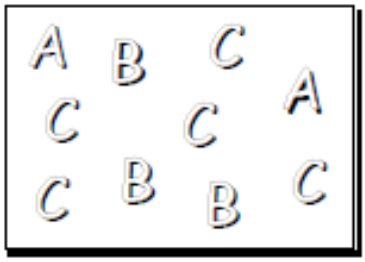
# S2 Block Test Two
# Revision Booklet
# MP2

# Ratio

## Exercise 1/2

1. From the letters shown, write down the ratio of :-

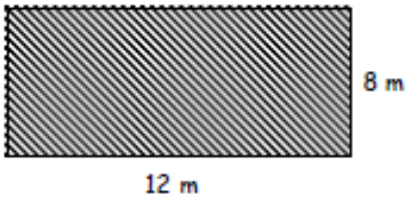



   (a) A : B (b) A : C
   (c) C : B (d) B : C
   (e) vowels : consonants

2. Copy each ratio and simplify as far as possible :-

   (a) 5 : 10 (b) 12 : 36 (c) 4 : 20 (d) 5 : 35
   (e) 27 : 3 (f) 36 : 16 (g) 100 : 8 (h) 240 : 30
   (i) 25 : 625 (j) 12 : 16 : 24 (k) 8 : 40 : 72 (l) 6 : 81 : 333

3. A rectangular garden measures 12 metres by 8 metres. Write down the ratio (in its simplest form) of :-




   (a) length : breadth (b) perimeter : area

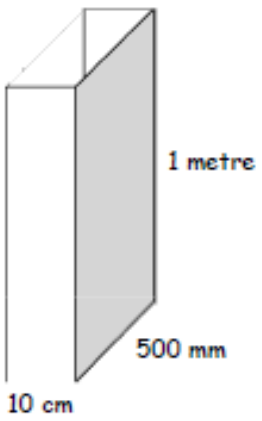
4. Simplify each of the following to unitary ratios :-

   (a) $\frac{1}{2}$ : 6 (b) $\frac{1}{3}$ : 9 (c) 12 : 0·2 (d) $\frac{1}{17}$ : 10

5. Change each quantity to similar units and simplify :-

   (a) $\frac{1}{2}$ kg : 200 g (b) $\frac{1}{3}$ hour : 10 mins (c) 50 mm : $\frac{1}{5}$ cm (d) $\frac{1}{8}$ litre : 250 ml

6. A box with no lid has length 10 centimetres, breadth 500 millimetres and height 1 metre.




   Write in its simplest form the ratio of :-

   (a) length : breadth
   (b) height : volume

# Ratio

## Exercise 3

1. On a small aircraft, the ratio of men to women is 2 : 3.

   If there are 8 men on the aircraft, how many women are there ?

| men | women |
|---|---|
| ×4 ( 2 ) | 3 ( ×? ) |
| 8 | ... |

2. The ratio of girls to boys in $3C_2$ is 4 : 5.

   (a) If there are 12 girls, how many boys are there ?

   (b) If there are 20 boys, how many girls are there ?

3. 

   A model Ferarri has a scale of 1 : 43.

   (a) The model has a tyre diameter of 2 cm.
   What will the tyre diameter be on the Ferarri ?

   (b) The Ferarri has a height of 129 centimetres.

   What is the height of the model ?

4. Farmer Ellis uses the table of ratios to feed his chickens using chicken feed and corn.

| Mix in the ratio | | | |
|---|---|---|---|
| *Strength* | *Feed* | : | *Corn* |
| Weak | 10 | : | 1 |
| Light | 7 | : | 1 |
| Medium | 7 | : | 2 |
| Strong | 5 | : | 3 |
| Very Strong | 4 | : | 5 |

   Which feed strength will he get if he mixes :-

   (a) 70g of feed and 10g of corn ?

   (b) 210g of feed and 60g of corn ?

   (c) 1 kg of feed and 1250g of corn ?

   (d) 600g of corn and 1 kg of feed ?

5. Farmer Ellis has a 30g bag of corn.

   How much chicken feed does he need to make *medium strength* feed ?



## Exercise 4

1. Share £250 between Ann and Kim in the ratio 2 : 3.

   **COPY** and complete :-

   Total number of shares = 2 + 3 = 5

   **Each share** = £250 ÷ 5 = **£50**

   Ann has 2 shares = 2 x £..... = £.....

   Kim has 3 shares = 3 x £..... = £ .....

   Kim 

   Ann 

   (Check total is £250)

# Ratio

2. Show all your working for each of the following :-

   (a) Share £1500 between Bill and Ben in the ratio 3 : 2.

   (b) Share 360 sweets between May and Matt in the ratio 5 : 7.

   (c) Share 1250 €'s between Tom and Tim in the ratio 7 : 3.

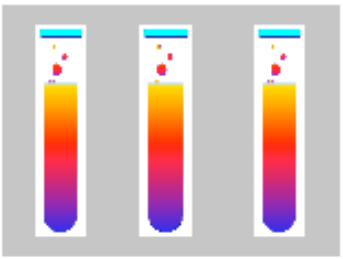
   (d) Share ten thousand pounds between Dan and Fran in the ratio 23 : 27.

