MATHEMATICS

N4

Unit 3

Numeracy

(Part 1 of 2)

Basic Arithmetic

Exercise 1 (Addition)

1) 17 + 3

2) 57 + 4

3) 12 + 9

4) 16 + 14

5) 14 + 37

6) 28 + 25

7) 317 + 469

8) 422 + 279

9) 458 + 419

10) 511 + 66

11) 426 + 36

12) 125 + 42

13) 38 + 17 + 26

14) 37 + 57 + 46

15) 32 + 74 + 48

16) 426 + 29 + 23

17) 474 + 32 + 71

18) 286 + 15 + 42

19) 602 + 155 + 86

20) 153 + 329 + 71

Exercise 2

Work out the answers to each of the following:–

1) 7·2 + 3·6

2) 5·7 + 4·5

3) 12·3 + 17·8

4) 16·5 + 14·2

5) 1·4 + 2·7

6) 4·28 + 2·15

7) 4·17 + 3·69

8) 5·22 + 1·79

9) 3·58 + 2·19

10) 1·11 + 6·66

11) 4 + 3·6

12) 12 + 4·2

13) 13·8 + 1·7

14) 56·1 + 3·46

15) 17·1 + 2·83

16) 1·7 + 2·57

17) 12·6 + 1·47

18) 14 + 0·29

19) 15 + 3·42

20) 13 + 2·53

Exercise 3

1) Two tables are placed together to form a larger one. The first table is 67·4 cm long and the second table is 56·8 cm long.
   What is the total length?

2) Three boxes weigh 4·6 kg, 7·9 kg and 18·2 kg.
   What is the total weight?

3) What length of shelf is needed to hold books with thicknesses of 6·3 cm, 7·4 cm, 1·8 cm, 2·8 cm and 4·9 cm?

4) John weighs 45·2 kg and Allan weighs 40kg.
   What is their total weight?

5) Every week Mr and Mrs McNally buy a TV guide for 90p, a Puzzle Time for 82p and a Crossword Fun for 67p.
   How much does this cost them every week?

6) On a Saturday 1432 people visited an art gallery, while 976 visited on Sunday. How many people visited that weekend?

7) Mrs Welsh was buying prizes for everyone in her classes for the end of term. In her 3 classes there were 32 pupils, 29 pupils and 27 pupils. How many prizes did she need to buy?

8) Mr Jarvie had 4 rolls of material holding 23 metres, 17 metres, 32 metres and 19 metres.
   How much material does he have in total?

Exercise 4 (Subtraction)

Work out the answers to each of the following:

1) 6·8 – 4·3   **2)** 9·6 – 1.8   **3)** 32·7 – 14·2

4) 15·6 – 14·7   **5)** 26·9 – 12·4   **6)** 17·28 – 10·43

7) 56·48 – 25·29   **8)** 82·04 – 63·48   **9)** 92·16 – 25·31

10) 83·58 – 36·21   **11)** 25·83 – 15·4   **12)** 36·42 – 15·9

13) 83·29 – 16·3   **14)** 25·62 – 7·3   **15)** 34·26 – 1·8

16) 26·4 – 15·35   **17)** 12·4 – 5·62   **18)** 17·4 – 8·99

19) 34·6 – 2·11   **20)** 73·2 – 16·78   **21)** 14 – 3·2

22) 83 – 5·6   **23)** 46 – 3·7   **24)** 36 – 8·08

25) 42 – 6·72   **26)** Take 19·2 from 76·8

27) From 0·67 subtract 0·38   **28)** Subtract 1·9 from 10·2

29) Evaluate 7·62 – 0·81

30) What is the difference between 17·93 and 13·27?

Exercise 5

1) Tanya has a 350 millilitre bottle of shampoo. She uses it to fill a 90 millilitre travel bottle. How much is now left in the original bottle?

2) A curtain with drop length of 192 centimetres was needed for a window. Lucy's curtains are 148 centimetres. By how much are they short?

3) Ewan and Scott have to put flyers through 470 letterboxes. On the first evening they delivered 145. How many had they still to deliver?

4) Judy received her weekly pay of £540. She spent £68·43 in the supermarket and £27·99 on a pair of shoes.
How much did she have left?

5) In the final vote for the winner on "Biggest Brother" Jana received 11240 votes and Adam received 9768 votes.

a) How many votes were there in total?

b) By how many votes did Jana win?

6) To make green paint, a painter mixes 27·42 litres of blue paint with 14.3 litres of yellow paint. He uses 17·3 litres of this green paint. How much paint is not used?

7) The Colrain High School Show cost £1746 to produce. £1245·50 was made from ticket sales and £876·32 from refreshment sales. How much profit did the school make?

8) The Lewis family won £100,000 on the lottery and used some of the money to redecorate their house. They bought a suite for £1279, carpets for £742 and a kitchen for £5200. How much money did they have left?

Exercise 6 (Multiplication)

Work out the answers to each of the following:

1) $16{\cdot}3 \times 6$ **2)** $29{\cdot}4 \times 7$ **3)** $38{\cdot}6 \times 2$

4) $29{\cdot}3 \times 4$ **5)** $51{\cdot}6 \times 2$ **6)** $29{\cdot}7 \times 3$

7) $23{\cdot}8 \times 9$ **8)** $14{\cdot}81 \times 5$ **9)** $29{\cdot}31 \times 3$

10) $93{\cdot}37 \times 7$ **11)** $18{\cdot}81 \times 5$ **12)** $38{\cdot}72 \times 4$

13) $29{\cdot}9 \times 6$ **14)** $17{\cdot}81 \times 8$ **15)** $14{\cdot}93 \times 9$

16) $83{\cdot}8 \times 8$ **17)** $56{\cdot}92 \times 4$ **18)** $73{\cdot}24 \times 5$

19) $9{\cdot}49 \times 9$ **20)** $92{\cdot}01 \times 7$ **21)** 15×8

22) $7{\cdot}42 \times 6$ **23)** $28{\cdot}39 \times 5$ **24)** $60{\cdot}02 \times 9$

Exercise 7

1) $4\cdot2 \times 10$
2) $7\cdot3 \times 10$
3) $2\cdot8 \times 10$
4) $14\cdot3 \times 10$
5) $17\cdot28 \times 10$
6) $18\cdot29 \times 10$
7) $6\cdot7 \times 100$
8) $4\cdot3 \times 100$
9) $7\cdot9 \times 100$
10) $42\cdot81 \times 100$
11) $39\cdot91 \times 100$
12) $99\cdot81 \times 100$
13) $4\cdot3 \times 1000$
14) $6\cdot2 \times 1000$
15) $13\cdot3 \times 1000$
16) $19\cdot9 \times 1000$
17) $19\cdot91 \times 1000$
18) $14\cdot03 \times 1000$
19) $39\cdot73 \times 1000$
20) $47\cdot83 \times 1000$
21) $57\cdot19 \times 1000$
22) $42\cdot31 \times 20$
23) $39\cdot96 \times 50$
24) $92\cdot81 \times 70$
25) $8\cdot3 \times 90$
26) $36\cdot2 \times 30$
27) $43\cdot3 \times 60$
28) $24\cdot3 \times 300$
29) $16\cdot28 \times 500$
30) $18\cdot79 \times 700$
31) $6\cdot8 \times 900$
32) $4\cdot31 \times 200$
33) $37\cdot9 \times 400$
34) $17\cdot9 \times 4000$
35) $19\cdot87 \times 7000$
36) $76\cdot03 \times 6000$

Exercise 8

1) Mr Johnston can make 32 cones from one tub of ice cream. In one weekend he used 8 tubs. How many cones did he make?

2) If one T-shirt cost £9·96, how much will it cost to buy 7 of these T-shirts?

3) The Boyles would like to buy the dining set shown. How much would it cost them for the table and 4 chairs?

£475

£95 each

4) Brian collected £45 from each of the 70 staff at Hydro Water for the Christmas party. How much money did he collect altogether?

5) Chocolate frogs cost 12p, orange bottles cost 7p and sherbert fizzys cost 5p. Find the cost of 6 chocolate frogs, 4 orange bottles and 8 sherbert fizzys.

6) Two shops are selling the same model of television.

They are offering these for sale with different deals.

Light House

Deposit £75

Six payments of £45·20

Bright Home

Deposit £120

Six payments of £41·35

Which shop has the cheaper deal? Justify your answer.

7) Ian needs to buy car insurance.
He spots these deals with two companies.

Churchall

Deposit £125

Nine payments of £35·70

Direct Call

Deposit £180

Nine payments of £28·70

Which insurance company has the cheaper deal?

Justify your answer.

8) Mr Kane is organising a trip for the pupils in S1.

He needs to hire three 49-seater buses and two 26-seater buses.

There will be no empty seats on the buses.

49-seater **£210**	**26-seater** **£130**

How much will it cost for the hire of the buses?

How many people are going on the trip?

9) Judy needs to buy six packets of crisps.

Which shop is the cheaper option?

Cut Price Deals **Mega pack crisps** **89p each** ***3 for 2***	**Value Deals** **Mega pack crisps** **62p each**

10) Tony is baking almond biscuits and uses the recipe below.

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Makes 10 biscuits

150g flour
75g sugar
50g ground almonds
125g margarine
Pinch of salt
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If he wants to bake 30 biscuits, how much of each ingredient will he need?

Exercise 9 (Division)

1) 828·6 ÷ 2

2) 19·50 ÷ 6

3) 2·736 ÷ 6

4) 59·5 ÷ 5

5) 31·203 ÷ 9

6) 182·68 ÷ 4

7) 164·92 ÷ 7

8) 0·24 ÷ 2

9) 60·444 ÷ 9

10) 273·6 ÷ 6

11) 54·312 ÷ 8

12) 31·56 ÷ 4

13) 1461·6 ÷ 4

14) 88·74 ÷ 6

15) 235·35 ÷ 3

16) 16·5 ÷ 5

17) 5·31 ÷ 9

18) 12·6 ÷ 2

19) 8·778 ÷ 7

20) 2·368 ÷ 8

Exercise 10

1) $57 \div 10$

2) $6 \cdot 2 \div 10$

3) $13 \cdot 4 \div 10$

4) $286 \div 10$

5) $38 \cdot 24 \div 10$

6) $1783 \div 10$

7) $57 \cdot 5 \div 100$

8) $203 \cdot 2 \div 100$

9) $1769 \cdot 73 \div 100$

10) $24323 \div 100$

11) $1325 \cdot 8 \div 100$

12) $6723 \div 100$

13) $17756 \div 1000$

14) $2935.67 \div 1000$

15) $1956.21 \div 1000$

16) $1234 \cdot 5 \div 1000$

17) $73246 \div 1000$

18) $2693 \cdot 64 \div 1000$

19) $5780 \div 20$

20) $37 \cdot 2 \div 30$

21) $13 \cdot 5 \div 50$

22) $3428 \cdot 8 \div 80$

23) $3824 \div 40$

24) $147 \cdot 84 \div 70$

25) $24324 \div 300$

26) $4325 \cdot 6 \div 400$

27) $672 \cdot 68 \div 200$

28) $12348 \div 6000$

29) $8624 \cdot 5 \div 5000$

30) $2693 \cdot 64 \div 3000$

Exercise 11

1) Katie has 192 books. She has 8 shelves on her bookcase. How many books can she fit on each shelf?

