

## Answer Key Chapter 6

### Student book

#### Chapter 6

##### Check in

1 a  $\frac{7}{10}$       b  $\frac{2}{5}$       c  $\frac{2}{3}$       d  $\frac{1}{5}$

e  $\frac{1}{12}$       f  $\frac{1}{9}$

2 a i  $1\frac{3}{20}$       ii  $3\frac{3}{5}$       iii  $7\frac{3}{10}$

b i  $\frac{13}{10}$       ii  $\frac{31}{8}$       iii  $\frac{17}{3}$

3 a 370      b 174      c 491 000      d 0.67  
e 0.4      f 1700      g 0.22      h 197.5  
i 12

##### Exercise 6A

4 a 420      b 37      c 200      d 0.53  
e 0.28      f 0.35      g 2.1      h 4  
i 2650      j 0.424      k 0.034      l 0.0921

5 a 0.7      b 0.9      c 0.04      d 0.17  
e 1.8      f 1.72      g 6.3      h 2.56

6 175 000; 17 500; 1750; 175; 17.5; 1.75

7 a 0.7      b 0.7      c 0.21      d 0.21  
e 2.4      f 2.4      g 3.15      h 3.15

8 Multiplying by  $\frac{1}{10}$  is the same as dividing by 10  
Multiplying by  $\frac{1}{100}$  is the same as dividing by 100

7  $5.4 \times 0.01$  (0.054)

$50.4 \div 100$  (0.504)

$54 \div 100$  (0.54)

$54 \times 0.1$  (5.4)

$504 \div 10$  (50.4)

$5.4 \times 10$  (54)

8 a 0.01      b 0.1      c 65      d 4800

9  $0.24 \text{ m}^2$

10 a  $x = 55$       b  $y = 20$

##### Exercise 6C

1 a 590      b 3521      c 0.7      d 2490  
e 7600      f 80      g 370      h 1500  
i 5      j 410 000      k 72 900      l 1 930 000

2 \$4.80

3 4.5 m

4 When Anna multiplied 45.6 by 100 she just put two 0s on the end rather than change the place value to 4560.

5 a 0.1      b 0.1      c 10      d 100

e 0.1      f 0.01      g 10      h 100

6 a 1      b 32      c 01,1      d 4321

7 a 0.01      b 0.0001

8 This is only true if the decimal is smaller than 1. For example, if you divide 3 by the decimal 1.5, the answer is 2 so it gets smaller.

##### Exercise 6B

1 a 3.2      b 2.561      c 0.004      d 35.6  
e 0.28      f 0.5      g 0.041      h 0.07  
i 0.02      j 23      k 456      l 309

2 0.9

3 a 36 mm      b 3.6 cm

4 a 0.07 kg      b 70 g

5  $410 \div 1000 = 0.41$

$410 \div 100 = 4.1$

$410 \div 10 = 41$

$410 \div 1 = 410$

$410 \div \frac{1}{10} = 4100$

$410 \div \frac{1}{100} = 41000$

6 Dividing by  $\frac{1}{10}$  is the same as multiplying by 10

Dividing by  $\frac{1}{100}$  is the same as multiplying by 100

##### Exercise 6D

1 a 400      b 8000      c 400      d 50      e 5  
f 90 000      g 10 000      h 0.003      i 7

2 a true      b false      c true

3 a 960      b 490      c 6200      d 18 000      e 17  
f 27      g 0.0039      h 130      i 8.0

Number	613 752	1.6831	0.004 753
3 s.f.	614 000	1.68	0.004 75
2 s.f.	610 000	1.7	0.0048
1 s.f.	600 000.	2	0.005

5 a 0.00466      b 0.02      c 0.00022      d 0.40

6 a i, ii, v

b iii 800 000      iv 0.04      vi 900

7 a 80 000      b 83 000      c 82 700      d 82 740

8 a 0.004      b 0.0036      c 0.003 57      d 0.003 565

9, 10 Students' own answers

11 a 8 135 000      b 8 130 000      c 8 100 000      d 8 000 000

12 a The theatre would sell 960 tickets, which is more than they have seats.

b It would say 15 tonnes which is too heavy for the bridge.

