

b) 2 cups = 500 mL
500 mL × 20 = 10 000 mL
10 000 mL = 10 L
10 L – 8 L = 2 L
He needs to buy an additional 2 L of juice.

c) $\frac{1}{2}$ cup = 125 mL
1.5 L = 1 500 mL
1 500 ÷ 125 = 12
She can make 12 apple pies.

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7 **a)** 1 cup = 250 mL
$\frac{1}{3}$ cup = 80 mL
3 tbsp = 45 mL
1 tbsp = 15 mL
$\frac{1}{2}$ cup = 125 mL

b) 500 mL pineapple juice
160 mL water
90 mL vinegar
30 mL soya sauce
250 mL brown sugar
90 mL cornstarch

Looking Back

1 **a)** 1 cup
b) 1 pint
c) 1 quart
d) 1 gallon

2 **a)** 6 L
b) 1 L
c) $\frac{1}{4}$ L
d) $\frac{3}{4}$ L

3 **a)** 0.005 L
b) 0.159 L
c) 4.579 L
d) 13.244 L

4 B

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Talking Mathematics

Imperial cup – 240 mL
Canadian cup – 250 mL
Japanese cup – 200 mL
Gō cup – 180.4 mL

Quick Check

1 **a)** volume
b) capacity

2 **a)** 500 mL
b) 8 cups
c) 2 pints

Topic 22 Transformations

Page 147

Getting Started

2 **a)** A, E, U, V, W, X, Y
b) All are once except for X.

Unit 1 Translation, Reflection and Rotation

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Let's Think …

Straight line: C
Flipped: R
Turned around a point: T

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1 **a)** Transformation
b) Transformation
c) Rotation
d) Reflection
e) Rotation

2 **a)** A
b) C
c) A

3 A – Congruent
B – Incongruent
C – Incongruent
D – Congruent
E – Congruent

Looking Back

When you move a figure in a straight line in any direction, you translate it to a new position.
The figure stays the same size and does not turn in any way, but slides to a new position.
When you flip a figure over a line you reflect it. The line of reflection is also called a mirror line and can be horizontal, vertical or diagonal.
The figure stays the same size. You end up with a mirror image of the original figure.
When you turn a figure around a fixed centre point, you rotate it.
The figure remains the same shape and size, but faces a different direction as it turns. When a figure has made a full rotation, it faces the same way as the original.
The rotation can be clockwise or anti-clockwise.
Two figures are congruent when they have exactly the same shape and size. If you put the two figures on top of each other, they will match exactly. When a figure is translated, reflected or rotated, it still has the same shape and size as the original, so it will be congruent with the original figure. Two figures that are not congruent or the same, are incongruent. These figures are all congruent, as they all have the same shape and size even though the shapes have moved in some way.

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Talking Mathematics

a) Congruent
b) Rotation
c) Reflection
d) Translation

Quick Check

Rotation, reflection and translation can all be found in the design.

Topic 23 Perimeter and Area

Unit 1 Measuring Perimeter

Page 152

Let's Think …

I would use a ruler to measure around the square and rectangle.
I would use a piece of string to measure around the circle and oval and then measure the length on a ruler to determine the perimeter in cm or mm.

3 **a)** 3 + 8 + 10 = 21 m

b) 15 + 15 + 14 + 12 + 11 = 67 m

c) 3 + 2.5 + 1.5 + 2.2 = 9.2 km

4 **a)** $(4 \times 2) + (2 \times 2)$
$= 8 + 4$
$= 12$ m

b) $(2.8 \times 2) + (3.7 \times 2)$
$= 5.6 + 7.4$
$= 13$ m

c) $(2.9 \times 2) + (1.3 \times 2)$
$= 5.8 + 2.6$
$= 8.4$ km

d) $(43 \times 2) + (20 \times 2)$
$= 86 + 40$
$= 126$ cm

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5 **a)** Multiply the one length by 2 and the one width by 2 and then add the two answers together.

b) Take the measurement of one side and multiply it by 4.

6 **a)** $20 \times 4 = 80$ cm

b) $(60 \times 2) + (45 \times 2)$
$= 120 + 90$
$= 210$ cm

c) $(2.4 \times 2) + (0.5 \times 2)$
$= 4.8 + 1$
$= 5.8$ m

7 **a)** $(90 \times 2) + (65 \times 2)$
$= 180 + 130$
$= 310$ cm for the tape.

b) $24 \times 4 = 96$ cm ribbon.

c) $(7 \times 2) + (9 \times 2)$
$= 14 + 18$
$= 32$ inches of tape.

d) $160 \div 4 = 40$ cm for each side.