2) A group of 138 pupils from Tarley Primary School are visiting the science museum. They are split into groups of 6 pupils. How many groups are there?

3) Mr Miller inherits £7600. He decides to keep £3000 and share the rest equally among his 5 grandchildren. How much does each grandchild receive?

4) Mrs Hussein charges £50 for a decorated cake.
If she made £8000 last year, how many cakes did she sell?

5) Mr Bell bought fifteen 20-litre tins of cooking oil.
If he uses 4 litres each day, how long will it last?

Calculators may be used for Questions 6 and 7

6) Mr Kane is organising a trip for the pupils in S2.

He needs to hire buses to accommodate the 171 pupils and teachers attending.

49-seater	26-seater
£210	**£130**

He wants to pay the lowest total hire charge available.

How many buses of each size should he hire?

7) Mr Belarbi is organising a trip for the pupils in S3.

He needs to hire buses to accommodate the 215 pupils and teachers attending.

48-seater	26-seater
£220	**£140**

He wants to pay the lowest total hire charge available.

How many buses of each size should he hire?

8) An empty box has a weight of 325g.

When twenty bars of soap are put into it, it has a weight of 1625g.

What is the weight of one bar of soap?

9) An empty box has a weight of 250g.

When thirty tins of soup are put into it, it has a weight of 9400g.

What is the weight of one tin of soup?

10) Brenda estimates that she needs 42000 ice cubes for a party.

If ice cubes are sold in boxes of 500 how many boxes will be needed?

Exercise 12 (Mixed problems)

1) Two tables are placed together to form a larger one. If the first table is 68·5 cm long and the second table is 58·8 cm long, what is the total length?

2) A piece of wood is 37·4 cm long. If 12·7 cm is cut off from one end what length remains?

3) A child places 5 toy bricks of length 14·6 cm in a straight line. What is the total length?

4) A piece of ribbon 114·8 cm long is shared equally among 7 girls. What length should each girl receive?

5) Three boxes weigh 4·6 kg, 7·9 kg and 18·2 kg. What is the total weight?

6) A bottle of Coca-Cola holds 2 litres. What volume remains after a glass of 0·35 litres has been removed?

7) What length of shelf is needed to hold books with thicknesses of 5·3 cm, 8·4 cm, 1·9 cm, 2·7 cm and 3·6 cm?

8) Billy does 10 press ups in 26·8 seconds. How long does he take for each press up?

9) Six spoonfuls of medicine each holding 5·1 ml are removed from a bottle containing 50 ml. How much medicine is left in the bottle?

10) A car uses 0·12 litres of petrol for every mile it travels. How many litres will be used in travelling 9 miles?

Exercise 13 (Fraction of a quantity)

1) $\frac{1}{2}$ of 48

2) $\frac{1}{4}$ of 20

3) $\frac{1}{3}$ of 36

4) $\frac{1}{2}$ of 62

5) $\frac{1}{3}$ of 42

6) $\frac{1}{4}$ of 52

7) $\frac{1}{5}$ of 35

8) $\frac{1}{5}$ of 60

9) $\frac{1}{2}$ of 76

10) $\frac{1}{3}$ of 54

11) $\frac{1}{4}$ of 72

12) $\frac{1}{3}$ of 75

13) $\frac{1}{5}$ of 80

14) $\frac{1}{5}$ of 75

15) $\frac{1}{2}$ of 92

16) $\frac{1}{3}$ of 81

17) $\frac{1}{4}$ of 60

18) $\frac{1}{5}$ of 90

19) $\frac{1}{8}$ of 24

20) $\frac{1}{8}$ of 40

21) $\frac{1}{8}$ of 56

22) $\frac{1}{8}$ of 80

23) $\frac{1}{10}$ of 40

24) $\frac{1}{10}$ of 50

25) $\frac{1}{10}$ of 70

26) $\frac{1}{10}$ of 90

27) $\frac{1}{5}$ of 85

28) $\frac{1}{2}$ of 38

29) $\frac{1}{8}$ of 96

30) $\frac{1}{3}$ of 96

31) $\frac{1}{2}$ of 13

32) $\frac{1}{2}$ of 19

Exercise 14

1) $\dfrac{1}{3}$ of 138

2) $\dfrac{1}{5}$ of 450

3) $\dfrac{1}{8}$ of 480

4) $\dfrac{1}{10}$ of 560

5) $\dfrac{1}{20}$ of 860

6) $\dfrac{1}{100}$ of 3800

7) $\dfrac{2}{3}$ of 156

8) $\dfrac{3}{5}$ of 935

9) $\dfrac{2}{5}$ of 470

10) $\dfrac{3}{8}$ of 576

11) $\dfrac{5}{8}$ of 192

12) $\dfrac{7}{8}$ of 304

13) $\dfrac{3}{10}$ of 370

14) $\dfrac{5}{8}$ of 128

15) $\dfrac{7}{10}$ of 790

16) $\dfrac{9}{10}$ of 450

17) $\dfrac{3}{20}$ of 660

18) $\dfrac{3}{8}$ of 776

19) $\dfrac{7}{20}$ of 780

20) $\dfrac{9}{20}$ of 540

21) $\dfrac{7}{20}$ of 540

22) $\dfrac{4}{5}$ of 145

23) $\dfrac{3}{10}$ of 650

24) $\dfrac{3}{8}$ of 424

25) $\dfrac{7}{8}$ of 360

26) $\dfrac{3}{5}$ of 480

27) $\dfrac{3}{10}$ of 120

28) $\dfrac{4}{5}$ of 290

29) $\dfrac{7}{10}$ of 240

30) $\dfrac{7}{8}$ of 496

Exercise 15

1) **a)** A football match last 90 minutes. How long is the first half?

   b) A rugby match lasts 80 minutes. How many minutes does the first quarter last?
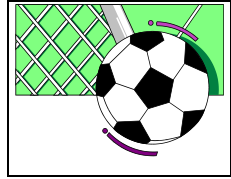
2) Brian has 45p, but he owes $\dfrac{1}{5}$ of it to Peter.

   a) How much does he owe to Peter?

   b) How much does he have left?

3) $\dfrac{3}{10}$ of a class of 30 pupils are absent.

   a) How many are absent?   **b)** How many are present?

4) 42 cars are in the car park. $\dfrac{1}{3}$ of them are blue.

   How many blue cars are there?

5) Calculate these amounts in pence.

   a) $\dfrac{1}{10}$ of £1

   b) $\dfrac{3}{10}$ of £2

   c) $\dfrac{3}{4}$ of £1

   d) $\dfrac{1}{2}$ of £1.60

   e) $\dfrac{1}{5}$ of £2

   f) $\dfrac{1}{3}$ of £1.50

6) John gets $\frac{2}{3}$ of £72 as a prize. How much money does he get?

7) A tank holds 1600 litres of oil when it is full. If it is $\frac{1}{4}$ **full**, how many litres have been **used**?

8) Calculate

    a) $\frac{2}{3}$ of 12cm   **b)** $\frac{3}{4}$ of 20 pupils

    c) $\frac{2}{5}$ of 30 grams   **d)** $\frac{7}{8}$ of 24 days

9) There are 60 minutes in an hour. How many minutes are there in:

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

10) Calculate

    a) $\frac{3}{4}$ of £100   **b)** $\frac{1}{10}$ of £120   **c)** $\frac{3}{8}$ of £40   **d)** $\frac{2}{5}$ of £35

11) $\frac{2}{3}$ of a person's weight is water. Jean weighs 63 kg.
How much of this is water?

12) Calculate the length of video tape needed to record **two** TV programmes each lasting $\frac{3}{4}$ of an hour.

Negative Numbers

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
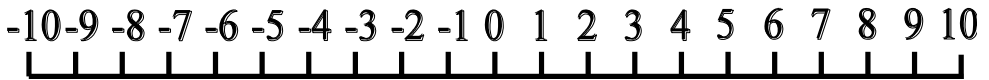
Exercise 1

1) Draw a Celsius thermometer and mark a scale on it from –10° to +10°. Use your drawing to write the following temperatures as positive or negative numbers:–

a) 10° above freezing point   **b)** 7° below freezing point

c) 3° below zero   **d)** 5° above zero

e) 8° below zero   **f)** freezing point.

2) Write down, in words, the meaning of the following temperatures:–

a) –2°C   **b)** +3°C   **c)** 4°C

d) –10°   **e)** 8°C   **f)** 0°C.

3) Which is colder –8°C or –4°C?

4) Is –1°C colder or warmer than –2°C?

5) Which is colder –5°C or –10°C?

6) Which of these temperatures is lowest? –6°C, –4°C, –8°C.

7) Which of these temperatures is highest? –10°C, –2°C, –3°C.

8) Is 4°C higher or lower than –6°C?

9) Here are some pairs of temperatures.
Write down the higher temperature of each pair.

a) 0°C, 5°C   **b)** 0°C, –5°C   **c** –8°C, –3°C

d) 12°C, –16°C.

10) What temperature is 5 degrees higher than 2°C?

11) What temperature is 5 degrees lower than 2°C?

12) What temperature is 10 degrees lower than –3°C?

Exercise 2

1) $2 - 3$
2) $7 - 9$
3) $14 - 19$
4) $12 - 15$

5) $6 - 11$
6) $9 - 16$
7) $18 - 25$
8) $3 - 24$

9) $22 - 38$
10) $39 - 54$
11) $4 - 37$
12) $8 - 47$

13) $58 - 72$
14) $59 - 95$
15) $80 - 138$
16) $243 - 437$

Exercise 3

Calculate the following.