13 a 5499      b 4500

14 a 0.0742      b 0.07      c 0.07

15 a 0.04      b 0.0362

### Exercise 6E

- 1 a 0.15      b  $0.\dot{3}\dot{6}$       c 0.428571      d 0.1875  
 2 a 6.421      b 5.69848      c 4.35 (to 2 d.p.)  
 3 137.5736°  
 4 a 12.7764 cm<sup>2</sup>      b 1.84 cm (to 2 d.p.)  
 5 a \$92.19      b \$30.29      c \$5.40  
 6 a 0.575928 m<sup>2</sup>      b \$8.75

### Exercise 6F

- 1 a 0.4      b 0.6      c 0.8      d 0.25  
 e 0.75      f 0.375      g 0.625      h 0.875  
 i 0.0625      j 0.3125  
 2 a  $0.3333... = 0.\dot{3}$   
 b  $0.6666... = 0.\dot{6}$

- c  $0.1666... = 0.1\dot{6}$   
 d  $0.142857... = 0.1\dot{4}2857$

4 a the 3s carry on forever

- b  $\frac{1}{4} = 0.25$        $\frac{1}{5} = 0.2$        $\frac{1}{6} = 0.1666...$   
 $\frac{1}{7} = 0.142857...$        $\frac{1}{8} = 0.125$        $\frac{1}{9} = 0.1111...$

$\frac{1}{10} = 0.1$

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

- 5 a 0.833 recurring      b 0.285... recurring  
 c 0.571... recurring      d 0.222... recurring  
 e 0.555... recurring      f 0.1818... recurring  
 g 0.0714285... recurring      h 0.0833... recurring

6 yes

- 7 a 0.0625      b 0.6875      c 0.15      d 0.35  
 e 0.55      f 0.015      g 0.035      h 0.004  
 8 a i 3.4      ii 7.375      iii 2.333...      iv 12.1875

- b i  $2\frac{4}{5}$       ii  $7\frac{5}{8}$       iii  $2\frac{4}{9}$       iv  $15\frac{7}{10}$

- 9 a  $\frac{1}{9}$       b  $\frac{5}{9}$       c  $\frac{2}{11}$

- 2 a  $\frac{2}{9}$       b  $\frac{1}{3}$       c  $\frac{28}{99}$       d  $\frac{1}{11}$   
 e  $\frac{7}{99}$       f  $\frac{4}{11}$       g  $\frac{143}{999}$       h  $\frac{7}{999}$   
 i  $\frac{4}{333}$

4 He has treated them like terminating decimals instead of recurring decimals so there is a rounding error.

- 5 a  $\frac{1}{45}$       b  $\frac{1}{18}$       c  $\frac{4}{45}$       d  $\frac{29}{990}$       e  $\frac{7}{900}$

- 6 a  $\frac{1}{550}$       b  $\frac{203}{9990}$       c  $\frac{7}{9000}$

### Exercise 6H

- 1 a  $\frac{3}{10}$       b  $\frac{2}{5}$       c  $\frac{2}{5}$

- 2 a  $\frac{3}{7}$       b  $\frac{3}{20}$       c  $\frac{1}{8}$

- 4  $0.61, \frac{5}{8}, \frac{13}{20}$

- 5 a false      b true      c false

- 7 a >      b <      c =

- 8 a smaller      b larger

- 9 a <      b <      c >      d <      e >

- 10 a true      b false      c false      d true

11 Students' own answers, e.g.

- a  $4\frac{71}{90}$       b  $1\frac{21}{110}$       c  $\frac{17}{70}$

### Exercise 6G

Decimal	Fraction (cancelled to simplest form)
0.6	$\frac{3}{5}$
0.75	$\frac{3}{4}$
0. $\dot{6}$ (or 0.666...)	$\frac{2}{3}$
0.7	$\frac{7}{10}$
0.25	$\frac{1}{4}$
0.03	$\frac{3}{100}$
0.27	$\frac{27}{100}$
0.4	$\frac{2}{5}$
0.8	$\frac{4}{5}$

### Exercise 6I

- 1 a  $1\frac{1}{2}$       b  $2\frac{1}{3}$       d  $1\frac{1}{5}$       e  $1\frac{2}{5}$

- f  $2\frac{1}{8}$       g  $2\frac{1}{6}$

2 a Somnath is correct. Waqar has not correctly dealt with the  $\frac{-3}{5}$

b Waqar should have subtracted  $\frac{3}{5}$  from 2 then it would have worked.