Looking Back

1 The total distance around an object.

2 **a)** $(2 \times \text{length}) + (2 \times \text{width})$

b) $4 \times \text{length}$

3 **a)** $(21.5 \times 2) + (18.5 \times 2)$
$= 43 + 37$
$= 80$ cm

b) $24 \times 4 = 96$ mm

c) $(155 \times 2) + (87 \times 2)$
$= 310 + 174$
$= 484$ mm

Unit 2 Measuring Area

Page 154

Let's Think …

Shape 1: 1 block
Shape 2: 6 blocks
Shape 3: 5 blocks
Shape 4: 8 blocks

1 Student's drawings

2 **a)** $9\ cm^2$ – each side is 3 cm
$16\ cm^2$ – each side is 4 cm
$8\ cm^2$ – 4 cm $\times$ 2 cm
$15\ cm^2$ – 5 cm $\times$ 3 cm

b) By multiplying one width by one length of a rectangle, you can work out the area of a rectangle.

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3 **a)** $9^2 = 81\ cm^2$

b) $3 \times 2 = 6\ km^2$

c) $3.2 \times 1.8 = 5.76\ m^2$

d) $8 \times 4 = 32\ m^2$

4 **a)** $4 \times 3 = 12\ cm^2$

b) $12 \div 2 = 6\ cm^2$

5 **a)** Area

b) Perimeter

c) Perimeter

d) Area

6 Student's drawings

7 **a)** You can take up 24 blocks to work out area of different shapes but depending on how they are arranged will depend on what the perimeter is.

b) With shapes created in different ways, they will have a different perimeter as you need to add up all the sides, but the area will be the same as it takes up a certain amount of space.

c) Depending on how the blocks are arranged (how much area a shape takes up), it can lead to the perimeter being the same as the area.

Looking Back

1 cm

2 Perimeter is the outside distance of something. Area is how much space something takes up.

3 Perimeter = $(3.5 \times 2) + (2.2 \times 2)$
$= 7 + 4.4$
$= 11.4$ m
Area = 3.5×2.2
$= 7.7$ m^2

Unit 3 Working with Circles

Page 156

Let's Think …

Take a piece of string and follow the edge of the circle, then place the string on a ruler to determine the perimeter.
You cannot measure the area using square centimetres.
It is more difficult as there are no straight lines.

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2 Student's drawings

3 **a)** $3 \times 2 = 6$ cm

b) $5 \times 2 = 10$ cm

c) $7.5 \times 2 = 15$ cm

Looking Back

1 The diameter is made up of two radii.

2 Circumference

3 3.14 and $\frac{22}{7}$

4 $2 \times \prod \times r$

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Talking Mathematics

1 Circumstance – a fact or condition that is connected with an event or action.
Circumnavigate – sail all the way around.
Circus – a travelling group of entertainers.
Circumvent – find a way of avoiding a problem or obstacle.
They all start with 'circu'.

2 Radius – a straight line from the centre to the edge of a circle or sphere.
Radiate – light, heat or other energy to be sent out in rays or waves.
Radio – the sending and receiving of electromagnetic waves carrying sound messages.
They both move from the centre to a certain point.

3 A rectangle has two sides equal whereas a square has all four sides equal. When working out the perimeter of a rectangle you use this method: (2 × length) + (2 × width). When working out the perimeter of a square you use this method: 4 × side.

Quick Check

1 $85 \times 60 = 5\,100$ cm^2
$20 \times 20 = 400$ cm^2
$5\,100 - 400 = 4\,700$ cm^2
She has 4 700 cm^2 left.

2 **a)** $25 \times 2 = 50$ cm

b) Yes, as the radius is 25 cm, which is to be multiplied by 2 and 3.14, which will be more than 100.

Topic 24 Probability

Unit 1 Chance, Outcomes and Probability

Page 160

Let's Think …

Heads or tails
50% chance of it landing on heads
50% chance of landing on tails
The results will be different as it is only probable that it will land 50% on either.

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1 **a)** Skill

b) Chance

c) Chance

d) Skill

e) Chance

2 Examples: weather predictions, winning a competition that many people enter, rolling a 6 on the die when playing a game.

3 **a)** P = $\frac{7}{12}$

b) P = $\frac{3}{12}$

c) P = $\frac{2}{12}$

d) P = $\frac{10}{12}$

e) P = $\frac{10}{12}$

f) P = $\frac{12}{12}$

4 $\frac{3}{7}$ = 0.43

5 $\frac{3}{5}$

Looking Back

Heads or tails
It landed more on heads than on tails.

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Talking Mathematics

When the outcome of an event is random – Chance
The result of doing an experiment to test a probability – Experimental probability
A possible result of a probability experiment – Outcome
Probability of $\frac{7}{11}$ – Fraction

Quick Check

1 $\frac{1}{7}$
There are 7 beads in the bag.

2 $\frac{2}{4}$

3 All three of them are possible outcomes.

Topic 25 Looking Back

Page 164

Revision A

1 **a)** 32 567 000 – thirty-two million five hundred sixty-seven thousand
950 342 – nine hundred and fifty thousand three hundred forty-two
8 020 505 – eight million twenty thousand five hundred five
172 900 000 – one hundred seventy-two million nine hundred thousand

b) 32 567 000 – two million
950 342 – two ones
8 020 505 – twenty thousand
172 900 000 – two million

c) 950 342, 8 020 505, 32 567 000, 172 900 000

d) 100 000 000 + 70 000 000 + 2 000 000 + 900 000

2 **a)** Add consecutive numbers starting at 2.

b) 1, 3, 6, 10,15 …

c) 55

d) 1, 4, 9, 16, 25 …

e) Shape 8 will be 8^2; each shape is the number pattern multiplied by itself.
Pattern 8 is 64.