1) $3+(-2)$
2) $6+(-4)$
3) $4+(-7)$
4) $6+(-6)$

5) $11+(-9)$
6) $9+(-10)$
7) $7+(-16)$
8) $-4+3$

9) $-5+(-5)$
10) $-4+(-10)$
11) $-3+(-12)$
12) $-5+(-3)$

13) $-8+(-10)$
14) $-10+(-2)$
15) $-3+(-3)$
16) $-5+(-1)$

17) $-11+(-9)$
18) $-7+(-13)$
19) $-10+(-10)$
20) $-12+(-7)$

21) $-4+(-4)$
22) $-4+(-2)$
23) $-4+4$
24) $-9+(-9)$

25) $-2+6$
26) $-3+10$
27) $-3+1$
28) $-5+6$

29) $-8+11$
30) $-6+1$
31) $-3+2$
32) $-7+3$

33) $-8+1$
34) $-7+2$
35) $-8+6$
36) $-7+10$

37) $-6+30$
38) $-100+1$
39) $-8+38$
40) $5+(-4)$

41) $7+(-3)$
42) $-10+(-4)$
43) $6+(-10)$
44) $8+(-9)$

45) $-8+(-12)$
46) $-5+(-6)$
47) $-6+(-2)$
48) $8+(-14)$

Exercise 4

1) $7-(-5)$
2) $9-(-1)$
3) $7-(-9)$
4) $6-(-13)$

5) $9-(-8)$
6) $18-(-1)$
7) $5-(-19)$
8) $2-(-15)$

9) $17-(-15)$
10) $29-(-17)$
11) $56-(-9)$
12) $68-(-27)$

13) $86-(-8)$
14) $98-(-1)$
15) $59-(-49)$
16) $29-(-115)$

17) 56–(–34)   **18)** 99–(–41)   **19)** 39– (–39)   **20)** 79– (–135)

21) –9–(–16)   **22)** –15–(–21)   **23)** –32–(–41)   **24)** –45–(–67)

25) –92–(–42)   **26)** –115–(–71)   **27)** –232–(–51)   **28)** –345–(–62)

29) The table shows information about various cities.

CITY	WINTER TEMPERATURE	SUMMER TEMPERATURE
London	4°C	18°C
Rome	7°C	25°C
Moscow	-9°C	18°C
Johannesburg	10°C	20°C
New York	-1°C	24°C
San Francisco	10°C	17°C
Sydney	11°C	21°C
Wellington(NZ)	8°C	17°C

a) Which city has the lowest winter temperature?

b) Which city has the highest winter temperature?

c) Which cities have the lowest summer temperature?

d) Which city has the highest summer temperature?

e) The temperature varies between winter and summer.

  i) By how many degrees does it go up in Rome?

 ii) By how many degrees does it go up in Moscow?

iii) By how many degrees does it go up in New York?

Rounding

Exercise 1

Round the following numbers correct to **1 decimal place**.

1) 8·43   **2)** 5·76   **3)** 2·39   **4)** 5·24   **5)** 3·18

6) 12·49   **7)** 11·02   **8)** 11·05   **9)** 23·81   **10)** 72·46

11) 93·55   **12)** 82·43   **13)** 7·98   **14)** 8·329   **15)** 6·483

16) 9·876   **17)** 12·345   **18)** 135·69

Round the following numbers correct to **2 decimal places**.

19) 5·382   **20)** 2·846   **21)** 9·305   **22)** 9·304   **23)** 7·826

24) 8·537   **25)** 6·692   **26)** 6·698   **27)** 13·492   **28)** 15·328

29) 43·135   **30)** 9·876   **31)** 12·345   **32)** 23·456   **33)** 33·333

34) 5·555   **35)** 3·8028

Round the following numbers correct to **3 decimal places**.

37) 8·4127   **38)** 5·3841   **39)** 2·9235   **40)** 7·1472

41) 9·1833   **42)** 16·5308   **43)** 6·5304   **44)** 3·4592

45) 3·4595   **46)** 123·4567   **47)** 98·7654   **48)** 135·1357

49) 1·234567   **50)** 7·6382835

Round the following numbers correct to the **number of decimal places indicated**.

51) 14·3827 (3dp)   **52)** 14·3827 (2dp)   **53)** 14·3827 (1dp)

54) 6·8025 (3dp)   **55)** 6·8025 (2dp)   **56)** 6·8025 (1dp)

57) 23·4723 (1dp)   **58)** 0·81607 (2dp)   **59)** 9·0869 (2dp)

60) 9·0869 (1dp)   **61)** 27·492 (2dp)   **62)** 27·498 (2dp)

63) 2·34567 (4dp)   **64)** 2·34567 (1dp)   **65)** 6·9025 (3dp)

Exercise 2

Round the following correct to **the stated number of significant figures**.

1) 66·3082 (5sf) **2)** 66·3082 (4sf) **3)** 66·3082 (3sf)

4) 66·3082 (2sf) **5)** 66·3082 (1sf) **6)** 0·008047 (3sf)

7) 0·008047 (2sf) **8)** 0·008047 (1sf) **9)** 0·487 (2sf)

10) 2·487 (2sf) **11)** 2·987 (3sf) **12)** 2·987 (2sf)

13) 2·987 (1sf) **14)** 0·020487 (4sf) **15)** 0·020487 (3sf)

16) 0·020487 (2sf) **17)** 0·020487 (1sf) **18)** 2468·83 (5sf)

19) 2468·43 (4sf) **20)** 2468·43 (3sf) **21)** 2468·43 (2sf)

22) 2468·43 (1sf) **23)** 876 (2sf) **24)** 698 (2sf)

25) 698 (1sf) **26)** 32650·04 (3sf) **27)** 298·24 (2sf)

28) 24875·21 (3sf) **29)** 0·054057 (3sf) **30)** 0·405784 (4sf)

31) 154·02581 (5sf) **32)** 32545252 (2sf) **33)** 258·154 (4sf)

34) 5124·025 (1sf) **35)** 0·002524 (1sf) **36)** 0·002524 (2sf)

37) 25·00145 (3sf) **38)** 652·0221 (4sf) **39)** 652·0821 (4sf)

40) 5540·3285 (2sf) **41)** 0·0002055 (2sf) **42)** 2·005467 (5sf)

43) 0·5126 (3sf) **44)** 5·821 (2sf) **45)** 65·89 (2sf)

46) 587·55 (4sf) **47)** 0·581 (1sf) **48)** 0·0713 (1sf)

49) 5·8354 (3sf) **50)** 15·8672 (3sf)

NON CALCULATOR PERCENTAGES

Exercise 1

1) **Work out:**

   a) 50% of £84   b) 25% of £1000   c) 20% of £80

   d) 10% 0f £40   e) 20% of £6400   f) 33 $\frac{1}{3}$ % of £81

   g) 50% of £9   h) 10% of £52   i) 10% of £63

   j) 75% of £48   k) 75% of £92   l) 66 $\frac{2}{3}$ % of £45

   m) 33 $\frac{1}{3}$ % of £7.20   n) 66 $\frac{2}{3}$ % of £153·60   o) 75% of £61

   p) 10% of £15·50   q) 20% of £13·20   r) 10% of 20p

2) A turtle laid 132 eggs. 50% of them were eaten by birds.
   How many were eaten by birds?

3) 20% of the pupils in a school are left handed.
   If there are 1100 pupils, how many of them are left handed?

4) 25% of the items sold at a car boot sale were CDs.
   How many CDs were sold if there were 5400 items?

5) In Glasgow in 2009, it was sunny for 20% of the time.
   If there are 365 days in a year, how many days was it sunny for?

Exercise 2

1) **Work out:**

   a) 50% of £3·20   b) 25% of £852   c) 20% of £8

   d) 10% of £60   e) 10% of 43g   f) 33 $\frac{1}{3}$ % of £39

   g) 25% of £1260   h) 10% of 52cm   i) 20% of £7·50

   j) 75% of £4·80   k) 60% of £12 000   l) 80% of £550

   m) 33 $\frac{1}{3}$ % of £7·20   n) 66 $\frac{2}{3}$ % of £153·60   o) 75% of £61

   p) 10% of £17·50   q) 20% of £15·20   r) 10% of 70p

s) 50% of £$\frac{1}{2}$ million   **t)** 40% of £390   **u)** 70% of 60p

v) 30% of 1750kg   **w)** 90% of 50p   **x)** 60% of £75

y) 80% of £21   **z)** 70% of £8

2) From 1(d) you will see that 10% of £60 = £6.
Use this result to write down:

a) 30%   **b)** 5%   **c)** 15%

3) For £80 calculate:

a) 10%   **b)** 30%   **c)** 5%   **d)** 15%

4) For £40 calculate:

a) 10%   **b)** 30%   **c)** 5%   **d)** 15%

5) State 2 different ways of calculating 15% without a calculator.

6) 33$\frac{1}{3}$ % of the passengers in a train containing 267 passengers
continue on the train until its destination.
How many passengers:

a) continue to the final stop   **b)** get out before the final stop?

7) 75% of the people in a room are over the age of 30. If there are 752
people in a room, how many of them are:

a) over the age of 30   **b)** under the age of 30?

8) On a cruise ship, 40% of the passengers are ladies, 35% are men,
15% are girls and the rest are boys. There are 2400 passengers.
How many are

a) ladies   **b)** men   **c)** girls   **d)** boys?

Exercise 3

1) **Work out:**

    a) 30% of £450   **b)** 70% of 240kg   **c)** 90% of £8

    d) 40% 0f 640m   **e)** 80% of £75   **f)** 90% of £62

    g) 35% of 600kg   **h)** 55% of£800   **i)** 85% of £90

    j) 65% of £540   **k)** 60% of £862   **l)** 80% of £48

    m) 15% of £16   **n)** 15% of £64   **o)** 15% of £8·20

    p) 8% of £340   **q)** 6% of £850kg   **r)** 9% of £250

    s) 4% of 750ml   **t)** 3% of 500m   **u)** 7% of £8

    v) 2% of 480kg   **w)** 1% of £5   **x)** 32% of £70

    y) 36% of £20   **z)** 53% of £86

2) Heidi is offered 11% of £350 or 45% of £80.
   Which offer should Heidi take?

