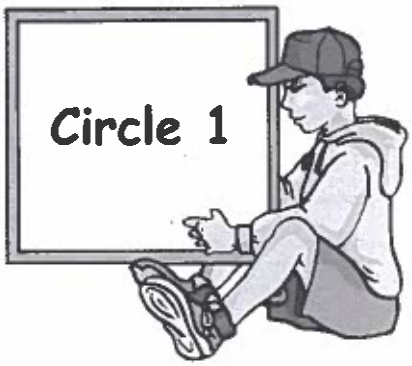
S2 Block 1
Revision Booklet

Topics

The Circle
Angles
Ratio
Proportion
Bearings and Compass Points

CHAPTER 10



Exercise 1 Basic Circle Work

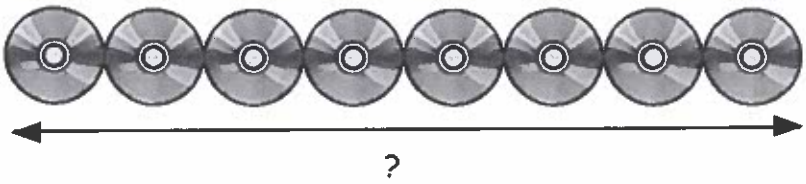
1. Use any suitable object to draw a circle.
   Show two separate diameters and radii on your circle.

2. Draw another circle with a diameter and a radius.
   Label all parts of your diagram.

3. Write the length of the diameter for a radius of length :-
   a 3 cm **b** 7 cm **c** 52 m **d** 8·5 km.

4. Write the length of the radius for a diameter length of :-
   a 12 cm **b** 56 cm **c** 1 m **d** 6·5 km.

5. Eight CD's each with a 6 cm **radius** are placed end to end.
   What is the total length ?

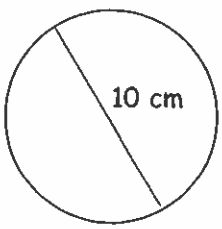


Exercise 2 The Circumference (C) of a circle

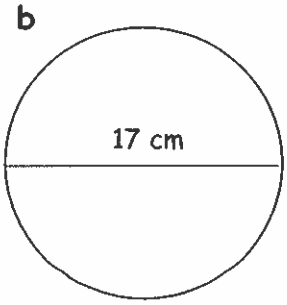
1. Copy and complete,
   " *The formula for finding the circumference of a circle is* C = ...

2. Find the circumference of each of the following circles :-

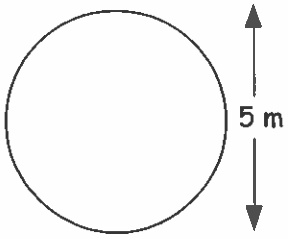
a



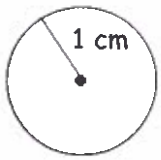
b



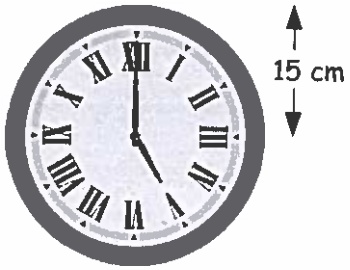
c



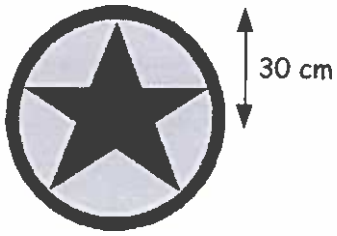
d



2. e

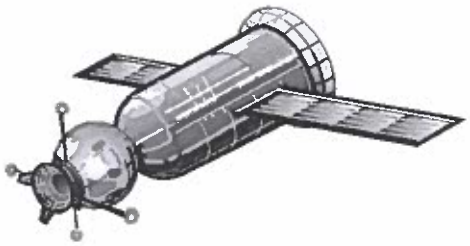


f



3. A satellite orbits 900 km above the earth.

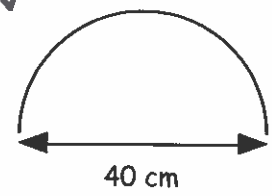
Assuming the radius of the earth is 6350 km, calculate the distance the satellite travels in one orbit.

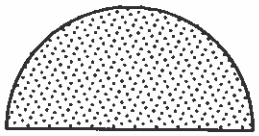


Exercise 3 Circle Problems

1. A metal strip is bent into a semi-circle with diameter 40 cm.

Find the length of the metal strip.



2. 

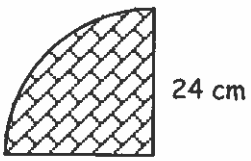
A garden is in the shape of a semi-circle with diameter 10 m.

Calculate the **perimeter** of the garden.

3. A kitchen tile has a quarter circle shape.

The tile has a 24 cm **radius**.

Calculate the **perimeter** of the tile.



4. A garden path has a fence made from metal poles bent into semi-circles.
Each semi-circle has a radius of 20 cm.

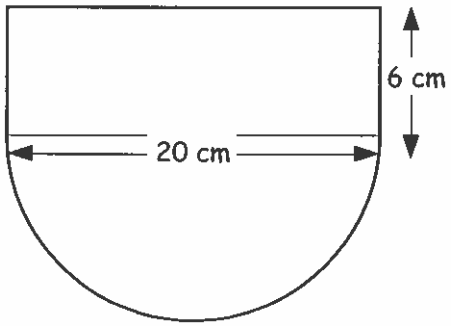
a Find the length of pole needed to make a fence 10 metres long.

b It costs £4·75 per metre for the metal pole.