3. Every week Jack pays £3, and Jill pays £4 into a church raffle.

   If they share the top prize (£140), in the ratio of their stake, how much should each receive ?

4. Ed and Ted win half a million dollars on an internet lottery.
   They decide to share the money in the ratio 13 : 12.

   How much more will Ed receive than Ted ?

5. 

   A chemist requires a special mix of three chemicals CtP, AgH and RcQ in the ratio of

   $\frac{1}{2}$ litre : $\frac{1}{4}$ litre : 2500 ml.

   If the chemist has 1 litre of RcQ, how much of the other chemicals does he require for the correct mix ?

## Exercise 5/6

1. (a) The cost of four magazines is £6. Find the cost of one magazine.

   (b) Seven football strips cost £210. Find the cost of one strip.

   (c) Eight sweets cost £2. Find the cost of one sweet.

2. 

   The cost of ten calculators is £50.
   How much would it cost for :-

   (a) one calculator (b) nine calculators ?

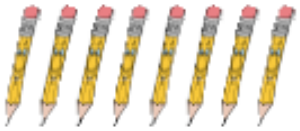
3. A car travels 140 kilometres in 4 hours.
   Assuming the car travels at the same speed, how far will it travel in :-

   (a) 3 hours (b) 5 hours (c) 30 minutes ?

# Ratio

4. A photocopy machine can produce 300 copies in 2 minutes.
   How many copies will the machine make in :-
   (a) 3 minutes (b) 11 minutes
   (c) 30 seconds (d) 20 seconds ?

5. (a) 600 pencils cost £24.
   Find the cost of 400 pencils.



   (b) A disc spins 3000 times in 8 minutes.
   How many times will it spin in 12 minutes ?

   (c) A computer makes three million calculations in 9 seconds.
   How many calculations will the computer make in 12 seconds ?

## Exercise 7

1. (a) Copy and complete the table.
   (b) Plot each point (1, 4), (2, 8), ... on a graph.
   (c) Join the points with a straight line.
   (d) Explain why the line must go through the origin.

| No. of sweets | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Cost (p) | 4 | 8 | | | | |

2. (a) Draw a set of axes and plot the points from the table.
   (b) Explain how you might check for direct proportion without drawing axes and plotting points.

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 2 | 4 | 6 | 8 |

=> (1, 3), ..., etc.

3. Which of the following tables indicate direct proportion ?

(a)

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 7 | 14 | 21 | 28 |

(b)

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 6 | 11 | 17 | 24 |

(c)

| $x$ | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| $y$ | 3 | 6 | 9 | 12 |

(d)

| $x$ | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| $y$ | 13 | 17 | 21 | 25 |

# Ratio

## Exercise 8

1. If it took two men 6 hours to build a wall, how long would it have taken 3 men ?
   (Remember : more men - less time)

2. If it took 7 park wardens 6 hours to clear away litter, how long would it have taken 3 wardens ?

3. Six men take 6 hours to build a kit car. How long will it take eight men ?

4. 

   Nine scouts have eight days rations.
   How many days rations would there then be if **three more** scouts join them ?

5. Oliver and his 5 friends take an hour to wrap all the presents for the church tombola. How long would it have taken if 4 **more** friends had helped with the wrapping ?

6. Five bees take eight days to make 5 millilitres of honey.
   How many bees would it take to make the same amount in ten days ?

## Exercise 9

For each of the following questions show **all** your working.

1. Tony buys ten stamps for £2·90. How much would he pay for 12 stamps ?

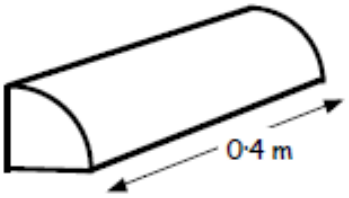
2. Henry can run 4 kilometres in 20 minutes.
   How long would he take to run 5 kilometres at this speed ?

3. 

   Five people should each pay £16 to hire a football pitch.
   If only 4 people turned up, how much would each of them then be expected to pay ?

4. What would be the weight of 12 cakes if 20 cakes weigh 1 kilogram ?

5. The perimeter of a room can be surrounded with fifty 0·4 metre wooden edging strips.
   How many strips of edging would be required if each strip was half a metre in length ?



# Answers

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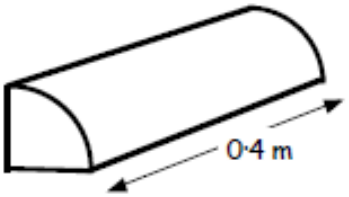


# Integers

## Exercise 3 Subtracting Negatives

1. Find :-

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a | 4 - (-2) | b | 8 - (-1) | c | 10 - (-5) | d | 70 - (-30) |
| e | (-3) - (-2) | f | (-1) - (-1) | g | (-8) - (-7) | h | (-11) - (-6) |
| i | (-34) - (-21) | j | (-121) - (-77) | k | 73 - (-54) | l | (-243) - (-233). |

2. Find :-

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a | $4x - (-2x)$ | b | $7y - (-4y)$ | c | $23k - (-14k)$ | d | $156i - (-127g)$ |
| e | $111d - (-88d)$ | f | $(-3w) - (-4w)$ | g | $(-40j) - 11j - (-20j)$. | | |