3) Goats' cheese contains 15% fat.
   How much fat is there in a pack which contains:

    a) 240g   **b)** 460g   **c)** 0·86kg   **d)** 0·38kg

4) Of the 3 cakes below, which one, *per helping*, is better for you in
   terms of fat content? (assume the cupcake is 1 helping)

500g chocolate cake

18% Fat

250g carrot cake

8% Fat

50g cupcake

12% Fat

CALCULATOR PERCENTAGES

Exercise 1

Calculate:

  1) 12% of £600   **2)** 23% of £280   **3)** 36% of £25

  4) 28% of £522   **5)** 24% of £16·50   **6)** 19% of £343

  7) 57% of £62   **8)** 42% of £812   **9)** 83% of £4100

10) 18% of £94   **11)** 74% of £26   **12)** 14% of £598

13) 82% of £84   **14)** 18% of 22·50   **15)** 12% of £85·50

16) 76% of £55·50   **17)** 92% of £630   **18)** 42% of £720

19) 55% of £682   **20)** 16% of £15   **21)** 6% of £35

22) 8% of £45   **23)** 3% of £150   **24)** 2% of £60

Exercise 2

Calculate:

  1) 7% of £16   **2)** 9% of £65   **3)** 41% of £25

  4) 89% of £530   **5)** 17% of £380   **6)** 22% of £60

  7) 46% of £5   **8)** 22% of £680   **9)** 7% of £50

10) 19% of £60   **11)** 35% of £14   **12)** 11% of £90

13) 44% of £12·50   **14)** 5% of £17   **15)** 6% of £90

16) 84% of £68.50   **17)** 8·5% of £64   **18)** 7·2% of £620

19) 3·1% of £540   **20)** 10·7% of £8890   **21)** $4\frac{1}{2}$% of £18

22) $12\frac{1}{2}$% of £84   **23)** $3\frac{1}{2}$% of £650   **24)** $2\frac{1}{2}$% of £12

Exercise 3

Calculate:

1) 4·7% of £16   **2)** 2·9% of £63·50   **3)** 41·6% of £25·40

4) 6·4% of £32   **5)** 1·7% of £95   **6)** 54·8% of £432·20

7) 4·35% of £5   **8)** 1·65% of £24   **9)** $7\frac{1}{4}$% of £86

10) $5\frac{1}{4}$% of £20   **11)** $9\frac{1}{4}$% of £34   **12)** $11\frac{1}{4}$% of £600

13) $10\frac{1}{4}$% of £20   **14)** $10\frac{1}{4}$% of £77   **15)** $40\frac{1}{4}$% of £61

16) $80\frac{1}{4}$% of £68·50   **17)** $2\frac{3}{4}$% of £18   **18)** $7\frac{3}{4}$% of £62·10

19) $3\frac{3}{4}$% of £637   **20)** $10\frac{3}{4}$% of £8890   **21)** $4\frac{1}{5}$% of £48

22) $6\frac{1}{5}$% of £52   **23)** $3\frac{2}{5}$% of £420   **24)** $2\frac{2}{5}$% of £14

25) $6\frac{3}{5}$% of £88   **26)** $19\frac{3}{5}$% of £12·40   **27)** $10\frac{3}{5}$% of £658·70

PERCENTAGE INCREASE & DECREASE

Exercise 1 (non calculator questions)

1) A lawnmower costing £130 is **reduced** by 50% in a sale.
Calculate the sale price of the lawnmower.

2) A gamestation costing £120 is in the sale marked "25% discount."
Calculate the sale price of the game station.

3) A pair of shoes are reduced by 10%.
If the shoes cost £50 full price, how much are they after the discount?

4) Simon has a new bike which should have cost him £350 from the factory. He received a 20% discount for taking the shop display bike. How much did Simon pay for the bike?

5) A tourist helicopter ride to the Grand Canyon costs £162. Children under 5 years of age receive a 75% discount. How much does it cost for a child under 5 years of age to visit the Grand Canyon?

6) A shampoo bottle usually holds 240ml. In a special offer 25% is added to the contents.
Calculate the amount of shampoo in the special offer bottle.

7) A cake shop decides to increase the weight of each cake by 20%.
Each cake used to weigh 1600g.
How much does each cake weigh now?

8) A painting costing £320 has its price raised by 50%.
How much does the painting cost now?

9) A man buys a car at an auction for £2460. He fixes it up and sells it with a price increase of 20%. How much does he sell it for?

10) A recipe uses 72g of sugar. Mrs Helder decides to increase this amount by 25%. How much sugar does Mrs Helder need?

11) Milk costs 80p per litre, but the price is expected to rise shortly by 5%. What will the new cost of a litre of milk be?

12) Johnny takes the local bus to school. His return fare is £1·50 per day.
The bus company decides to increase all their fares by 20%.
What will Johnny's new return fare be?

13) In a sale a pair of shoes, normally priced at £47·52, are reduced by 25%. What is the sale price of the shoes?

14) The average attendance at a football stadium last season was 48000.
This season it has dropped by 15%.
What is the average attendance at the stadium this season?

15) Farmer Yates had 60 cattle, but due to an outbreak of sickness he lost 85% of his herd. How many cattle does he still have left?

Exercise 2

1) Calculate the sale price of the following items with the **reductions** stated:

	ITEM	NORMAL PRICE	DISCOUNT
a)	TV	£350	15%
b)	DVD Player	£260	65%
c)	Hi–Fi System	£850	30%
d)	Shirt	£35	45%
e)	Ornament	£15·80	25%
f)	Table	£840	15%
g)	Carpet	£688	14%
h)	Fitted Kitchen	£5,800	24%
i)	Magazine	£1·40	20%
j)	Bag of sweets	£1·15	60%
k)	Shoes	£52	5%

2) Calculate the new price of the following items after the following **increases:**

	ITEM	COST	INCREASE
a)	Laptop	£400	12%
b)	Camera	£560	35%
c)	Calculator	£12	14%
d)	Playstation	£200	32%
e)	Ornament	£34	26%
f)	Book	£15·50	16%
g)	CD	£12	11%
h)	Jacket	£55	23%

Exercise 3

1) **Calculate** the sale price of the following items with the reductions stated:

	ITEM	COST	INCREASE
a)	TV	£350	15%
b)	DVD Player	£440	22%
c)	Home Theatre	£849	18%
d)	Skirt	£84·20	37%
e)	Shirt	£35·60	28%
f)	Ornament	£64·58	45%
g)	Table	£220	7·5%
h)	Carpet	£640	18½ %
i)	Fitted Kitchen	£5800	26%
j)	Magazine	85p	11%
k)	Bag of Sweets	£1·19	24%
l)	Shoes	£44·44	4¼ %

2) **Calculate** the new price of the following items after the following **increases:**

	ITEM	COST	INCREASE
a)	Laptop	£487	13%
b)	Camera	£250·50	35%
c)	Calculator	£8·49	12%
d)	Playstation	£199·50	21%
e)	Ornament	£34·20	24%
f)	Book	£15·50	17%
g)	CD	£9·99	11%

FURTHER PROBLEMS

Exercise 4

1) A salesman has a salary of £16500. He receives a bonus of 4% of his salary. How much does he get altogether?

2) £820 is divided between 2 ladies. One gets 65%.
   How much does each receive?

3) In a class of 40 pupils, 55% are girls.
   How many boys are there?

4) In 1981, the population of a town was 8030.
   By 1991, the population was just 90% of this figure.
   What was the population in 1991?

5) A car cost £12460 when new.
   A year later, its value was only 75% of this.
   What was its value a year later?

6) The composition of brass by weight is 64% copper, 32% zinc and the remainder is lead. Find the weight of
   a) copper **b)** zinc **c)** lead in 650 kg of brass.

7) During a sale, all items are sold with 15% off their usual cost.
   What is the sale price of a CD which usually costs £12·20?

8) There are 40 people in a doctor's waiting room. 65% are male.
   How many are female?

9) The rental on a flat is £360 per month.
   Ted and Lucy get a special deal and only have to pay 85% of this.
   How much did they pay per month?

10) A university noticed that 16% of the new students dropped out by the end of the first year.
    If there were 1350 new students, how many dropped out?

11) The Dragons basketball team play 40 matches in the season.
    They win 55%, draw 22·5% and lose the rest.
    Calculate the number of **a)** wins **b)** draws **c)** losses.

Exercise 5

1) Everyone should eat 5 portions of fruit or vegetables every day.
   The first food Harry eats one morning is an apple for breakfast:

   What percentage of his recommended daily amount has he had?

   If he eats a portion of sweet corn with his lunch and a banana after lunch what percentage of Harry's recommended daily allowance has he still to eat?

2) What is the largest number: 6% of 100,   2% of 300   or   1% of 700?

3) What is the biggest amount of money

   a) 25% of £200
   b) 30% of £150 or
   c) 60% of £90?

4) Mars Bar – 500g contains 20% sugar,
   Snickers – 400g contains 22% sugar and
   Topic – 350g contains 26% sugar.

   Calculate the amount of grams of sugar there are in each bar.
   Which bar has the most sugar in it?

5) 3 breakfast cereals each claim to have a low percentage salt content. In a 500g packet of Cornyflakes there are 7·5 grams of salt, a 1kg packet of Crispie Rice has 16 grams of salt and a 200g packet of Sugar Pops has 2.8 grams of salt.

   a) Calculate the percentage of salt in all 3 cereals
   b) Which cereal has the lowest salt content?

6) The recommended daily amount of salt is 6 grams. Sarah's breakfast had 1·5 grams of salt in it. What percentage of her recommended daily amount has she had?

7) 3 different packets of Cheese and Onion crisps are tested for saturated fat.

   Walkers 30g packet has 3g of saturated fat

   Golden Wonder 25g packet has 2·6g of saturated fat

   McCoys 35g packet has 3·4g of saturated fat

What crisps would be the healthiest option?
You must give a reason for your answer.

8) Mesco's the supermarket sells healthy choice ready made meals.
They have 1·5 grams of fat per 100 grams.
What is the percentage of fat in these meals?

9) Angela in the school canteen makes her own versions of these meals. These weigh 300 grams and have a fat content of 4 grams.
What meal contains the least percentage of fat?

10) Before adding milk a 60g portion of All Bran cereal contains 15g of sugar, a 70g portion of Corn Flakes contains 17g of sugar and a 50g portion of Frosties contains 14g of sugar.

What would the healthiest breakfast cereal be?
You must give a reason for your answer.

11) A 250ml can of Red Bull contains 1ml of caffeine, a 330ml of Coca Cola contains 1·1ml of caffeine and a 500 can of Diet Irn Bru contains 1·2ml of caffeine.

Which of these cans would be the worst to drink if you want to go to sleep soon? You must give a reason for your answer.

12) John, Peter and James all want to increase their weightlifting. They all train hard and after 2 months John has improved from being able to lift 45kg and can now lift 50kg. Peter could lift 48kg and can now lift 54kg while James could lift 55g and can now lift 61kg.

Which of the 3 boys has improved the most compared to their original weightlifting abilities?

13) Sam deposited £1200 in the bank.
The interest rate is 4% per annum. How much will Sam earn in interest if he leaves the money in for the full year?

14) We should all drink 8 glasses of water a day. What percentage of your recommended daily amount of water have you drank if you have:

    a) 2 glasses

    b) 4 glasses

    c) 7 glasses

15) John and Peter want to do a swim for charity. Before they start training Peter can swim 40 lengths and John 30 lengths. Peter's training increases his stamina and allows him to swim 25% more. John's training allows him to swim 50% more.

    a) How many lengths can they now both swim?

    b) If Peter was sponsored for £1 per length and John for £1·20 per length who raised the most money?

16) Torrison's the supermarket sells healthy choice ready made meals. They have 0·5 grams of fat per 100 grams.

What is the percentage of fat in these meals?

17) Jessie in the school canteen makes her own versions of these meals. These weigh 400 grams and have a fat content of 1·4 grams.

What meal contains the least percentage of fat?

18) Heather had £650; she decided to keep £350 at home and deposited the rest in the bank. The interest rate is 6% per annum. How much will Heather earn in interest if she leaves the money in for the full year? How much more would she have received if she had deposited the full amount in the bank?