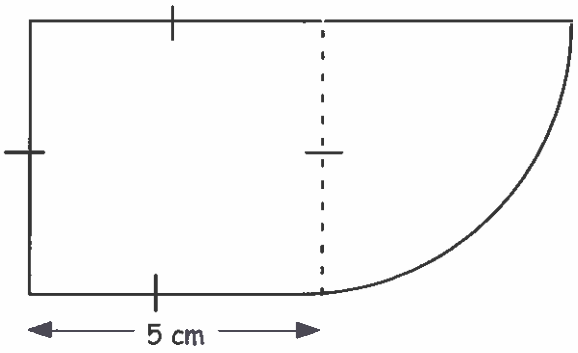
If you must buy whole metre length only, how much will the fence cost ?

5. Calculate the perimeter of each composite shape below :-

a



b



Exercise 4 — Finding the Diameter of a Circle

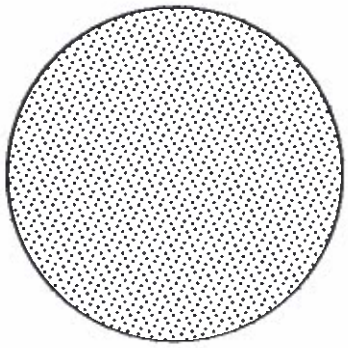
1. Find the diameter of a circle with circumference 125·6 cm.

Copy and complete :-

$$D = \frac{C}{\pi}$$

$$D = \frac{125{\cdot}6}{3{\cdot}14}$$

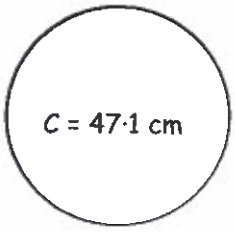
$$D = \ldots.$$



2. Calculate the diameter of each circle below :-

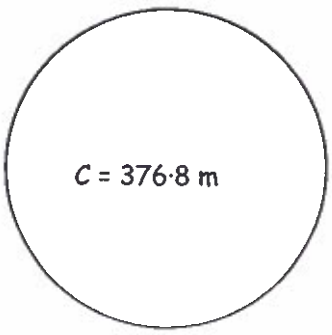
a

b



c

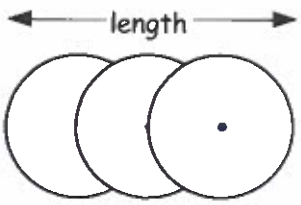
d



3. Find the **radius** of a circle with circumference 81·64 mm.

4. Three circles overlap at their centres as shown. Each circle has a circumference of 78·5 cm.

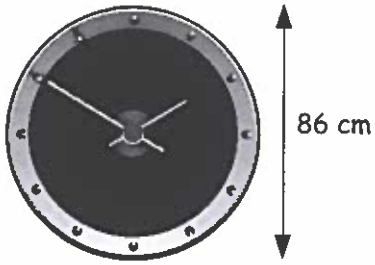
Find the total length of the diagram.



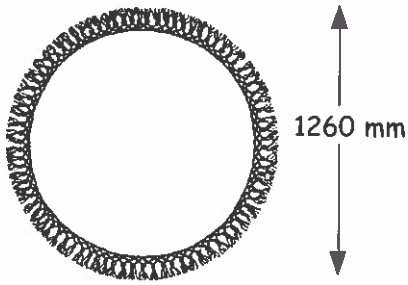
Revisit - Review - Revise Exercise 10

1. Calculate the circumference of each of these :-

a



b



2. A semi-circular console table has a diameter of 1·2 metres.

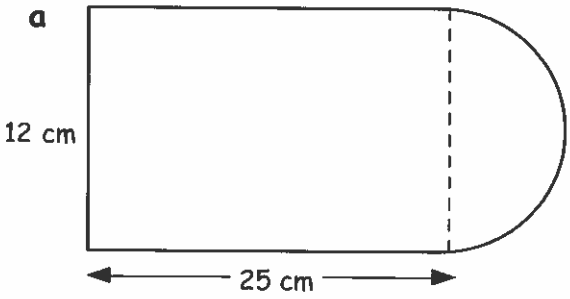
Calculate the perimeter of the table top.

3. 

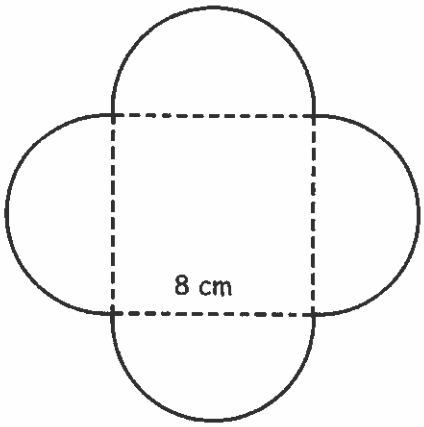
Calculate the radius of a circular garden which has a circumference of 172·7 metres.

4. Calculate the perimeter of each shape below :-

a



b

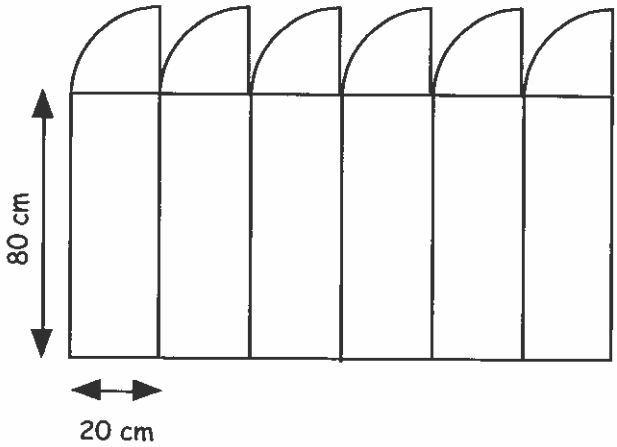


5. A fence is built from metal rods using quarter circles.

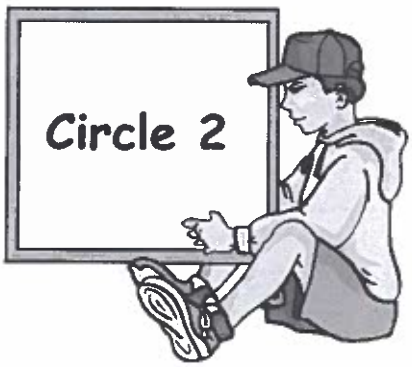
a Find the length of one of the quarter circles.

b Find the total length of metal needed to build the fence.

c At £6·50 per metre, find the total cost of the fence.
(*Only sold in whole metre lengths*).