## Exercise 4 Multiplying/Dividing Negatives

1. Find :-

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a | 3 x (-2) | b | 8 x (-1) | c | 12 x (-5) | d | 10 x (-30) |
| e | (-3) x 4 | f | (-1) x 6 | g | (-8) x 7 | h | (-11) x 4 |
| i | (-9) ÷ 3 | j | (-121) ÷ 11 | k | 72 ÷ (-9) | l | 243 ÷ (-3). |

2. Find :-

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a | (-4) x (-2) | b | (-3) x (-4) | c | (-7) x (-9) | d | (-11) x (-12) |
| e | 15 ÷ (-5) | f | (-30) ÷ (-5) | g | (-40) ÷ (-8) | h | (-243) ÷ (-3). |

3. Find :-

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a | (-11 + 3) x 2 | b | (7 - 11) x 5 | c | $(-1)^{17}$ | d | (-1) x (-7) x (-2). |

## Exercise 5 Mixed Exercise

1. Find :-

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a | -3 + 8 | b | 8 - (-2) | c | 9 + (-3) - (-5) | | |
| d | 5 x (-4) | e | (-3) x 6 | f | (-5) x (-7) | g | 35 ÷ (-5) |
| h | (-64) ÷ (-8) | i | $(-1)^{191}$ | j | $(-1)^9 \times (-1)^{11}$ | k | (-10) x (-1) ÷ (-2). |

2. For every 100 m a weather balloon rises the temperature drops by 2·5°C.

   If at ground level the temperature is 11°C, what would the temperature be at a height of 2·1 km ?

# Answers

## Exercise 2 - Adding and Subtracting Integers

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | a | -1 | b | -5 | c | 2 | d | -2 |
| | e | 0 | f | -6 | g | -13 | h | -4 |
| | i | -100 | j | -31 | k | -70 | l | -90 |
| 2. | a | -87 | b | -1·5 | c | 3·9 | d | -5·2 |
| | e | -2·1 | f | 27 | g | -38·2 | | |
| | h | $-k$ | i | $-10g$ | j | $2t$ | | |

## Exercise 3 - Subtracting Negatives

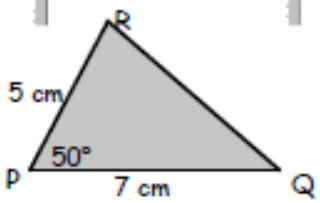
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | a | 6 | b | 9 | c | 15 | d | 100 |
| | e | -1 | f | 0 | g | -1 | h | -5 |
| | i | -13 | j | -44 | k | 127 | l | -10 |
| 2. | a | $6x$ | b | $11y$ | c | $37k$ | d | $283i$ |
| | e | $199d$ | f | $w$ | g | $-31j$ | | |

## Exercise 4 - Multiplying/Dividing Negatives

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | a | -6 | b | -8 | c | -60 | d | -300 |
| | e | -12 | f | -6 | g | -56 | h | -44 |
| | i | -3 | j | -11 | k | -8 | l | -81 |
| 2. | a | 8 | b | 12 | c | 63 | d | 132 |
| | e | -3 | f | 6 | g | 5 | h | 81 |
| 3. | a | -16 | b | -20 | c | -1 | d | -14 |

# Drawing Shapes

## Exercise 1 (You will need a ruler and a protractor).




1. On the right is a rough sketch of ΔPQR.
   Follow the instructions to draw it accurately :-

   Step 1 :- Draw line PQ = 7 cm.

   Step 2 :- Put your protractor at P and mark (with an X) an angle of 50°.

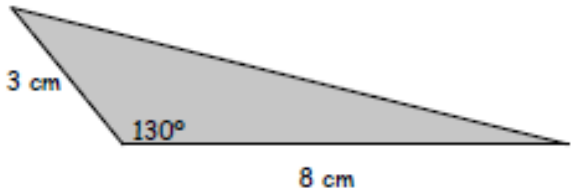
   Step 3 :- Draw line PR, from P through the X, to point R.
   (*Make sure it is 5 centimetres long*).

   Step 4 :- Join R to Q to complete the triangle.

2. Make accurate drawings of the following triangles :-

   (a)


   (b)




3. Make an accurate drawing of ΔABC where AB = 11 cm, BC = 9 cm and ∠ABC = 73°.

## Exercise 2 (You will need a ruler and a protractor for this exercise.)

1. On the right is a rough sketch of ΔBTV.
   Follow the instructions to draw it accurately :-

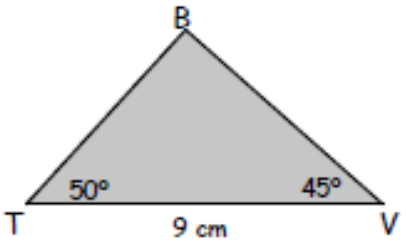
   Step 1 :- Draw line TV = 9 cm.

   Step 2 :- Put your protractor at T and mark (with an X) an angle of 50°.

   Step 3 :- Draw a line from T through the X,

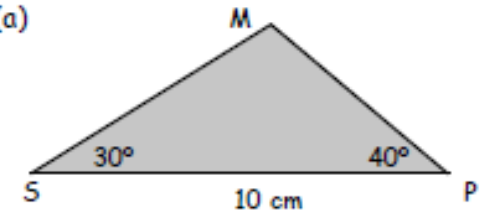
   Step 4 :- Put your protractor at V and mark (with an X) an angle of 45°.

