

# Answer Key | Lower Secondary Stage (6-8)

1<sup>st</sup> Semester | 2023-2024

Subject: Math

Chapter: 6

Objectives: To review the answers of 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**

1 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

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

3 175 000; 17 500; 1750; 175; 17.5; 1.75

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

5 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 m<sup>2</sup>

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 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

4

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 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 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  $0.142857... = 0.\dot{1}42857$   
 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  $\frac{2}{11}$

### 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	$\frac{4}{5}$

- 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 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  $4 + \frac{2}{3} = 4 \times \frac{3}{2} + \frac{2}{2} = \frac{12}{2} + \frac{2}{2} = 6$

b  $10 + \frac{2}{5} = 10 \times \frac{5}{2} + \frac{2}{2} = \frac{50}{2} + \frac{2}{2} = 25$

c  $10 + \frac{4}{5} = 10 \times \frac{5}{4} + \frac{4}{4} = \frac{50}{4} + \frac{4}{4} = 12\frac{1}{2}$

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

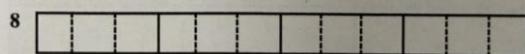
3 20 bottles

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  $0.833... = 0.8\bar{3}$

e  $0.461... = 0.461538$     f  $1.666... = 1.\bar{6}$

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

## 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  $0.26\dot{5}, \frac{265}{999}$       f  $0.0\dot{3}, \frac{1}{33}$
- 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 10.5  
 d  $8.\dot{1}\dot{8}$       e  $3.8\dot{5}814\dot{2}$
- 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  $0.\dot{1}\dot{8}$       b  $0.57142\dot{8}$       c  $0.\dot{5}$

- 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