CHAPTER 14



Exercise 1 The Area of a Circle

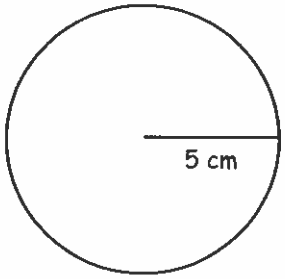
1. Find the area of a circle with radius 5 cm.

COPY and complete :-

$A = \pi r^2$

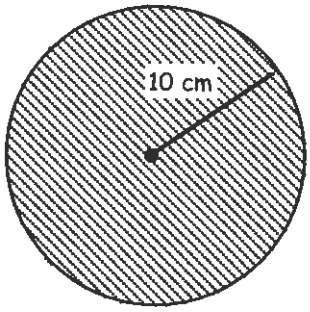
$A = 3{\cdot}14 \times 5 \times \ldots$

$A = \ldots\ldots$

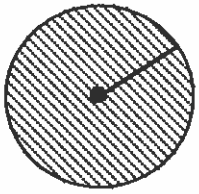


2. Calculate the area of each circle below :-
*(You **should** set down 3 lines of working)*

a



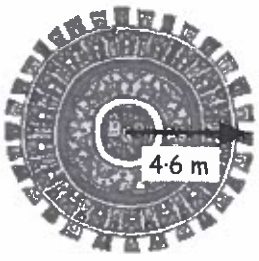
b



radius = 22·5 mm

3. Calculate the area of the circular carpet shown.

It has a radius of 4·6 metres.
(Round your answer to 1 dec. pl.)

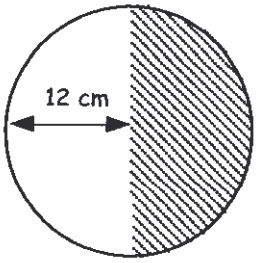


4. 

Work out the area of this coloured counter which has **diameter** 1·8 cm. *(Round your answer to 2 dec. pl.)*

5. This circular sign has been split into 2 semi-circles.

If the radius of the circle is 12 cm, find the area of the shaded part of the circle.

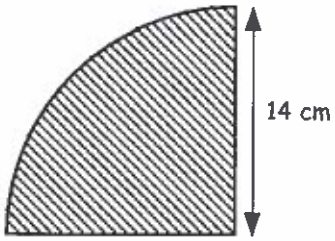


Exercise 2 Circle Problems

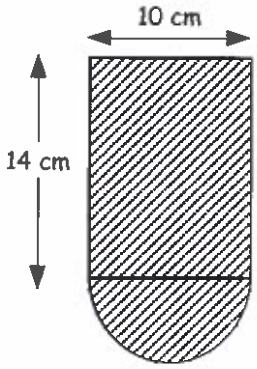
1. Calculate the area of each shape below :-

a

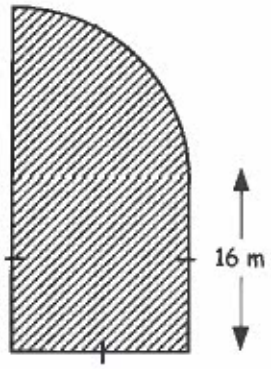
b



c



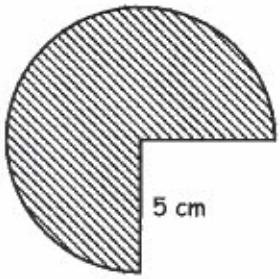
d



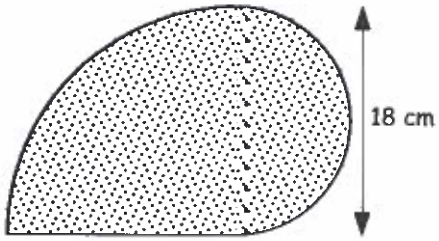
2. Calculate the perimeter of each shape in question 1.

3. Calculate the area of each shape below :-

a

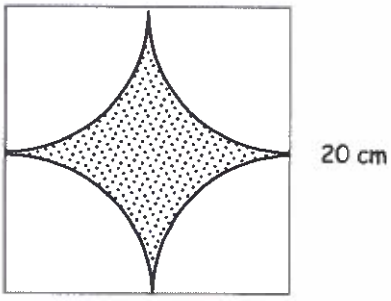


b

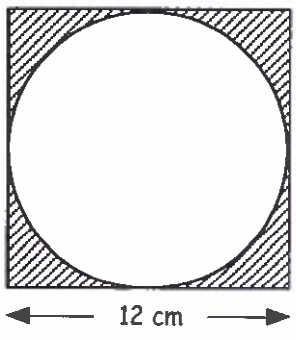


4. Calculate the shaded area of each square below :-

a



b



c (i) triangle
(ii) $A = {}^1/_2 b \times h$ (iii) $6x^2$
d (i) kite
(ii) $A = {}^1/_2 D \times d$ (iii) 48 cm²

2. a 54 cm b 63 cm c $12x$ d 26·2 cm
3. a 84 cm² b 53·5 cm²

Non Calculator Exercise 3

1. a 4750 b 601690
2. a four thousand seven hundred and fifty two
   b six hundred and one thousand, six hundred and eighty seven
3. a 2070 b 63602 c 18200
   d 475 e $38^2/_3$ f 325·17
4. a 142 kg b £9000 c 7700 g
   d \$710 e 1·8 m f 231 kJ
5. a ${}^2/_6, {}^3/_9$
   b ${}^2/_{20}, {}^3/_{30}$
   c ${}^6/_{14}, {}^9/_{21}$
6. a 48 cm b 144 cm²
7. one with each side 4 units
8. a 12·232