- 3 a  $2\frac{1}{4}$       b  $2\frac{11}{35}$       c  $4\frac{5}{6}$       d  $2\frac{11}{12}$

- e  $3\frac{9}{20}$       f  $4\frac{9}{20}$       g  $8\frac{23}{40}$

- 4  $1\frac{7}{12}$  kg

- 5  $2\frac{3}{8}$  m

- 6  $1\frac{5}{8}$  l

- 7  $1\frac{5}{6}, 9\frac{1}{3}$

- 8 a  $4\frac{2}{15}$       b  $4\frac{7}{10}$

- 9 a 4      b 3      c 9      d 18

### Exercise 6K

- 1 a  $2\frac{1}{6}$     b  $2\frac{1}{2}$     c  $1\frac{1}{3}$     d  $2\frac{2}{11}$   
 e  $4\frac{1}{5}$     f  $4\frac{1}{6}$     g  $5\frac{3}{5}$     h  $11\frac{2}{3}$   
 i  $57\frac{3}{5}$     j  $22\frac{10}{17}$
- 2 a 10    b  $15\frac{1}{6}$     c  $16\frac{1}{4}$     d 20  
 e  $73\frac{1}{3}$     f  $82\frac{1}{4}$     g  $6\frac{3}{7}$     h  $8\frac{3}{4}$   
 i  $21\frac{1}{3}$     j  $14\frac{1}{4}$     k  $-7\frac{4}{5}$     l  $-3\frac{4}{5}$
- 3  $12\frac{1}{4}$  hours
- 4  $10\frac{1}{2}$
- 5  $8\frac{4}{5}$
- 6  $31\frac{1}{4} m^2$
- 8  $-3 \times 2\frac{1}{5} = -6\frac{3}{5}$   
 $3 \times 1\frac{5}{12} = 4\frac{1}{4}$      $4 \times 1\frac{1}{3} = 5\frac{1}{3}$   
 $2 \times 3\frac{1}{8} = 6\frac{1}{4}$      $(4 \times 1\frac{1}{4})^2 = 25$
- 9 a  $21\frac{3}{7}$     b  $10\frac{3}{4}$

10 4

11 a 240    b 180

### Exercise 6M

- 1 a  $4 + \frac{2}{3} = 4 \times \frac{3}{2} = \frac{4 \times 3}{2} = \frac{12}{2} = 6$   
 b  $10 + \frac{2}{5} = 10 \times \frac{5}{2} = \frac{50}{2} = 25$   
 c  $10 + \frac{4}{5} = 10 \times \frac{5}{4} = \frac{50}{4} = 12\frac{1}{2}$
- 2 a 45    b  $5\frac{1}{3}$     c 9    d  $9\frac{3}{5}$   
 e 12    f 9    g  $-7\frac{1}{2}$     h  $-7\frac{1}{5}$

i -14

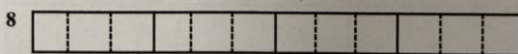
3 20 bottles

4 18 people

5  $2\frac{1}{2}$  weeks

6  $2\frac{2}{3}$  m

7  $3\frac{3}{4}$



9 a  $4\frac{4}{5}$     b  $2\frac{2}{3}$     c  $4\frac{10}{11}$     d  $2\frac{18}{19}$     e  $2\frac{12}{19}$

f  $3\frac{7}{27}$     g  $-2\frac{4}{13}$     h  $-3\frac{1}{2}$     i  $-2\frac{1}{7}$

10 same value

### Investigation

One pattern in this investigation is in the fractions where this works; notice each integer increases by 1 each time as does the denominator of the fraction.

$$4\frac{1}{2} + 3 = 4\frac{1}{2} - 3$$

$$5\frac{1}{3} + 4 = 5\frac{1}{3} - 4$$

$$6\frac{1}{4} + 5 = 6\frac{1}{4} - 5$$

$$7\frac{1}{5} + 6 = 7\frac{1}{5} - 6$$

### Exercise 6

- 1 a 0.29    b 0.8    c 970    d 300  
 e 32    f 90    g 4    h 3.5
- 2 a 0.01    b 2.3    c 71    d 4.08  
 e 0.01    f 7.8