   Step 5 :- Draw a line from V through the X, to meet your first line at point B.

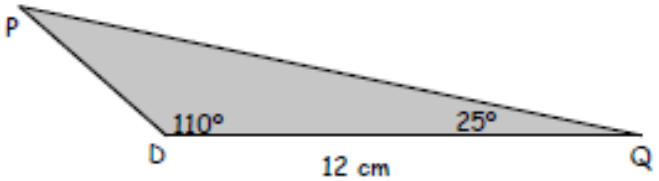



2. Make accurate drawings of the following triangles :-

   (a)



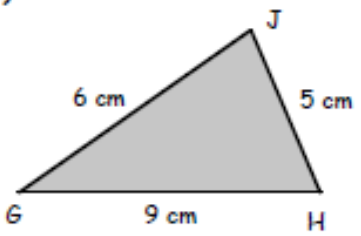

   (b)




3. Make an accurate drawing of ΔDEF where DE = 10 cm, ∠DEF = 59° and ∠FDE = 40°.

# Drawing Shapes

## Exercise 3 (You will need a ruler and a pair of compasses)




1. On the right is a rough sketch of ΔGHJ.
   Follow the instructions to draw it accurately :-

   Step 1 :- Draw line GH = 9 cm.

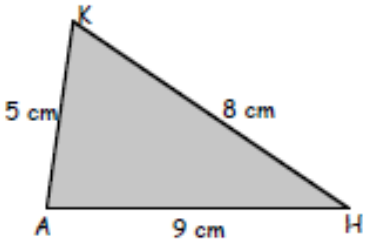
   Step 2 :- Set your compasses to 6 cm, place the compass point on G and draw a light arc.

   Step 3 :- Now set your compasses to 5 cm, place the compass point on H and draw a 2nd arc.

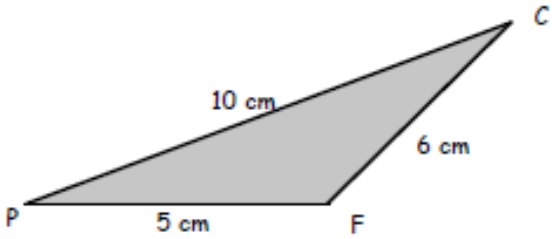
   Step 4 :- Call the point where the arcs meet J and join G to J and to H.

2. Make accurate drawings of the following triangles :-

   (a)




   (b)




3. Make an accurate drawing of ΔXYZ where XY = 10 cm, XZ = 9 cm and YZ = 6 cm.

## Revision Exercise

**(You will need a ruler, protractor and a pair of compasses for this exercise.)**

Make accurate drawings of the following triangles.

1. ΔABC where AB = 10 cm, BC = 6 cm and ∠ABC = 70°.

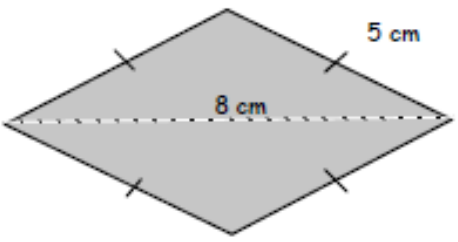
2. ΔPQR where PQ = 9 cm, ∠PQR = 50° and ∠QPR = 40°.

3. ΔSTY where ST = 8 cm, ∠STY = 10° and ∠TSY = 150°.

4. ΔJKL where JK = 11 cm, JL = 14 cm and KL = 2 cm.

5. A rhombus is made from two iscoceles triangles as shown.

   Make an accurate drawing of this rhombus.



# Statistics

**Exercise 1**

1. Calculate the **mean** for each set of data :-

   (a) 3, 8, 4, 2, 10, 7, 8

   (b) 50, 60, 52, 58, 54, 56

   (c) 1·3, 2·6, 3·2, 4·1, 5, 4·8, 4, 1·9, 0·1, 2

   (d) the first ten prime numbers.

2. Find the **median** for each set of data :-

   (a) 1, 3, 5, 6, 8, 11, 14

   (b) 16, 22, 23, 25, 31, 40, 61, 63

   (c) 4, 1, 14, 12, 6, 7, 11, 13, 9

   (d) 5, 8, 21, 12, 5, 16, 33, 12, 15, 9.

3. Find the **mode** for each set of data :-

   (a) 1, 1, 2, 3, 5, 8, 13, 21, 34, 55

   (b) 3, 2, 1, 8, 4, 5, 9, 2, 7, 6, 0,

   (c) 1·7, 2·3, 1·6, 3, 2·3, 3·7, 2·9,

   (d) A, C, F, G, H, Y, T, E, D, D, G, H, G.

4. Find the **range** for each set of data in question 3(a) to (c).

5. Find the **mean**, **median**, **mode** and **range** of each set of data :-

   (a) 10, 14, 15, 15, 16, 19, 22, 23, 27, 29, 30

   (b) 46, 31, 66, 73, 83, 43, 16, 66

   (c) All the prime numbers between 30 and 50.

6. 

   The mean weight of 4 boxes is 300 kg.
   Three of the boxes each weigh 85 kg.
   What is the weight of the fourth box ?