Answers to Chapter 9

Exercise 1 - Revision

1. a ${}^2/_4, {}^3/_6$ b ${}^2/_6, {}^3/_9$
   c ${}^2/_{16}, {}^3/_{24}$ d ${}^2/_{200}\ {}^3/_{300}$
   e ${}^4/_6, {}^6/_9$ f ${}^4/_{10}, {}^6/_{15}$
   g ${}^6/_{14}, {}^9/_{21}$ h ${}^{22}/_{24}, {}^{33}/_{36}$
2. a ${}^1/_2$ b ${}^2/_3$ c ${}^5/_7$ d ${}^2/_3$
   d ${}^1/_8$ f ${}^3/_4$ g ${}^1/_3$ h ${}^{61}/_{72}$
3. a ${}^{124}/_{240} = {}^{31}/_{60}$ b ${}^{150}/_{1650} = {}^1/_{11}$

Exercise 2 - Top-Heavy and Mixed Fractions

1. a $1^1/_2$ b $5^1/_2$ c $5^2/_3$ d $8^1/_6$
   e $11^1/_{10}$ f $8^1/_9$ g $40^4/_5$ h $13^5/_{12}$
2. $5^2/_3$ kg
3. a $4^1/_2$ b $5^1/_2$ c $14^1/_2$ d $8^1/_2$
   e $30^1/_2$ f $12^3/_5$ g $555^1/_2$ h $12^1/_4$
4. a 11 b 23 c 27
5. a ${}^{19}/_6$ b ${}^{19}/_3$ c ${}^5/_3$ d ${}^{69}/_5$
   e ${}^{35}/_4$ f ${}^{123}/_{11}$ g ${}^{122}/_7$ h ${}^{408}/_5$

Exercise 3 - Add/Subtract Basic Fractions

1. a ${}^3/_4$ b ${}^1/_2$ c ${}^4/_5$ d 1
   e ${}^2/_5$ f ${}^1/_2$ g $4^1/_2$ h $8^4/_5$
   i $10^1/_2$ j $4^3/_4$ k 10 l $4^1/_4$
2. a ${}^3/_4$ litre b ${}^1/_2$ litre
3. a $3^1/_2$ m b 32 m

Exercise 4 - Add/Subtract Harder Fractions

1. a ${}^3/_4$ b ${}^7/_{12}$ c ${}^{17}/_{20}$ d ${}^{11}/_{24}$
   e ${}^5/_{12}$ f ${}^5/_{24}$ g ${}^{18}/_{35}$ h ${}^{122}/_{45}$
   i ${}^{25}/_{156}$ j ${}^5/_{88}$ k ${}^3/_4$ l ${}^{11}/_{24}$
2. a $1^1/_2$ b $5^{13}/_{14}$ c $5^5/_{12}$ d $2^1/_{20}$
   e $3^5/_{24}$ f $3^3/_4$ g $1^{29}/_{40}$ h ${}^{13}/_{18}$

Review - Revisit - Revise Exercise 9

1. a ${}^2/_6, {}^3/_9$ b ${}^4/_{10}, {}^6/_{15}$
   c ${}^{18}/_{20}, {}^{27}/_{30}$ d ${}^{22}/_{34}, {}^{33}/_{51}$
2. a $5^1/_2$ b $4^2/_3$ c ${}^{58}/_7$ d ${}^{20}/_{11}$
3. a $3^2/_3$ b $2^6/_7$ c $11^2/_9$ d $7^1/_2$
4. a ${}^7/_{10}$ b $2^5/_6$ c $5^{11}/_{15}$ d $7^1/_2$
   e $2^3/_{14}$ f $2^7/_{30}$ g $2^7/_{12}$ h $3^{14}/_{15}$
   i $8^{13}/_{15}$ j $20^{19}/_{36}$ k $1^{23}/_{45}$ l $1^1/_9$
5. $1^7/_8$ km
6. a $29^1/_{10}$ cm b $2^{19}/_{20}$ cm
7. ${}^5/_8 + {}^1/_8 = {}^6/_8 = {}^3/_4$

Answers to Chapter 10

Exercise 1 - Basic Circle Work

1. See drawings
2. See drawings
3. a 6 cm b 14 cm c 104 cm d 17 km
4. a 6 cm b 28 cm c 50 cm d 3·25 km
5. 96 cm

Exercise 2 - The Circumference of a Circle

1. $C = \pi D$
2. a 31·4 cm b 53·38 cm c 15·7 m
   d 6·28 cm e 94·2 cm f 188·4 cm
3. 45530 km

Exercise 3 - Circle Problems

1. 62·8 cm
2. 25·7 m

2. a £350 b Ben by £10·28
   c (i) £568·35 (ii) £29554·20
3. a £457·25 b £304·50 c £222·22 d £612·80
4. a £5·62 b £146·12
5. a 150 b £10·20

Exercise 2 - Earning More Money

1. £1488
2. £35345
3. a £4·50 b £663 c £340 d £840
4. a £3130·20 b £481
   c £1271·25 d £3·78 million
5. £22790

Exercise 3 - Earning Commission

1. a £744 b £1000 c £2480 d £5600
2. a £6800 b £6300 c £10695
3. £880

Exercise 4 - Earning Extra Money - Overtime

1. a £140 b £308·70 c £340·20 d £610·20
2. £461·25
3. £806·93

Exercise 5 - Gross Pay - Net Pay & Deductions

1. a £11235 b £21735
2. a £7085·25 b £27654·75
   c Regular payment made into a fund by an employee toward a future pension.
3. £445·75
4. £43·60