- 3 a 900    b 9000    c 40000  
 d 40000    e 0.8    f 0.07  
 g 0.007    h 9    i 0.0004
- 4 a 540000    b 42000    c 0.037  
 d 0.00022    e 12    f 1.1  
 g 0.0048    h 1400    i 0.31
- 5 a 18.4    b 158000    c 10500  
 d 0.0301    e 15.1    f 113  
 g 21500    h 13.4    i 21.0

- 6 b 0.00571  
 d 509000  
 f 0.0101

7 a 0.1    b 0.01    c 0.2    d 0.07

8 a 0.375    b  $0.285... = 0.285714$   
 c  $0.222... = 0.2$     d  $0.833... = 0.83$   
 e  $0.461... = 0.461538$     f  $1.666... = 1.6$

9 i  $\frac{1}{8}, \frac{1}{5}, 0.2, 0.25, \frac{3}{10}$     ii  $\frac{5}{8}, \frac{2}{3}, 0.75, \frac{7}{9}, 0.8$

10 a  $\frac{2}{3}$     b  $1\frac{1}{2}$     c  $2\frac{3}{4}$     d  $1\frac{1}{2}$   
 e  $\frac{7}{9}$     f  $3\frac{1}{12}$

11 a  $2\frac{3}{20}$     b  $\frac{3}{4}$     c  $2\frac{7}{12}$     d  $\frac{13}{20}$     e  $2\frac{23}{56}$

12  $5\frac{7}{8}$  km

13  $1\frac{11}{12}$  kg

14 a  $4\frac{4}{5}$     b  $-3\frac{1}{3}$     c  $-13\frac{2}{7}$     d  $13\frac{1}{5}$   
 e  $-7\frac{2}{5}$     f  $97\frac{1}{7}$

15 a 20    b -8    c 18    d  $10\frac{1}{2}$   
 e  $16\frac{1}{2}$     f -14

### Summary

#### Check out

1 a 0.18    b 2.7    c 300    d 5.16

2 a i 8710    ii 0.00486  
 b i 48000    ii 0.020  
 c i 60    ii 0.0008

3  $\frac{3}{4}, \frac{7}{9}, \frac{17}{20}$

4 a i  $1\frac{22}{63}$     ii  $1\frac{7}{8}$     b  $\frac{5}{6}$  litre

5 a  $10\frac{2}{5}$     b  $-15\frac{5}{6}$     c  $22\frac{2}{3}$

6 a i 16    ii  $-10\frac{1}{2}$     b 40

## Answer Key Chapter 6

### Homework book

#### 6A-6C

- 1 a 530    b 56    c 600    d 250  
 e 0.7    f 0.5    g 220    h 4400  
 i 5400    j 9    k 303    l 590
- 2 a 0.064    b 0.8    c 0.0058    d 0.004  
 e 0.024    f 0.00087    g 0.00072    h 0.000003  
 i 0.0008    j 0.0027    k 0.005    l 0.0104
- 3 a 0.5    b 0.06    c 0.052    d 3.45
- 4 a 5.4    b 0.562    c 0.6    d 4.5  
 e 0.8    f 0.52    g 0.05    h 0.003  
 i 0.15    j 4.56    k 0.002    l 0.76
- 5 a 1.4    b 1.2    c 5.6    d 3.5  
 e 1.8    f 8.8    g 0.28    h 0.36  
 i 0.2    j 0.72    k 0.27    l 0.28
- 6 a 620    b 80    c 63    d 150  
 e 2.4    f 0.3    g 800    h 700  
 i 1200    j 60    k 350    l 2200