# Statistics

1. The data below shows the number of cars parked on a main street each day at lunchtime.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 11 | 32 | 40 | 65 | 32 | 33 | 18 | 12 | 6 | 23 |
| 57 | 16 | 54 | 42 | 67 | 32 | 78 | 47 | 49 | 52 | 70 |
| 16 | 38 | 7 | 13 | 35 | 79 | 71 | 52 | 24 | 15 | 10 |

| Class Intervals | Tally | Frequency |
|---|---|---|
| 0 - 9 | | |
| 10 - 19 | COPY | |
| 20 - 29 | | |
| 30 - 39 | | |
| 40 | | |

(a) **COPY** and complete the frequency table.

(b) On how many days was data collected ?

(c) On how many days were there more than 30 cars parked at lunchtime ?

2. Shown is the number of children attending football training each week.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22 | 3 | 5 | 17 | 24 | 17 | 4 | 11 |
| 10 | 18 | 8 | 26 | 19 | 19 | 23 | 9 |
| 13 | 23 | 13 | 22 | 26 | 9 | 23 | 15 |
| 2 | 18 | 17 | 15 | 26 | 11 | 19 | 10 |
| 12 | 10 | 19 | 11 | 14 | 6 | 7 | 20 |

(a) Which of these would be the most suitable class interval to use :-

(0 - 9) or (0 - 4) or (0 - 1) ?

(b) Construct a frequency table using your chosen class interval.

3. For each set of data below, choose a suitable class interval and construct a frequency table.

(a)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13 | 4 | 41 | 69 | 51 | 58 | 57 | 33 |
| 11 | 40 | 46 | 61 | 22 | 22 | 52 | 63 |
| 14 | 53 | 46 | 54 | 42 | 56 | 60 | 54 |
| 50 | 29 | 43 | 13 | 46 | 17 | 25 | 21 |
| 25 | 36 | 39 | 20 | 7 | 11 | 14 | 6 |

(b)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 | 18 | 5 | 18 | 13 | 9 | 11 | 21 |
| 7 | 17 | 8 | 22 | 13 | 23 | 4 | 19 |
| 6 | 15 | 13 | 26 | 10 | 19 | 17 | 22 |
| 14 | 26 | 10 | 8 | 18 | 19 | 24 | 3 |
| 11 | 11 | 15 | 23 | 8 | 26 | 17 | 5 |

(c)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2·9 | 5·7 | 5·1 | 4·9 | 3·0 | 1·1 | 2·4 | 6·8 | 0·9 | 5·5 | 1·7 | 6·2 |
| 0·5 | 6·3 | 4·5 | 3·4 | 5·6 | 3·1 | 3·4 | 4·6 | 3·7 | 2·5 | 1·6 | 3·7 |
| 5·0 | 2·9 | 4·3 | 2·1 | 5·4 | 4·6 | 5·3 | 6·1 | 2·2 | 5·7 | 5·8 | 1·3 |

# Statistics

## Exercise 4

1. A gardener recorded the number of **new** dandelions that appeared in his lawn each week over a 7 week period.

   He began to use a weed killer and studied the results.

   (a) Copy and complete the table.

   (b) Which week did the gardener start using the weedkiller ?

   (c) Find the median.

| Week | Frequency (new weeds) | Cumulative freq. (total so far) |
|---|---|---|
| 1 | 3 | 3 |
| 2 | 12 | 15 |
| 3 | 36 | .. |
| 4 | 68 | .. |
| 5 | 40 | .. |
| 6 | 12 | .. |
| 7 | 1 | ... |

2. For each table below :-

   (i) add a cumulative frequency column (ii) find the median.

(a)

| Goals | Frequency |
|---|---|
| 0 | 1 |
| 1 | 4 |
| 2 | 12 |
| 3 | 11 |
| 4 | 8 |
| 5 | 6 |
| 6 | 0 |

(b)

| Score | Frequency |
|---|---|
| 0 | 2 |
| 1 | 3 |
| 2 | 5 |
| 3 | 15 |
| 4 | 18 |
| 5 | 6 |
| 6 | 2 |

(c)

| No. | Frequency |
|---|---|
| 10 | 3 |
| 11 | 3 |
| 12 | 12 |
| 13 | 16 |
| 14 | 15 |
| 15 | 24 |
| 16 | 35 |

## Exercise 5

1. The table shows the results of a questionnaire asking a group of 90 pupils their favourite bedtime drink.

   (a) **COPY** and complete the table.