Review - Revisit - Revise Exercise 13

1. a £2312·50
   b £12888
   c £438
2. £552·25
3. £17715
4. £7105
5. a £1236 b £15143
6. £752·20

Answers to Chapter 14

Exercise 1 - The Area of a Circle

1. 78·5 cm^2
2. a 314 cm^2 b 1590 mm^2
3. 66·4 m^2
4. 2·54 cm^2
5. 226 cm^2

Exercise 2 - Circle Problems

1. a 100·48 cm^2 b 153·86 cm^2
   c 179·25 cm^2 d 456·96 m^2
2. a 41·12 cm b 49·98 cm
   c 53·7 cm d 89·12 m
3. a 58·9 cm^2 b 381·5 cm^2
4. a 86 cm^2 b 30·96 cm^2

Review - Revisit - Revise Exercise 14

1. a 64 cm^2 b 48 cm^2 c 80 cm^2 d 120 cm^2
2. a 615 cm^2 b 73·28 cm^2
3. a 502·4 cm b 300 cm c 153·86 cm^2
4. a 3·375 m^2 b 11·8125 m^2
5. a 64000 cm^3 b 64000 ml or 64 litres

Answers to Chapter 15

Exercise 1 - Time, Distance and Speed

1. a 60 km b 90 mph c 2·5 hrs d 12 secs
2. a 4·5 mins b 45 m c 40 km/hr
3. a 2 hrs b 0·5 hr
4. a 250 metres per min b 300 metres per min
5. 50 minutes

Exercise 2 - Problem solving - $^1/_2$ & $^1/_4$ hrs

1. a 100 km b 600 mph c 3·5 hrs
   d 840 km e 225 m f 15 mins
2. a 9 km/hr b 135 km
3. No - will be 10 minutes late

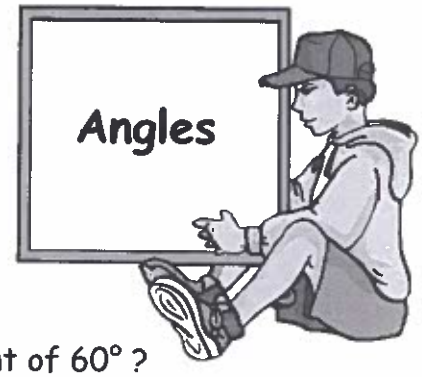
Exercise 3 - Convert Hrs & Mins to Dec. Times

1. a 0·75 hr b 0·4 hr c 0·6 hr d 0·45 hr
2. a 0·12 hr b 0·67 hr c 0·13 hr d 2·07 hr
3. a 2·55 hr b 1·8 hr c 5·1 hr d 3·05 hr
4. a 220 km b 40 mph c 8 hr 24 min
5. 16 minutes

Exercise 4 - Convert Dec. Times to Hrs & Mins

1. a 2 hr 48 min b 4 hr 24 min
   c 21 mins
2. a 4 hr 36 min b 8 hr 9 min
   c 3 hr 3 min d 1 hr 7·5 mins
3. a 3 hr 45 min b 2 hr 10 mins
   c 54 mins
4. a 72 km/hr b 900 km/hr
   c 37·8 km/hr d 0·03 km/hr

CHAPTER 6

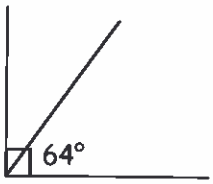


Review 5 Angles

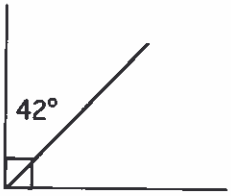
1. What is the :- **a** complement of 70° **b** supplement of 60° ?

2. Copy and complete each diagram below, filling in **all** missing angles :-

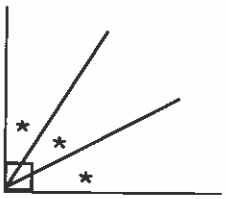
a



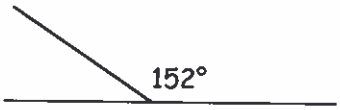
b



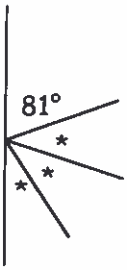
c



d

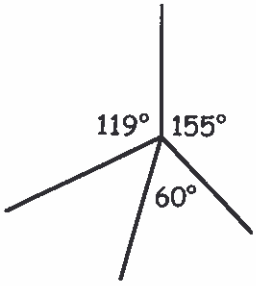


e

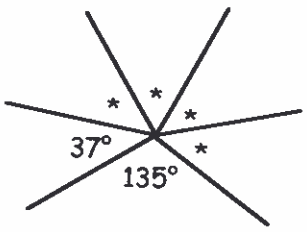


f

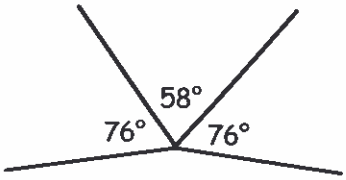
g



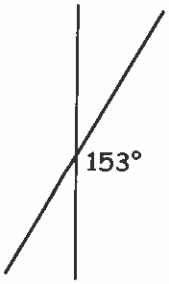
h



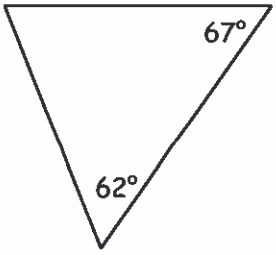
i



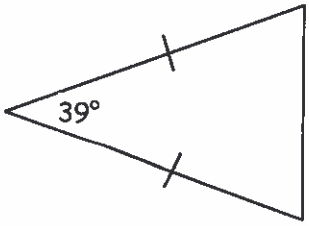
j



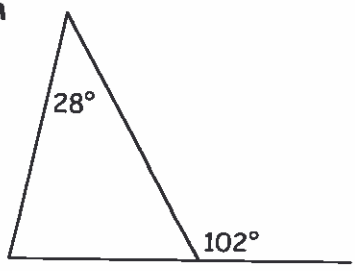
k



l



m



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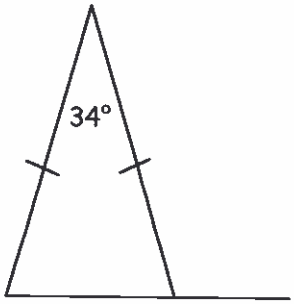
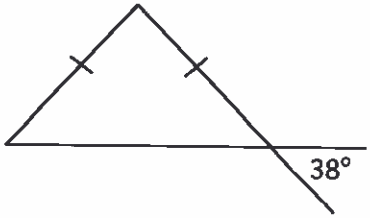