#### 6F-6H

- 1 a 0.5    b 0.375    c 0.3125    d 0.45  
 e 0.56
- 2 a  $0.8\dot{8}, \frac{8}{9}$     b  $0.2\dot{2}, \frac{2}{9}$     c  $0.2\dot{5}, \frac{25}{99}$     d  $0.4\dot{1}, \frac{41}{99}$   
 e  $0.2\dot{6}\dot{5}, \frac{265}{999}$     f  $0.0\dot{3}\dot{3}, \frac{1}{33}$
- 3 a  $0.6\dot{6}$     b  $0.8\dot{3}$     c  $0.2\dot{2}$     d  $0.7\dot{7}$   
 e  $0.2\dot{7}$     f  $0.6\dot{3}$     g  $0.71428\dot{5}$     h  $0.214285\dot{7}$   
 i  $0.58\dot{3}$     j  $0.30769\dot{2}$
- 4 a  $2.\dot{3}$     b  $5.1\dot{6}$     c  $10.\dot{5}$   
 d  $8.1\dot{8}$     e  $3.85814\dot{2}$
- 5 a  $\frac{3}{8}$     b  $\frac{4}{9}$     c  $\frac{5}{6}$     d  $\frac{2}{3}$   
 e  $\frac{7}{9}$     f  $\frac{3}{4}$     g  $\frac{5}{11}$     h  $\frac{3}{5}$
- 6 a  $\frac{2}{3}$     b  $\frac{8}{9}$     c  $\frac{5}{11}$     d  $\frac{9}{14}$
- 7 a true    b false    c true    d false

#### 6D-6E

- 1 a 60    b 300    c 5    d 10000  
 e 0.0002    f 70

- 2 a 980    b 600    c 5400    d 37  
 e 0.0020    f 6.0

3

Number	457213	5.8612	0.004851
3 s.f.	457000	5.86	0.00485
2 s.f.	460000	5.9	0.0049
1 s.f.	500000	6	0.005

- 4 a 7244000    b 7240000    c 7200000    d 7000000
- 5 a 14999    b 9500
- 6 a 0.18    b  $0.57142\dot{8}$     c 0.5

- 7  $2300 \text{ cm}^3$  (using the same accuracy as the least accurate number in the question, 2 s.f.)

#### 6I

- 1 a  $1\frac{1}{3}$     b  $2\frac{1}{12}$     c  $3\frac{5}{7}$     d  $3\frac{7}{12}$
- 2  $11\frac{3}{5}$  litres
- 3  $5\frac{11}{20}$  km
- 4 a  $6\frac{1}{60}$     b  $7\frac{17}{30}$     c  $5\frac{11}{20}$
- 5 a  $7\frac{8}{15}$     b  $1\frac{1}{2}$

#### 6J-6M

- 1 a 1    b  $1\frac{1}{2}$     c  $4\frac{2}{3}$     d  $2\frac{2}{5}$   
 e  $1\frac{1}{3}$     f  $1\frac{1}{7}$     g 2    h  $2\frac{2}{9}$   
 i  $1\frac{3}{5}$     j  $2\frac{1}{7}$     k  $3\frac{3}{4}$     l 6  
 m 7    n  $3\frac{3}{4}$     o  $13\frac{3}{4}$     p  $14\frac{2}{3}$   
 q  $9\frac{1}{5}$     r  $16\frac{5}{7}$     s  $12\frac{2}{3}$     t  $36\frac{10}{11}$
- 2 a 10kg    b 15m    c \$24    d 140ml

3 1 day 21 hours

4  $14\frac{1}{4}\text{cm}^2$

5 a  $8 \div \frac{2}{3} = 8 \times \frac{3}{2} = \frac{24}{2} = 12$

b  $8 \div \frac{4}{5} = 8 \times \frac{5}{4} = \frac{40}{4} = 10$

c  $7 \div \frac{4}{5} = 7 \times \frac{5}{4} = \frac{35}{4} = 8\frac{3}{4}$

d  $5 \div 1\frac{1}{3} = 5 \div \frac{4}{3} = 5 \times \frac{3}{4} = \frac{15}{4} = 3\frac{3}{4}$

6 a 12      b 14      c 8      d 10

e 16      f  $9\frac{3}{5}$       g  $16\frac{2}{3}$       h  $7\frac{1}{2}$

i 6      j  $1\frac{9}{11}$       k 3      l  $3\frac{5}{9}$

m  $2\frac{6}{7}$       n  $2\frac{2}{11}$       o 7      p  $2\frac{17}{19}$

7 20

8  $\frac{2}{5}$  kg for \$2.80