   (b) Construct an accurate pie chart using a pair of compasses, a protractor and the table information.

| Drink | Number | Fraction | Angle |
|---|---|---|---|
| Water | 10 | $\frac{10}{90}$ | $\frac{10}{90} \times 360 = 40°$ |
| Chocolate | 15 | $\frac{15}{90}$ | $\frac{15}{90} \times 360 = \ldots\ldots°$ |
| Milk | 30 | $\frac{\ldots\ldots}{90}$ | $\frac{\ldots\ldots}{90} \times 360 = \ldots\ldots°$ |
| None | 35 | $\frac{\ldots\ldots}{90}$ | $\frac{\ldots\ldots}{90} \times 360 = \ldots\ldots°$ |
| **TOTAL** | **90** | **1** | **360°** |

# Statistics

2. For each table below, construct an accurate pie chart, showing all your working.

(a)

| Favourite pet | Number |
|---|---|
| Cat | 20 |
| Dog | 10 |
| Mouse | 12 |
| Rabbit | 18 |
| TOTAL | .... |

(b)

| People's weight (kg) | Number |
|---|---|
| 30 - 50 | 80 |
| 51 - 70 | 120 |
| 71 - 90 | 480 |
| 91 - 110 | 40 |
| TOTAL | .... |

3. The table shows the results of a survey asking how old people were when they first went to the cinema.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 8 | 6 | 7 | 5 | 6 | 9 | 5 | 6 | 5 | 5 | 6 |
| 5 | 9 | 7 | 6 | 9 | 7 | 6 | 9 | 9 | 6 | 5 | 5 |
| 5 | 6 | 7 | 6 | 8 | 6 | 8 | 7 | 6 | 6 | 8 | 6 |

Construct a **pie chart** to show this information.

## Exercise 6

1. The stem and leaf diagram shows the ages of spectators watching a football match.
   (a) Write a key for the diagram.
   (b) Write out all the ages shown in the diagram.
   (c) How old was the youngest spectator ?
   (d) What was the modal age ?
   (e) Find the median.

**Spectators ages**

| | |
|---|---|
| 1 | 2 2 6 9 |
| 2 | 0 4 5 6 |
| 3 | 0 1 1 1 2 4 |
| 4 | 2 |
| 5 | 0 3 |

2. The unordered stem and leaf diagram shows the money donated to a local charity by a Primary seven class.
   (a) **COPY** the diagram, but put the donations in order.
   (b) How many pupils donated money ?
   (c) What was the largest donation ?
   (d) What was the modal donation ?
   (e) Find the average (mean) donation.

**Money collected**

| | |
|---|---|
| 1 | 1 7 4 0 |
| 2 | 9 1 3 4 |
| 3 | 9 8 2 3 2 2 |
| 4 | 0 |
| 5 | 3 0 |

**Key :**
2 | 9 means £2·90

# Statistics

3. For each set of data shown :-

   (i) Construct an ordered stem and leaf diagram. (ii) Find the mode and median.

   (a) Ages of mature students at a University.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 42 | 27 | 37 | 25 | 60 | 29 | 35 | 26 | 45 | 35 | 26 |
| 50 | 39 | 27 | 26 | 42 | 47 | 26 | 59 | 42 | 23 | 29 | 29 |
| 20 | 51 | 43 | 44 | 28 | 46 | 42 | 27 | 52 | 30 | 30 | 42 |

   (b) Distances (in metres) jumped from a standing position.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1·62 | 1·23 | 1·41 | 1·15 | 0·97 | 1·31 | 1·23 | 1·26 | 1·5 |
| 1·33 | 1·29 | 1·12 | 1·23 | 1·19 | 1·36 | 1·53 | 1·08 | 1·23 |
| 0·9 | 1·2 | 1·51 | 1·03 | 1·66 | 1·53 | 1·44 | 1·23 | 1·39 |

## Exercise 7

1. State whether each of the following statements is likely to have a positive correlation, a negative correlation or neither.

   (a) The temperature in a park and the sales of ice-creams.

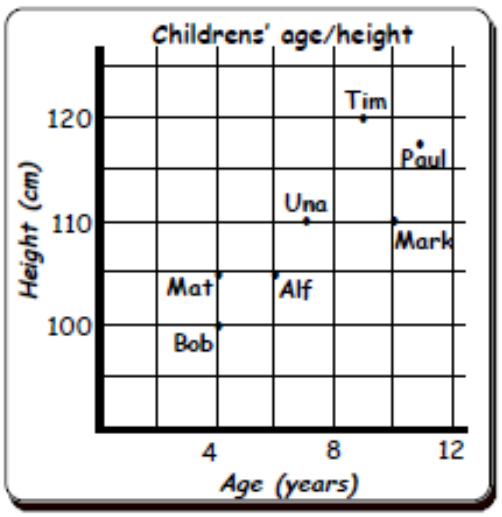
   (b) The amount of sunshine and the sales of umbrella's.

   (c) The distance travelled by an aeroplane and the cost of the flight.

   (d) The number of chairs in a classroom and the number of teachers.

   (e) The cost of a car and the mileage travelled by the car.

2. The scattergraph shows childrens' ages and heights (in cm).




   (a) List the age and height of each person.

   (b) State whether you think there is a positive correlation, a negative correlation or neither.

   (c) **Copy** the scattergraph and draw a line of best fit.

   (d) Use your line of best fit to estimate :-

      (i) the height of Abby aged 9.

      (ii) the age of Alex who is 125 cm tall.