o

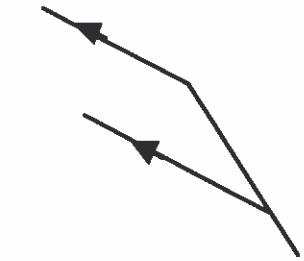


Exercise 1 Corresponding Angles

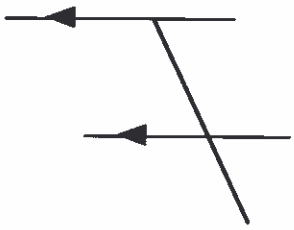
1. Copy and complete :- Corresponding (F) angles are e.....

2. Copy the diagrams and mark all the corresponding (F) angles with a * :-

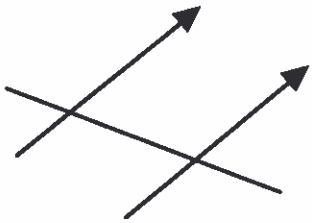
a



b

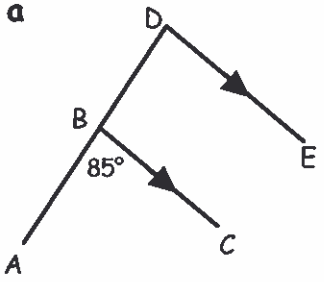


c

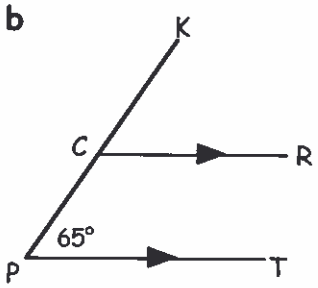


3. Write down the sizes of all the angles in the following diagrams :- ($\angle ABC = 85°$).

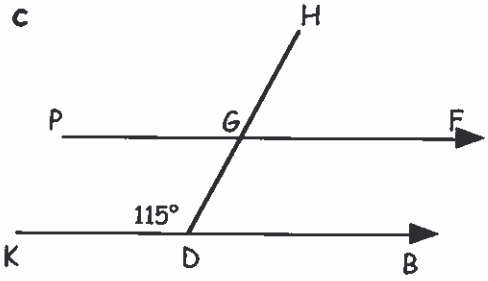
a



b

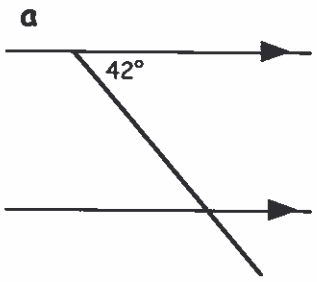


c

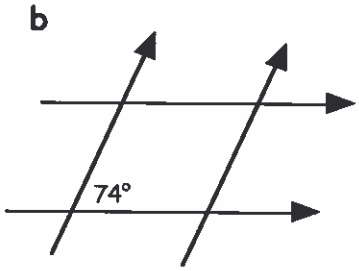


4. Sketch each of the following and fill in all the missing angles :-

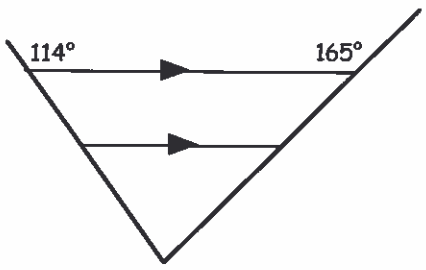
a



b



c

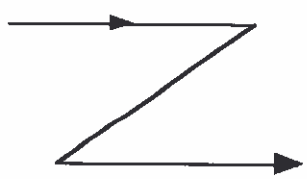


Exercise 2 Alternate Angles

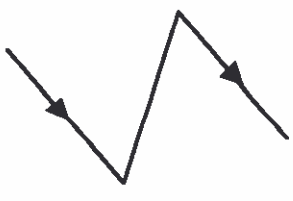
1. Copy and complete :- Alternate (Z) angles are e.....