19) William can run 10 km without stopping for a rest. He wants to be able to run 12 km without stopping for a rest. What percentage must he improve his running by to be able to achieve this?

Foreign Exchange

Exercise 1

In Exercise 1 we use the exchange rate of **£1 = €1·16**

1) How many Euros (€) do you get when you exchange £100?

2) How many Euros (€) do you get when you exchange £900?

3) Change £1200 into Euros.

4) If a TV costs £600 how much would that be in Euros?

5) A sofa costs £1300 in the UK, how much would the same sofa cost if you bought it in Europe?

6) A tennis racket costs £29 in Scotland, what would it cost in France?

7) A DVD Player is £76 in England, how much is it in Germany?

8) If a laptop costs £340 in Scotland, how much would it cost in Belgium?

9) The price of a new washing machine in Scotland is £380, what would the equivalent price be in Holland?

10) John paid £450 for his computer in a shop in Hamilton, how much would be the same computer be if he bought it in Madrid?

11) Peter paid £25 for a new shirt, his cousin Pierre who lives in Paris bought the same shirt. How much did Pierre pay?

12) If a Fiesta costs £12 400 at Arnold Clark in Wishaw how much would the same car cost at Arnold Clark in Munich?

13) A computer game costs £35 in Glasgow, how much would it cost in Amsterdam?

14) What would it cost to buy a tie in Barcelona if the same tie costs £8·50 in Edinburgh?

Exercise 2

In Exercise 2 we use the exchange rates in the table shown

Country	Rate		
Mainland Europe	£1	=	€1·16
USA	£1	=	$1·28
Russia	£1	=	38·60 Rubles
Poland	£1	=	5·20 Zloty

1) A TV costs £700 in the UK. How much would it cost in the USA?

2) A polish company receives a loan of £2 000 000 from a British bank, how much is this in Polish Zloty?

3) A computer costs £600 in the UK. How much would it cost in France?

4) Simon paid £470 for his computer in a shop in Scotland, how much would be the same computer be if he bought it in Russia?

5) A polo shirt costs £18 in Scotland, how much will this be in Russian Rubles?

6) A computer game costs £28 in England, how much would it cost in the USA?

7) A sofa costs £1700 in Scotland, how much would the same sofa cost if you bought it in Poland?

8) Amanda paid £56 for a new dress, her cousin Bette who lives in Madrid bought the same skirt. How much did Bette pay?

9) If a BMW costs £21 200 at Arnold Clark in Wishaw how much would the same car cost at Arnold Clark in Moscow?

10) An iPhone costs £245 in Glasgow, how much would it cost in Chicago?

11) What would it cost to buy a scarf in Miami if the same scarf costs £10·50 in London?

12) 2 identical microwaves cost £95 in the UK and $120 in the USA. Which is the better value?

13) 2 identical pairs of sunglasses cost £45 in Scotland and 240 Zloty in Poland. Which is the better value?

Exercise 3

In Exercise 3 we use the exchange rates in the table shown

Country	Rate		
Mainland Europe	£1	=	€1·16
USA	£1	=	$1·28
Russia	£1	=	38·60 Rubles
Poland	£1	=	5·20 Zloty

1) Change €116 into £s.

2) Change 308·80 Rubles into £s.

3) Change $102·40 into £s.

4) Change 348·40 Zloty into £s.

5) A TV costs €900 in the Europe. How much would it cost in the UK?

6) A kettle costs €12 in the Europe. How much would it cost in the UK?

7) A purse costs $33 in the USA. How much would it cost in the UK?

8) If the price of a camera is 4632 Rubles in Russia how much would the same camera cost in Scotland?

9) Gillian paid 234 Zloty for a new coat while on holiday in Poland, what would she pay for the same coat if she bought it in England?

10) Jose Mourinho was paid the same salary with Real Madrid as he was paid when he returned to Chelsea. If he was paid €174 000 per week at Real Madrid how much was his salary at Chelsea?

11) Irene is going to Paris. She takes £150 with her which she changes into Euros. She spends €120.
How much does she have left in Euros?

12) Before flying to Poland Viv exchanges £400. While she is in Poland she spends 1400 Zloty.
How much will she have left when she changes it back into £s?

13) Brian spends €136·62 in a French supermarket.
He is charged an extra 2·75% for paying with his credit card.
Calculate the total bill in pounds.

Time Intervals

Exercise 1

Change the following from 12 hour time to 24 hour time

1) 2.00 pm
2) 5.00 pm
3) 4.30 pm
4) 7.00 am
5) 11.00 am
6) 4.15 am
7) 3.42 pm
8) 5.16 am
9) 11.27 pm
10) 12.00 pm
11) 12.00 am
12) 9.35 am

Exercise 2

Change the following from 24 hour time to 12 hour time

1) 1500
2) 0500
3) 1830
4) 0840
5) 0620
6) 1455
7) 1341
8) 1937
9) 2121
10) 1200
11) 0000
12) 1719

Exercise 3

Work out how much time in **hours and minutes** there are between these times. (eg 10.00 am to 11.30 am = 1hour 30mins)

1) 9.00 am to 11.00 am
2) 7.30 pm to 10.30 pm
3) 12 noon to 7.00 pm
4) 10.00 am to 4.00 pm
5) 3.30 pm to 5.00 pm
6) 12.30 am to 6.00 am
7) 2.15 pm to 4.00 pm
8) 5.15 pm to 6.30 pm
9) 6.45 am to 8.15 am
10) 4.30 pm to 9.15 pm
11) 1630 to 2130
12) 0830 to 1930
13) 2030 to 2345
14) 0915 to 2345

Exercise 4

Work out how much time in **hours and minutes** there are between these times. (eg 7.10 am to 11.55 am = 4 hours 45 mins)

1) 9.10 am to 11.40 am   **2)** 7.40 pm to 10.50 pm

3) 12.20 noon to 7.50 pm   **4)** 10.10 am to 4.40 pm

5) 3.15 pm to 5.40 pm   **6)** 12.05 am to 6.35 am

7) 2.35 pm to 4.10 pm   **8)** 5.30 pm to 6.55 am

9) 6.12 am to 3.24 pm   **10)** 4.24 pm to 9.12 am

11) 1655 to 2125   **12)** 0845 to 1935

13) 0900 to 1107   **14)** 2011 to 0108

Exercise 5

Work out how much time in **hours** there are between these times.

> eg 9.00 am to 11.15 am
>
> = 2hours 15mins
>
> = 2hours   + (15 ÷ 60)
>
> = 2hours   + 0.25hours
>
> = 2·25hours

1)   **a)** 8.00 am to 11.00 am   **b)** 8.30 pm to 10.30 pm

     c) 1.00 pm to 7.15 pm   **d)** 11.00 am to 4.30 pm

     e) 3.15 pm to 7.30 pm   **f)** 1.30 am to 7.00 am

     g) 2.15 pm to 9.30 pm   **h)** 3.15 am to 10.45 am

     j) 2.15 pm to 4.00 pm   **k)** 5.30 pm to 9.15 pm

     l) 0815 to 1130   **m)** 2030 to 2345

     n) 0645 to 0815   **p)** 1630 to 2115

2) **a)** 9.10 am to 11.40 am   **b)** 7.40 pm to 10.50 pm

c) 12.20 noon to 7.50 pm **d)** 10.10 am to 4.46 pm

e) 3.15 pm to 5.51 pm   **f)** 12.06 am to 6.42 am

g) 2.35 pm to 4.41 pm   **h)** 5.30 pm to 6.54 am

j) 6.12 am to 3.24 pm   **k)** 4.24 pm to 9.12 am

l) 1655 to 2125   **m)** 0840 to 1928

n) 0906 to 1112   **p)** 2012 to 0106

Speed, Distance and Time

Exercise 1 (Distance)

1) How far does a car go in 3 hours at a speed of 50 mph?

2) How far does a bus go in 4 hours at a speed of 40 mph?

3) How far does an aeroplane fly in 6 hours at a speed of 350 mph?

4) How far can you cycle in 3 seconds at a constant speed of 7 m/s?

5) An express train is going at a constant speed of 60 m/s.
   How far does it go in 8 seconds?

6) A jet plane is flying at a constant speed of 250 m/s.
   How far does it go in 3 seconds?

7) If you go at a speed of 4 m/s, how far do you go in 10 seconds?

8) An ambulance travels at 70 mph for 3 hours.
   How far does it travel in that time?

9) A veteran car travels at 15 mph for 5 hours. How far does it travel?

10) Find the distance travelled in 3 hours at an average speed of 55 km/h.

11) Find the distance travelled in 5 hours at an average speed of 44 mph.

12) Find the distance travelled in 30 seconds at an average speed of 8 m/s.

13) Find the distance travelled in 7·5 hours at an average speed of 80 km/h.

14) Find the distance travelled in 12 hours at an average speed of 30 mph.

15) An aircraft travels at a steady speed of 600 km/h for 4½ hours.
How far does it travel?

16) A model speedboat travels at 2·5 m/s for 16 seconds.
How far does it travel?

17) A mole burrows through the earth at a speed of 18 cm per minute.
How far will it burrow in 15 minutes?

18) Calculate the distance travelled at 30 km/h for 5 hours.

Exercise 2 (Speed)

1) Pam cycled 20 metres in 4 seconds. What is her speed in m/s?

2) Ken is running at a constant speed. He covers 18 metres in 3 seconds.
What is his speed?

3) A plane flying at a constant speed takes 5 seconds to go 1500 metres.
What is its speed in m/s?

4) A lorry travelling along a motorway at a constant speed goes 100 metres in
4 seconds. What is its speed in m/s?

5) Find the average speed of a jogger who runs 18 miles in 3 hours.

6) Find the average speed of a train travelling 520 kilometres in 4 hours.

7) Find the average speed of a car covering 280 kilometres in 5 hours.

8) Find the average speed of Cheryl who walks 15 kilometres in 5 hours.

9) Find the average speed of an aeroplane which flies 2703 km in 3 hours.

10) Find the average speed of a space shuttle which flies 210960 miles in
12 hours.

11) Jill cycled 54 kilometres in 6 hours. What is her speed in km/h?

12) Calculate the average speed to travel 80 km in 20 hours.

13) Calculate the average speed to travel 72 km in 6 hours.

14) Calculate the average speed to travel 85 km in 17 hours.

15) Calculate the average speed to travel 121 km in 5 hours 30 minutes.

16) Calculate the average speed to travel 81 km in 2 hours 15 minutes.

17) Calculate the average speed to travel 324 km in 6 hours 45 minutes.

18) It is 150 miles from Hereford to London by rail. The first train in the morning takes 3 hours for the journey. What is its average speed?

Exercise 3 (Time)

1) Calculate the time taken to go 80 kilometres at a speed of 20 km/h.

2) Calculate the time taken to go 500 miles at a speed of 125 mph.