# Statistics

3. For each data set, construct a scattergraph and draw a line of best fit :-

(a)

| Engine size (1000cc) | 1·1 | 1·1 | 1·1 | 1·4 | 1·4 | 1·4 | 1·6 | 1·6 | 1·6 | 1·8 | 1·8 | 1·8 | 2·0 | 2·0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| km / litre | 50 | 60 | 55 | 50 | 40 | 45 | 40 | 30 | 35 | 35 | 25 | 30 | 30 | 20 |

(b)

| Age (years) | 5 | 6 | 6 | 7 | 7 | 8 | 9 | 9 | 9 | 10 | 10 | 10 | 11 | 11 | 12 | 12 | 12 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Javelin throw (m) | 4 | 5 | 6 | 7 | 5 | 6 | 6 | 8 | 9 | 11 | 12 | 9 | 10 | 11 | 14 | 18 | 15 | 12 |

# Answers

Exercise 1

1. a 6 b 55 c 2·9 d 12·9
2. a 8 b 28 c 9 d 12
3. a 1 b 2 c 2·3 d G
4. a 54 b 9 c 2·1
5. a ????? ?????? ???????
   b ????? ?????? ???????
   c ????? ?????? ???????
6. a 945 kg
7. 8

Exercise 2

1. a Freq = 2 9 2 6 4 4 2 4
   b 33 c 20
2. a 0 - 3 b Various
3. a/b/c Various

Exercise 3

1. a Total Freq = 38
   fx = 0 2 22 42 36 Total = 102
   b 38 c 102 d 2·7 ???
2. a 30 in each class b 16·9 & 15·7
   c 17 & 16
3. a Table with 4 @ 13, 6 @ 14, 9 @ 15, 10 @ 16, 11 @ 17.
   bi 17 ii 4 iii 15·45 iv 16

Exercise 4

1. a Cum Freq = 3 15 51 119 159 171 172
   b Week 5 c 68 weeds
2. a Cum Freq = 1 5 17 28 36 42 42
   Median = 3
   b Cum Freq = 2 5 10 25 43 49 51
   Median = 4
   c Cum Freq = 3 6 18 34 49 73 108
   Median = 15

Exercise 5

1. a Angles = 40° 60° 120° 140°
   b Drawing
2. a Angles = 120° 60° 72° 108° Drawing
   b Angles = 40° 60° 240° 20° Drawing
3. Angles = 80° 130° 50° 40° 60° Drawing

Exercise 6

1. a Various eg 2/4 = 24
   b 12 12 16 19 20 24 25 26 30
   31 31 31 32 34 42 50 53
   c 12 d 31 e 30
2. a b 17 c £5·30

| | |
|---|---|
| 1 | 0 1 4 7 |
| 2 | 1 3 4 9 |
| 3 | 2 2 2 3 8 9 |
| 4 | 0 |
| 5 | 0 3 |

   d £3·20 e £2·93
3. a

| | |
|---|---|
| 2 | 0 3 3 5 6 6 6 6 7 7 7 8 9 9 9 |
| 3 | 0 0 5 5 7 9 |
| 4 | 2 2 2 2 2 3 4 5 6 7 |
| 5 | 0 1 2 9 |
| 6 | 0 |

   Key eg 3/5 = 35
   Mode 42 Median 36·8
   b

| | |
|---|---|
| 0·9 | 0 7 |
| 1·0 | 3 8 |
| 1·1 | 2 5 9 |
| 1·2 | 0 3 3 3 3 3 6 9 |
| 1·3 | 1 3 6 9 |
| 1·4 | 1 4 |
| 1·5 | 0 1 3 3 |
| 1·6 | 2 6 |

   Key eg 1/23 = 1·23
   Mode = 1·23 Median 1·23

Exercise 7

# Answers

1. a +ve b -ve c +ve d neither
   e -ve
2. a Bob 4/100 cm Mat 4/105 cm
   Alf 6/105 cm Mary 7/110 cm
   Tim 9/120 cm Mark 10/110 cm
   Paul 11/118 cm
   b +ve c **James got original**
   di 115 cm ii 12
3. a

   b

Exercise 8/9

1. a No Chance 0 b Definite 1
   c 50/50 $^1/_2$ d 50/50 $^1/_2$
2. a $^1/_2$ b $^1/_5$ c $^2/_5$ d $^3/_{10}$
3. a $^3/_{40}$ b $^9/_{40}$ c $^3/_{10}$ d $^3/_8$
   e $^1/_{40}$ f $^7/_{10}$ g $^3/_8$ h 0
4. H T (or T H)

Exercise 10

1. a most will say yes b most will say no
   c will say no
2. Various
3. Discrete = Countable No. people in class

   Continuous = Measurable Size of feet
4. Survey

# Statistics

## Exercise 3

1. A footballer practised taking 4 penalties every day. The table shows the results over several weeks.

   (a) **COPY** and complete the table.

   (b) How many days did he record taking penalties ?

   (c) How many penalties were scored in total ?

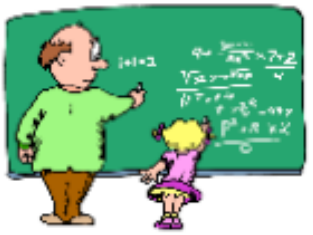
   (d) Calculate the mean number of penalties scored.

| No. scored ($x$) | Freq ($f$) | $f \times x$ |
|---|---|---|
| 0 | 2 | 0 x 2 = 0 |
| 1 | 2 | 1 x 2 = ... |
| 2 | 11 | 2 x .. = ... |
| 3 | 16 | .. x .. = ... |
| 4 | 9 | .. x .. = ... |
| | ... | ... |

2. Shown are the test scores for classes 2X1 and 2Y1.

| 2X1 scores ($x$) | Freq ($f$) |
|---|---|
| 12 | 1 |
| 14 | 6 |
| 16 | 8 |
| 18 | 9 |
| 20 | 6 |

| 2Y1 scores ($x$) | Freq ($f$) |
|---|---|
| 12 | 5 |
| 14 | 5 |
| 16 | 11 |
| 18 | 8 |
| 20 | 1 |



   (a) How many pupils are in each class ?