2. Copy the diagrams and mark all the alternate (Z) angles with a * :-

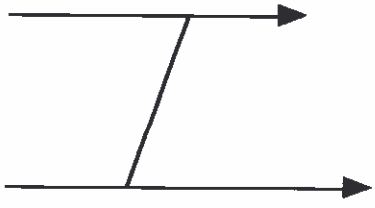
a



b

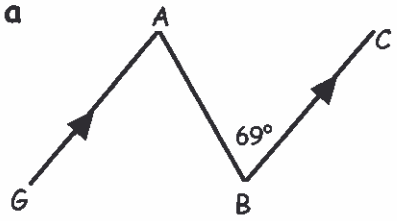


c

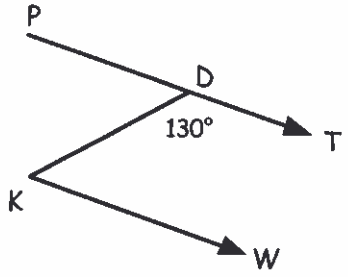


3. Write down all the sizes of the angles in the following diagrams :- (e.g. $\angle ABC = 69°$).

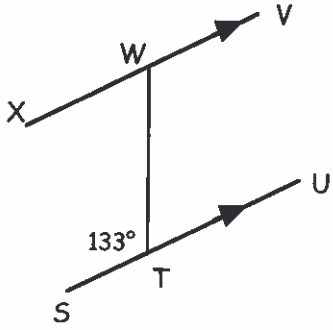
a



b

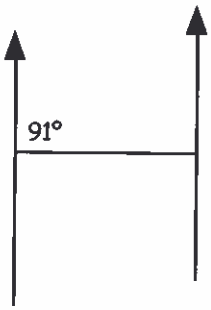


c

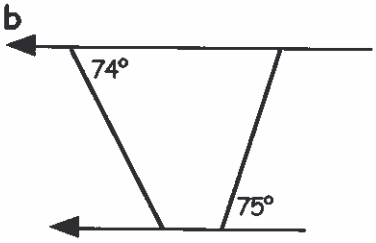


4. Sketch each of the following and fill in all the missing angles :-

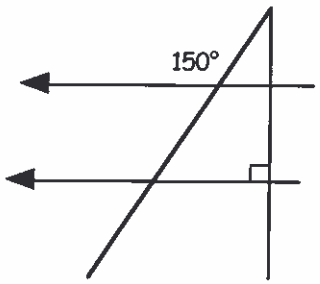
a



b



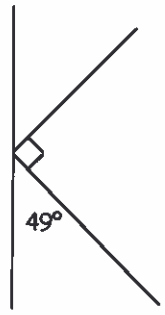
c



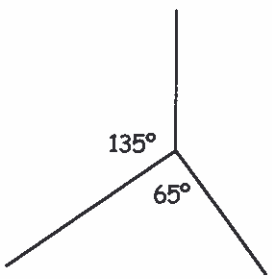
Exercise 3 Mixed Exercise

1. Make a neat rough sketch of each of the following diagrams.
   Fill in all the missing angles.

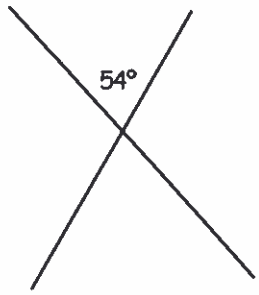
a



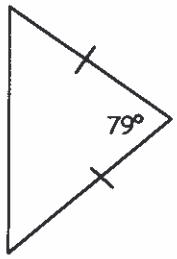
b



c

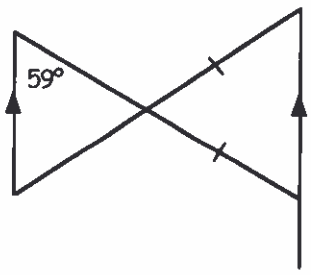


d

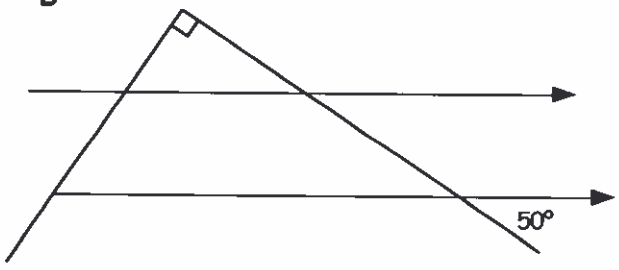


2. Sketch each of the following and fill in all the missing angles :-

a



b



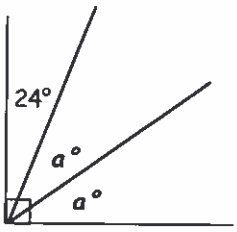
Revisit - Review - Revise 6

1. a What size of angle is **complimentary** to 34° ?

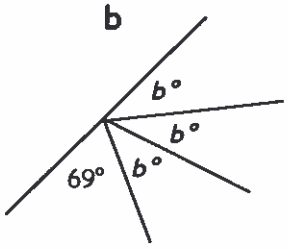
   b Write down the **supplement** of 85°.