3) Calculate the time taken to go 432 metres at a speed of 8 m/s.

4) Calculate the time taken to go 630 kilometres at a speed of 90 km/h.

5) Calculate the time taken to go 504 kilometres at a speed of 72 km/h.

6) Calculate the time taken to go 448 miles at a speed of 56 mph.

7) Calculate the time taken to go 648 kilometres at a speed of 108 km/h.

8) Calculate the time taken to go 294 kilometres at a speed of 42 km/h.

9) Calculate the time taken to go 630 centimetres at a speed of 18 cm/s.

10) Calculate the time taken to go 100 metres at a speed of 10 m/s.

11) How many hours does it take to go 705 miles at 47 mph?

12) A motor boat has a speed of 4 mph. How many hours does it take to go 24 miles from Lulworth to Bournemouth?

13) A motor boat has a speed of 8 mph. How many hours does it take to go 32 miles from Swanage to Ventnor?

14) A motor boat has a speed of 5 mph. How many hours does it take to go 60 miles round the Isle of Wight?

15) Calculate the time taken (in hours and minutes) to go 150 miles at an average speed of 60 mph.

16) Calculate the time taken (in hours and minutes) to go 44 km at an average speed of 16 km/h.

17) Calculate the time taken (in hours and minutes) to go 350 km at an average speed of 56 km/h.

18) Sasha drives 180 miles at an average speed of 40 mph. How long will her journey take her?

Exercise 4 (Mixture)

1) Find the average speed for each of these journeys.

   a) Shaun drives 245 miles in 7 hours

   b) An aircraft flies 1125 kilometres in 1 hour 15 minutes

   c) Sarah drives 171 kilometres in 4 hours 45 minutes.

2) Calculate the time taken (in hours and minutes) for each of the following journeys.

   a) 132 km at an average speed of 12 km/h

   b) 351 miles at an average speed of 52 mph

   c) 95 km at an average speed of 38 km/h.

3) Calculate the distance travelled in journeys whose times and average speeds are:

   a) 4 hours, 69 mph

   b) 3 hours 15 minutes, 64 km/h

   c) 5 hours 30 minutes, 92 km/h.

4) A and B are two aircraft.

   Aircraft A flies a distance of 962 miles in 2 hours.

   Aircraft B flies a distance of 1644 miles in 3·5 hours.

   Calculate the average speed of each aircraft, and say which one flew faster, on average.

5) A freight train travels at a steady speed of 35 mph.

   a) Calculate the time taken, in hours, to travel a distance of 168 miles.

      Give the answer in decimals.

   b) Change your answer to hours and minutes.

6) At a constant speed of 13 m/s, how far will a racing bike go in

   a) 10 seconds   b) 1 minute?

7) A woman goes on a country walk. She covers 18 miles in 4 hours, at a steady speed. What is her speed in miles per hour?

8) A train's average speed for a 450 mile journey is 90 mph.
How long does the journey take?

9) A coach starts from Bournemouth at 7.30 am and arrives in York at 2.30 pm.

    a) How long does the journey take?

    b) From Bournemouth to York is 252 miles.
What is the average speed of the coach?

10) The 1045 train leaving London is due at Preston at 1315, at Carlisle at 1420 and at Glasgow at 1545. At Preston this train is 17 minutes late. By Carlisle it has made up 10 minutes.

    a) Write down the actual arrival times of the train at Preston and Carlisle.

    b) At what average speed would the train have to travel from Carlisle to Glasgow, a distance of 156 km, to arrive on time?

11) Camilla leaves London at 8.55 am to drive to Truro in Cornwall, a distance of 450 kilometres. If she averages a speed of 60 km/h, when will she arrive in Truro?

12) A high speed train travels from Hamburg to Munich in Germany. The train leaves at 2215 hours and travels at an average speed of 140 km/h. If the train arrives in Hamburg at 0400 hours the following morning, find the distance it travels.

13) William drives coaches. One morning he drove from 9.50 am until 11.35 am without stopping. When he checked his trip counter, he discovered that he had travelled 112 miles. Calculate his average speed for the drive.

Perimeter

Exercise 1

1) Work out the perimeter of the following rectangles (no calculator)

a) 7cm, 4cm

b) 9cm, 8cm

c) 3cm, 4cm

d) 11m, 3m

e) 2cm, 5cm

f) 12cm, 2cm

g) 2m, 9m

h) 13km, 6km

i) 11km, 5km
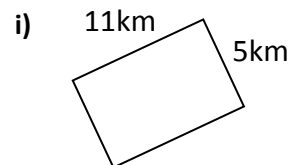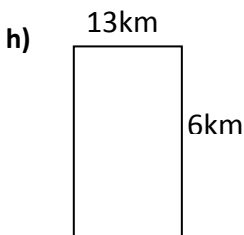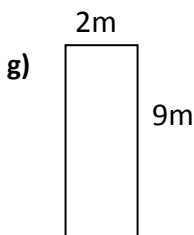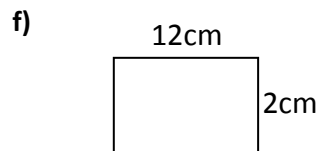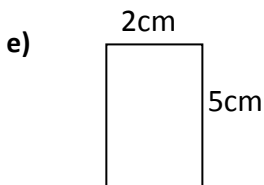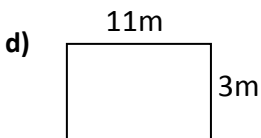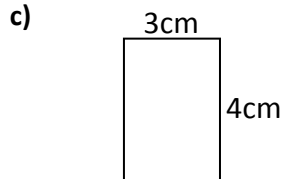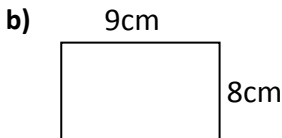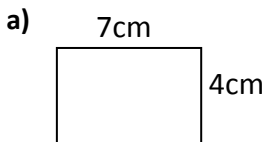
2) Work out the perimeter of these rectangles (calculator)

a) 1·5m, 2·9m

b) 14·2cm, 10·8cm

c) 28cm, 56cm

d) 1·2km, 0·7km

e) 3·9cm, 4·9cm

f) 54cm, 67cm
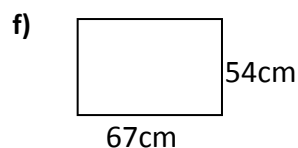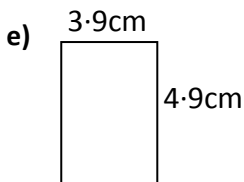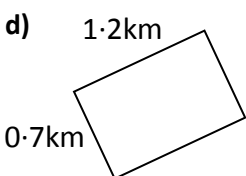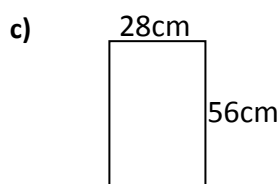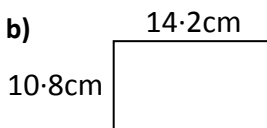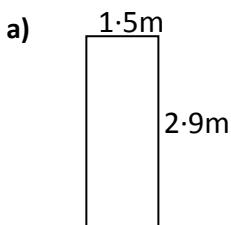
Exercise 2

Find the perimeter of each of the shapes below, all lengths are in cm:

a)

12   16

23

b)

15

8

17

c)

16

12   10

d)

10   10

8

e)

30   30

30

f)

25   25

15

g)

8   15

13

h)

1·2   7·1

6·3

i)

14·6

10

12·1

j)

6·4   6·6

6·5

k)

9·1   12·3

8·7

l)

3   7

6

6

4

m)

5

4

3

8

9
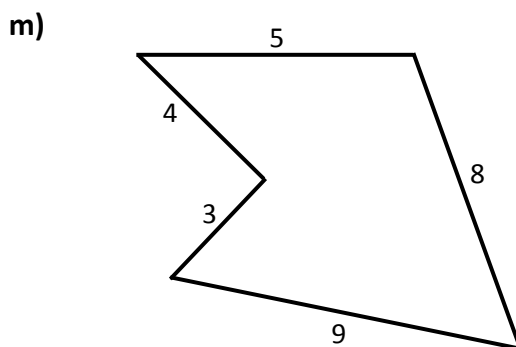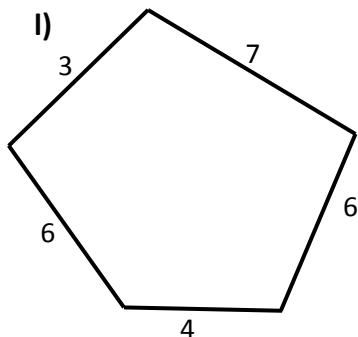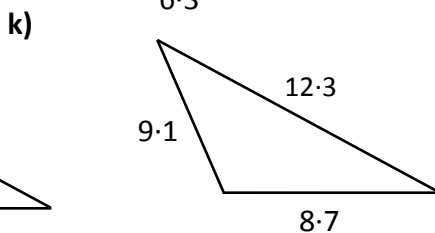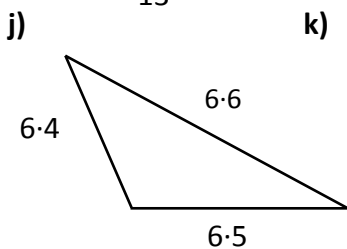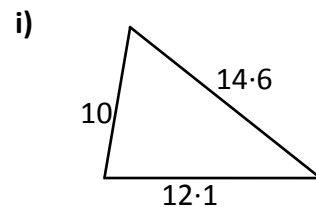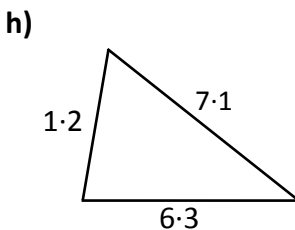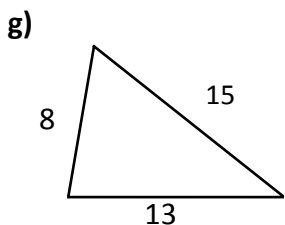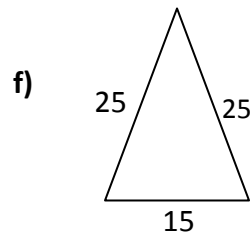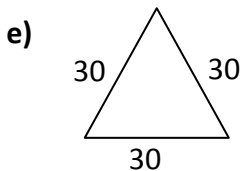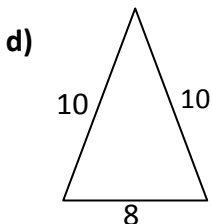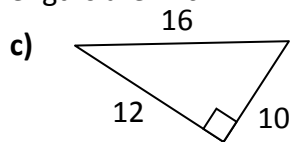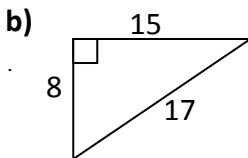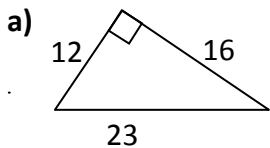
Exercise 3

Find the perimeter of each of the following shapes:

1) A rectangle measuring 5 cm by 3 cm

2) A rectangle measuring 9 cm by 4 cm

3) A triangle with sides 5 cm, 9 cm and 10 cm

4) An equilateral triangle with sides 4 cm

5) A regular hexagon with sides 8 cm.