   (b) Find the mean score for each class.

   (c) Find the median score for each class .

3. A group of 18 year old boys were asked how old they were when they went out on their first "date".
   The results are shown in this bar graph.

   (a) Form a frequency table from the information in the bar graph.

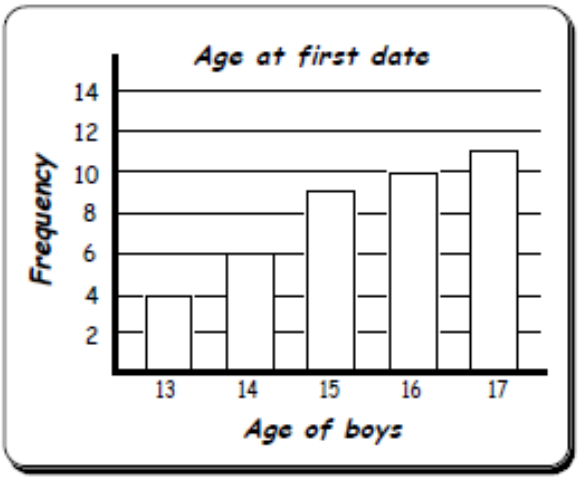
   (b) Calculate the : -

   (i) mode

   (ii) range

   (iii) mean

   (iv) median.



# Statistics

## Exercise 4

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   He began to use a weed killer and studied the results.

   (a) Copy and complete the table.

   (b) Which week did the gardener start using the weedkiller ?

   (c) Find the median.

| Week | Frequency (new weeds) | Cumulative freq. (total so far) |
|---|---|---|
| 1 | 3 | 3 |
| 2 | 12 | 15 |
| 3 | 36 | .. |
| 4 | 68 | .. |
| 5 | 40 | .. |
| 6 | 12 | .. |
| 7 | 1 | ... |

2. For each table below :-

   (i) add a cumulative frequency column (ii) find the median.

(a)

| Goals | Frequency |
|---|---|
| 0 | 1 |
| 1 | 4 |
| 2 | 12 |
| 3 | 11 |
| 4 | 8 |
| 5 | 6 |
| 6 | 0 |

(b)

| Score | Frequency |
|---|---|
| 0 | 2 |
| 1 | 3 |
| 2 | 5 |
| 3 | 15 |
| 4 | 18 |
| 5 | 6 |
| 6 | 2 |

(c)

| No. | Frequency |
|---|---|
| 10 | 3 |
| 11 | 3 |
| 12 | 12 |
| 13 | 16 |
| 14 | 15 |
| 15 | 24 |
| 16 | 35 |

## Exercise 5

1. The table shows the results of a questionnaire asking a group of 90 pupils their favourite bedtime drink.

   (a) **COPY** and complete the table.

   (b) Construct an accurate pie chart using a pair of compasses, a protractor and the table information.

| Drink | Number | Fraction | Angle |
|---|---|---|---|
| Water | 10 | $\frac{10}{90}$ | $\frac{10}{90} \times 360 = 40°$ |
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| None | 35 | $\frac{\ldots}{90}$ | $\frac{\ldots}{90} \times 360 = \ldots..°$ |
| **TOTAL** | **90** | **1** | **360°** |



# Statistics

## Exercise 4

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| 5 | 40 | .. |
| 6 | 12 | .. |
| 7 | 1 | ... |

2. For each table below :-

   (i) add a cumulative frequency column (ii) find the median.

(a)

| Goals | Frequency |
|---|---|
| 0 | 1 |
| 1 | 4 |
| 2 | 12 |
| 3 | 11 |
| 4 | 8 |
| 5 | 6 |
| 6 | 0 |

(b)

| Score | Frequency |
|---|---|
| 0 | 2 |
| 1 | 3 |
| 2 | 5 |
| 3 | 15 |
| 4 | 18 |
| 5 | 6 |
| 6 | 2 |

(c)

| No. | Frequency |
|---|---|
| 10 | 3 |
| 11 | 3 |
| 12 | 12 |
| 13 | 16 |
| 14 | 15 |
| 15 | 24 |
| 16 | 35 |

## Exercise 5

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| Chocolate | 15 | $\frac{15}{90}$ | $\frac{15}{90} \times 360 = \ldots..°$ |
| Milk | 30 | $\frac{\ldots}{90}$ | $\frac{\ldots}{90} \times 360 = \ldots..°$ |
| None | 35 | $\frac{\ldots}{90}$ | $\frac{\ldots}{90} \times 360 = \ldots..°$ |
| **TOTAL** | **90** | **1** | **360°** |



# Answers

Exercise 2

1. a Freq = 2 9 2 6 4 4 2 4
   b 33 c 20
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3. a/b/c Various

Exercise 3

1. a Total Freq = 38
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   Median = 4
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   Median = 15