3 **a)** $\frac{7}{8}, \frac{3}{4}, \frac{1}{2}, \frac{3}{12}$

b) $2\frac{1}{6}, 1\frac{8}{24}, 1\frac{3}{12}, 1\frac{1}{6}$

c) $\frac{40}{50}, \frac{15}{25}, \frac{4}{10}, \frac{1}{5}$

4 **a)** 3 000 g

b) 8.55 g

c) 1 200 kg

5 **a)** Subtract 32 from the degrees Fahrenheit. Multiply the answer by 5 and divide that answer by 9.

b) 24 °C

c) Moscow is the coldest city.
Sydney is the hottest city.

d) 3 °C

e) London is –1 °C.
Sydney is 24 °C.

6 **a)** 0.678 < 0.786

b) $\frac{3}{4}$ < 0.8

c) 0.875 = $\frac{7}{8}$

d) 0.5 = 0.500

7 **a)** Triangular prism

b) Faces – 5
Vertices – 6
Edges – 9

c) Student's drawing

Revision B

1 **a)** $54.00, $48.00, $65.00

b) $167.00

c) $65.40 – $53.65 = $11.75
Claudia has $11.75 more than Sarah.

d) $53.70

2 **a)** a – Acute angle
b – Obtuse angle
c – Right angle
d – Full revolution

b) **i)** Parallel lines: AB and CD
ii) Perpendicular lines: AB and EF, CD and EF
iii) Point: I, E
iv) Line segment GH
v) Line CD

c) Angle a = 75°
Angle b = 83°

3 Mean: A – 5.2, B – 4.8
Median: A – 5, B – 5
Range: A – 8, B – 6

4 **a)** 1.5 m + 1.5 m = 3 m = 30 dm
7 × 40 cm = 280 cm = 28 dm
65 dm – (30 dm + 28 dm)
65 dm – 58 dm = 7 dm
Yes, he has enough wood.

b) Yes, he has 7 dm left over.

5 3: 3, 6, 9, 12, 15, 18, 21, 24
5: 5, 10, 15, 20, 25, 30, 35, 40
LCM: 15

6 F8: 1, 2, 4, 8
F20: 1, 2, 4, 5, 10, 20
1, 2 and 4 are common factors
GCF: 4

7 8.723 m = 8 m + 7 dm + 2 cm + 3 mm

8 **a)** hexagon

b) triangle

c) pentagon

d) decagon

Revision C

1 **a)** \$12.00 + \$8.50 + \$14.25 + \$5.25 = \$40.00

b) $8\frac{50}{100} = 8\frac{1}{2}$, $5\frac{25}{100} = 5\frac{1}{4}$

c) $\frac{1}{4} + \frac{3}{8}$
$\frac{2}{8} + \frac{3}{8}$
$= \frac{5}{8}$
$\frac{5}{8}$ of \$40.00
= \$25.00
He spent \$25.00

d) \$40.00 – \$25.00 = \$15.00
He has \$15.00 left.

e) $\frac{7}{16}$ = \$17.50
Therefore, $\frac{7}{16}$ is more.

2 He needs to use the pulley 5 times.
15 ÷ 3.5 = 4 r 1

3 **a)** 1 080 r 1

b) 327

c) 29

d) 52 r 6

4 **a)** 865 ÷ 15 = 57 r 10
He can make 57 full bags.
b) There are 10 apples left over.

5 **a)** Cake for the boys, chocolate for the girls.
b) Ice cream
c) True
d) True

6 **a)** 2:35 p.m.
b) 11:15 a.m.
c) 8:30 a.m.
d) 12:00 a.m.
e) a) 14:35
b) 11:15
c) 08:30
d) 00:00

7 **a)** 10:15 a.m.
b) 12:00
c) 12:00 – 10:15 = 1:45
It took 1 hour and 45 minutes.

8 **a)** $12 \times 10 \times 2 = 240\ cm^3$
b) $10 \times 5 \times 3 = 150\ cm^3$

9 **a)** Incongruent
b) Congruent
c) Congruent

10 500 mL × 45 = 22 500 mL = 22.5 L
He will need 2.5 L more of cola.
250 mL × 45 = 11 250 mL = 11.250 L
He has enough sparkling water.

11 **a)** $\frac{8}{18}$ chance
b) Lollipop
c) $\frac{0}{18}$ chance (impossible)

12 **a)** (60 × 2) + (20 × 2)
120 + 40 = 160 cm
b) $60 \times 20 = 1\ 200\ cm^2$

13 **a)** d = 2 × *r*
= 2 × 3
= 6 cm
b) C = ∏ × d
C = 2 × ∏ × r
c) $C = 2 \times \frac{22}{7} \times 3$
= 18.86 cm

14 **a)** $41.75 – $22.25 = $19.50
b) Chantel: $22.25 + $7.75 = $30.00
Laura: $41.75 + $8.25 = $50.00