Exercise 4

Work out the perimeter of these shapes (lengths are in cm)
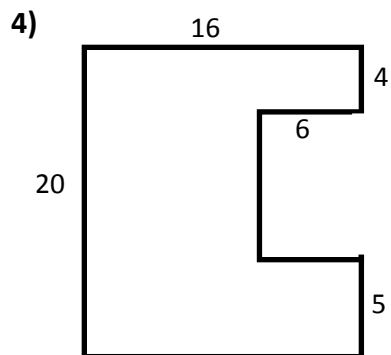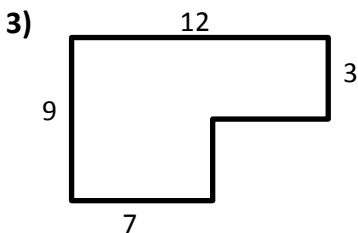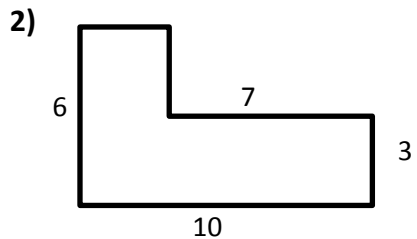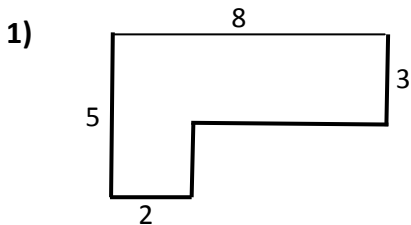
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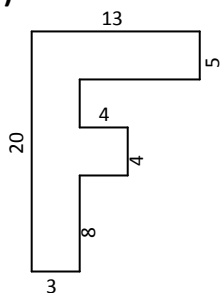
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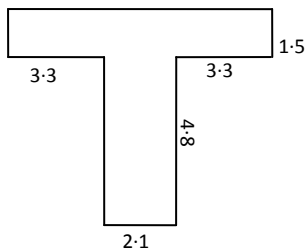
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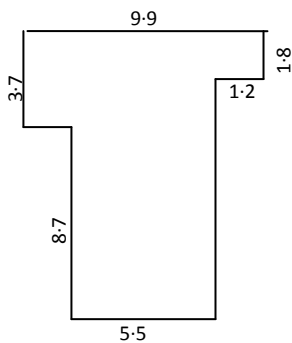
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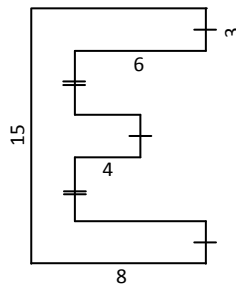
Area

Exercise 1

1) Count the number of squares in each of the following to find the area of the rectangles.

a)
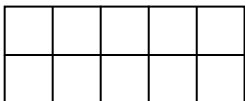
b)
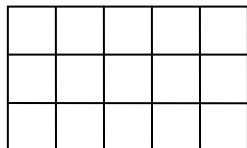
c)
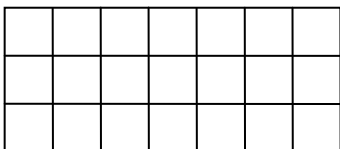
d)
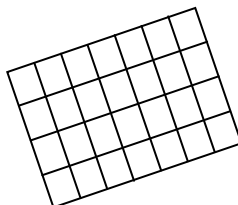
2) Work out the area of the following rectangles
(do not use a calculator)

a)

7cm
4cm

b)

9cm
8cm

c)

3cm
4cm

d)

11m
3m

e)

2cm
5cm

f)

12cm
2cm

g)

2m
9m

h)

13km
6km

i)

11km
5km
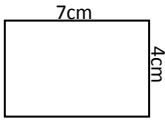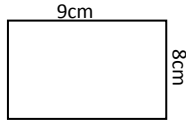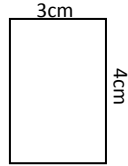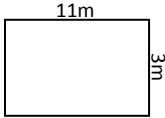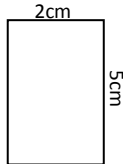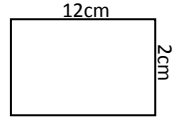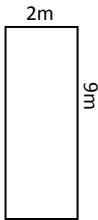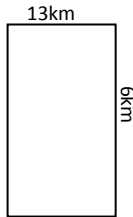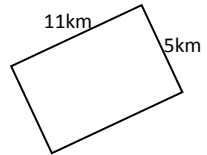
3) Work out the area of these rectangles (you may use a calculator)

a)

1·5m
2·9m

b)

14·2cm
10·8cm

c)

28cm
56cm

d)

1·05km
0·7km

e)

3·9cm
4·9cm

f)

67cm
54cm
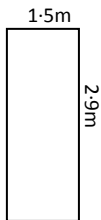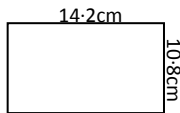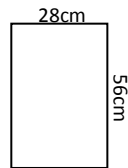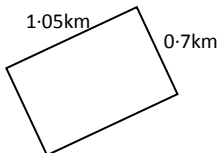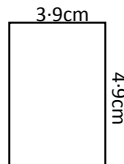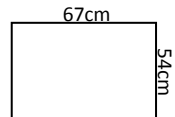
4) Work out the area of the following squares and rectangles (remember to include units in your answer)

a) 4cm by 8cm **b)** 9cm by 7cm **c)** 2·5m by 2·5m

d) 3·6km by 5km **e)** 24cm by 16cm **f)** 1·25m by 1·25m

g) 100m by 3·2m **h)** 4·9m by 97·2cm **l)** 6mm by 7·2m

5) Find the length or breadth of these rectangles:

a)

7m

Area = 28 m^2

b)

Area = 32cm^2 4cm

c) Area = 45 mm^2 5mm

d) Area = 38·5m^2 5m

e)

4cm

Area = 84cm^2

f)

Area = 81m^2
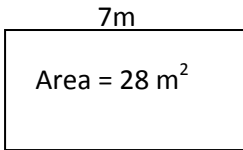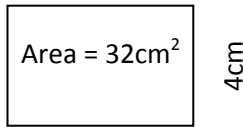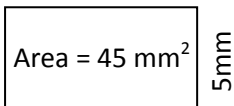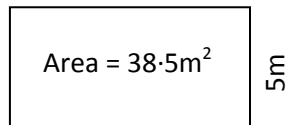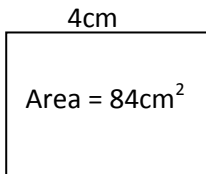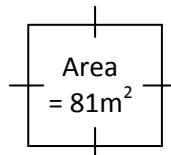
Exercise 2

1) Anna has a rectangular piece of grass in her garden. She wishes to turf it at a cost of **£1·65 per m².**

16m

11m

Find the cost of turfing her garden.

2) Ross decides to paint one wall of his bedroom blue.

4·9m

3·8m
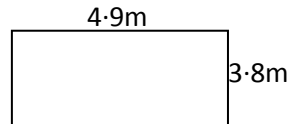
One tin of paint covers 8m².
How many tins will he need?
If a tin costs £10·65 how much will it cost him?

Exercise 3

Find the area of the following shapes, all lengths are in metres.

1)

8

5

2

3

2)

6

7

3

10

3)

12

9

3

7

4)

12

7

3

9

3

3

5)

6)

7)

8)
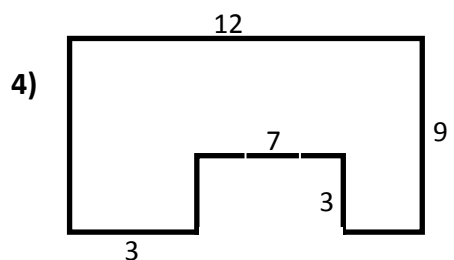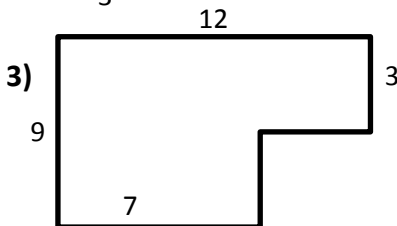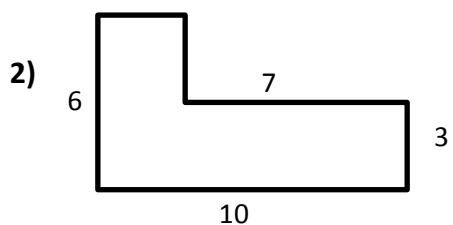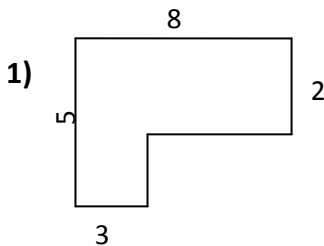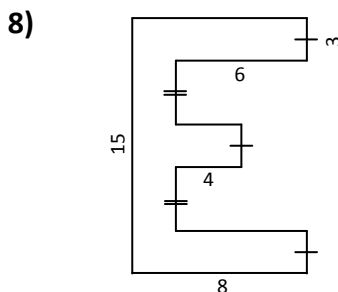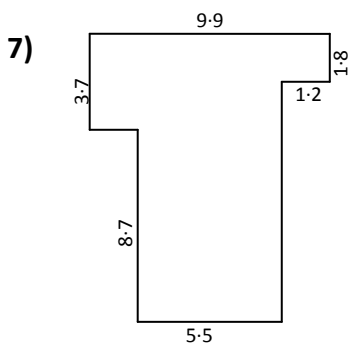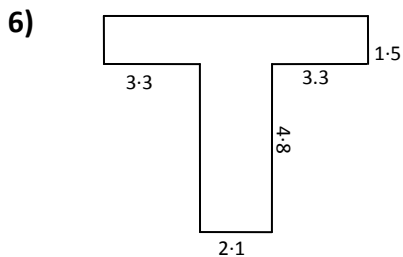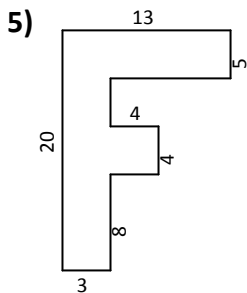
Volume

Exercise 1

1) Find the volume of these cubes or cuboids (all lengths are in metres unless otherwise stated)

a)

b)

c)

8
10
3

d)

7
6
9

e)

0·8
0·5
1·2

f)

0·3
0·3
0·3

g)

90cm
60cm
2m

h)

5cm
14cm
9mm
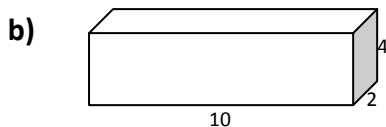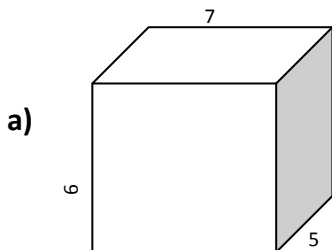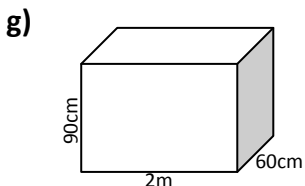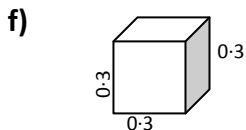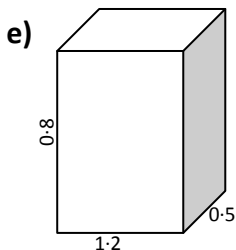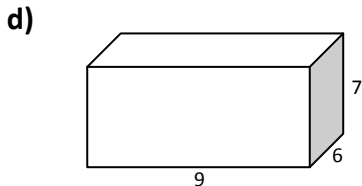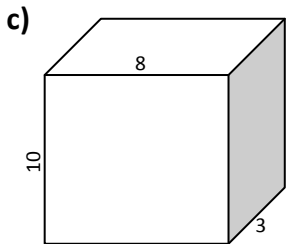
Exercise 2 (remember to include units in your answer: cm^3, m^3, km^3)

Work out the volume of the following cuboids (lengths are in cm)

1)

6
5
11
7
5
20

2)

4
6
12
8
6
15

3)

3 9

6

18 2

4)

12

3

4 1

2

5)

4

12

4

10 5

6)

8

24

10

30 8

7)

5·4

12·7

9·3

23·5 7.1

8)

0·4

2·3

0·9

8·4 0·3

9)

7

10

9

25 8

10)

5

20

10

50 6

11)

6

11

5

3

22

12)

68

18

15

27

18

13)

92

150

54

56

475

14)

2·3

12·9

2·1

1·8

18·4

15)

6·4

21·5

8·3

6·1

24·7

16)
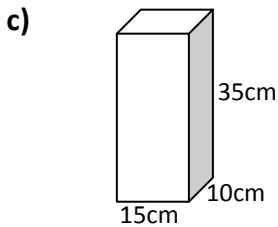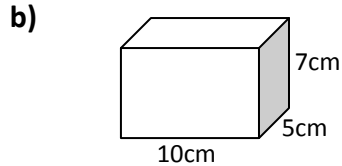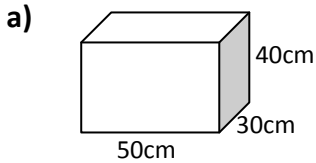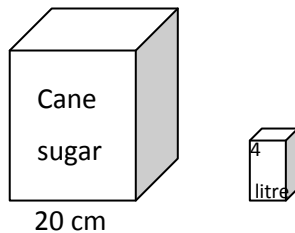

1·1

2.2

1·1

1·1

4·4
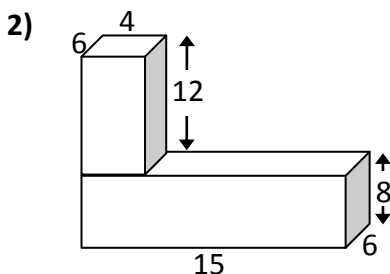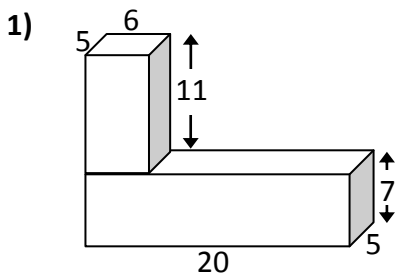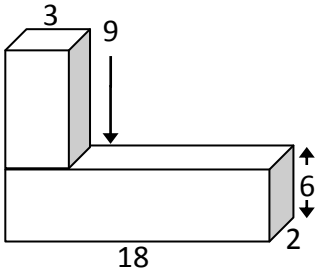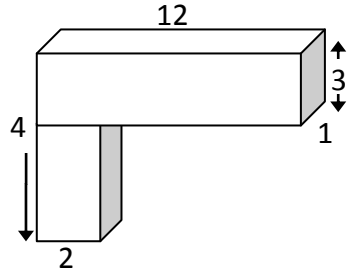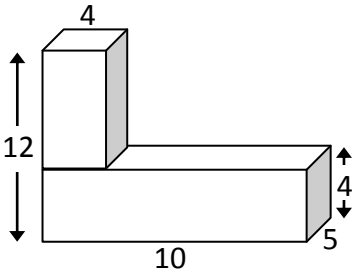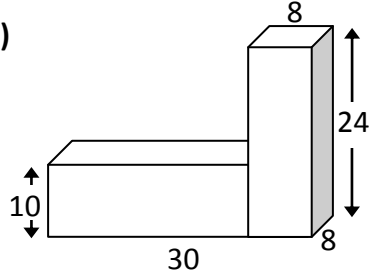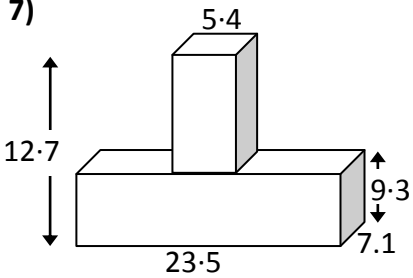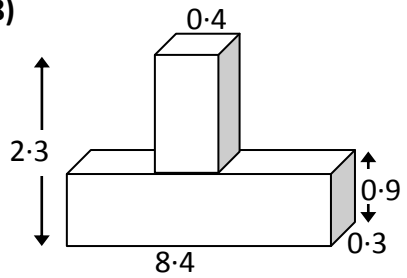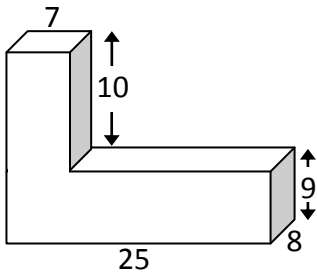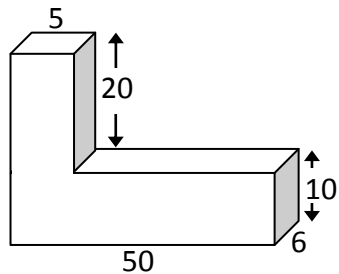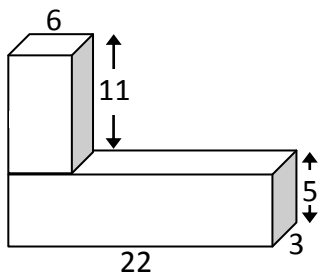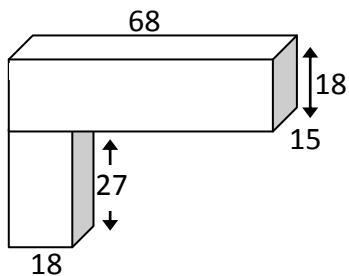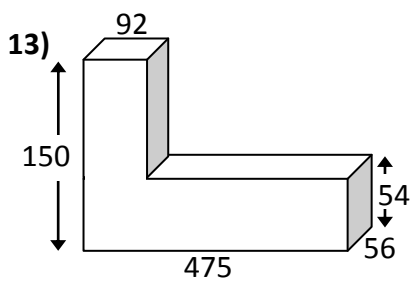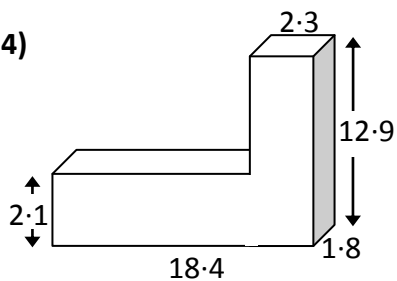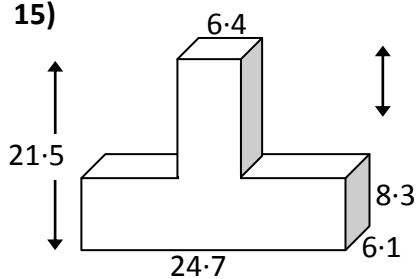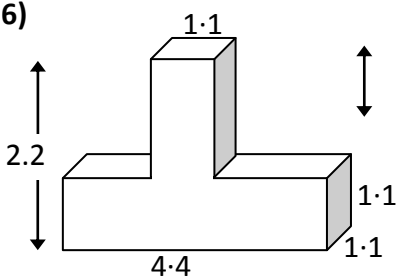
Exercise 2

1) Calculate the volume of each cuboid in cm^3.

Write the volume in ml and calculate how many litres of liquid each of the following containers could hold.

a)

40cm
30cm
50cm

b)

7cm
5cm
10cm

c)

35cm
10cm
15cm

d)

17cm
9cm
68cm
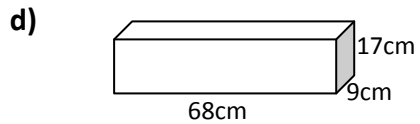
2) A container, in the shape of a cube of side 20 cm, holds sugar
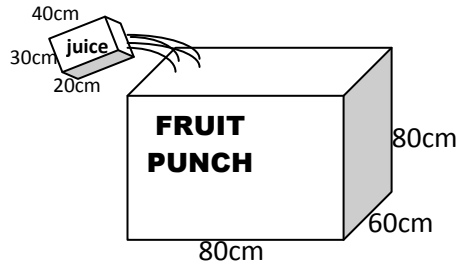

Cane

sugar

20 cm

4 litre

a) Calculate its **volume** in cm^3

b) How many litres can it hold?

c) How many 4 litre packets can be filled from the box when it is full?

3) A carton of orange juice is in the shape of a cuboid measuring 30cm, by 20cm, by 40cm.


a) Calculate its **volume** in cm^3

b) How many litres can it hold?

The carton is poured into a plastic container in the shape of a cuboid to make up a fruit punch.

c) Calculate the **volume** of the container in cm^3

d) How many litres can the container hold?

e) How many cartons need to be poured in to fill the container?

4) This tank is full of olive oil.

a) Calculate its volume in cm^3

b) How many litres can it hold?
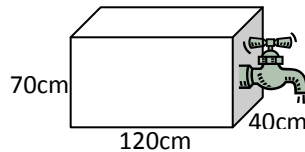
It is discovered the tank is left in the sunlight and the oil has spoiled, therefore the tap is opened and the oil pours out at a rate of 6 litres/minute.

c) How long will it take for the tank to empty?

5) Calculate the length of the missing edge of the cuboid.