2. Make a neat sketch of each diagram and find the value of each letter :-

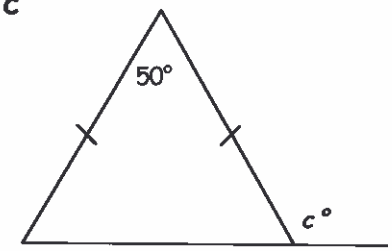
a



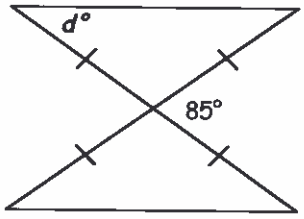
b



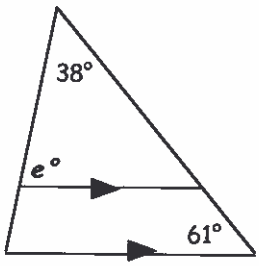
c



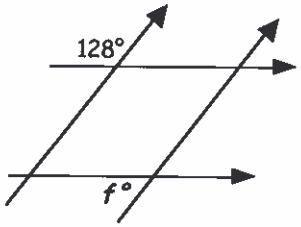
d



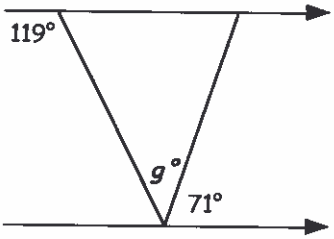
e



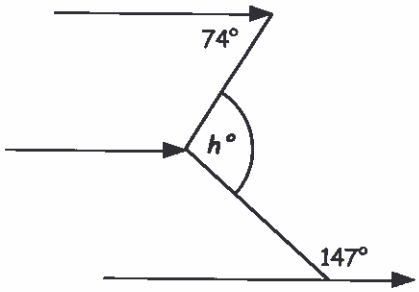
f



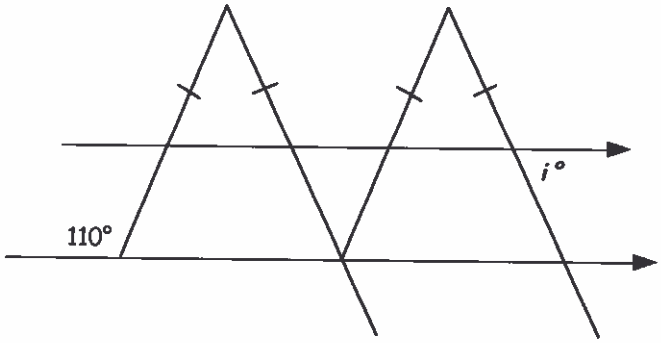
g



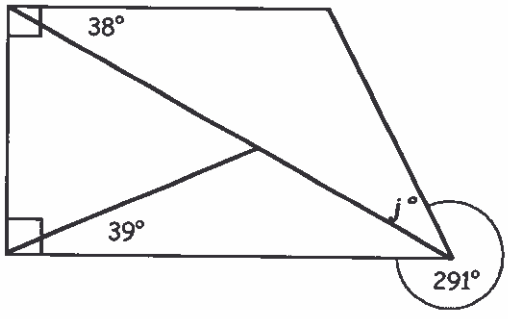
h



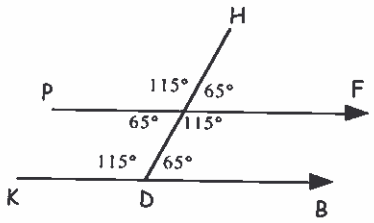
i



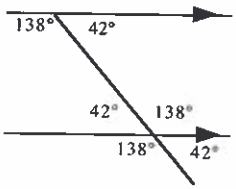
j



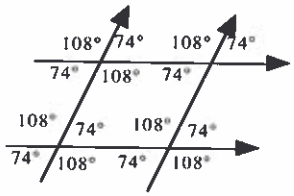
c



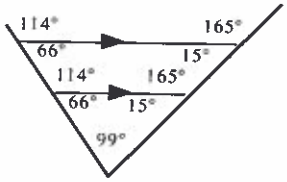
4. a



b

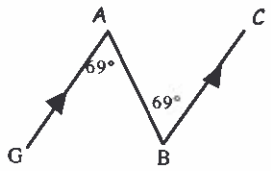


c

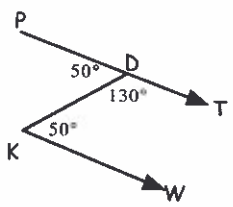


Ch 6 Ex 2 Alternate Angles

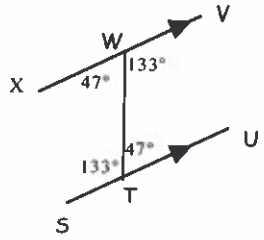
1. equal
2. check diagrams
3. a



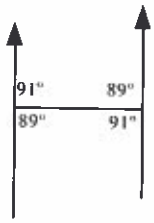
b



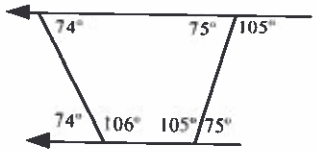
c



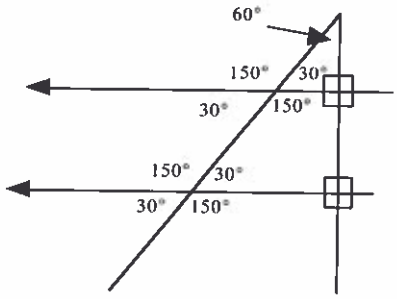
4. a



b

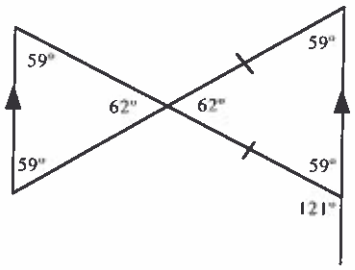


c

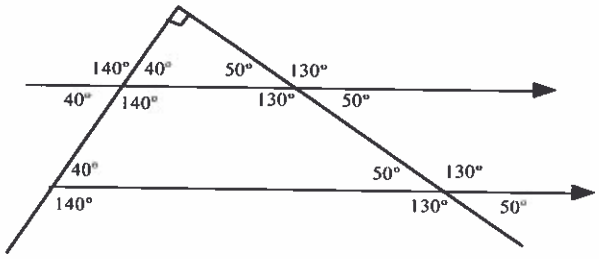


Ch 6 Ex 3 Mixed Exercise

1. a 41° b 160°
   c 54°, 126°, 126° d 50·5°, 50·5°
2. a



b



Ch 6 Revisit – Review – Revise 6

1. a 56° b 95°
2. a 33° b 37° c 115°
   d 42·5° e 81° f 52°
   g 48° h 107° i 70°
   j 31°

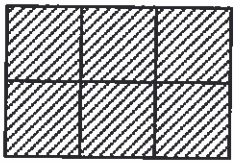
Ch 6 Cumulative Ex 2 (Chapters 1-6)

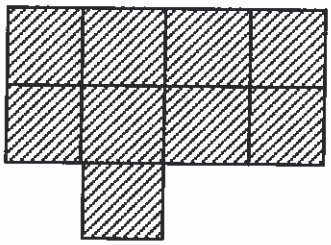
1. a 9 b 169 c 81
   d 11 e 2
2. small 90p per 50g, large 80p per 50g
   large tin is cheaper
3. a 60 b 1
4. 2, 3, 5, 7, 11, 13, 17, 19, 23, 29
5. 2 x 2 x 2 x 5 x 7
6. a $y = 4x - 1$ b $y = x - 5$
7. a 5 b 7 c 3
   d 1 e 2 f -5
8. a $x < 5$ b $x < 4$ c $x \geq 4$
9. a $x = 107°$ b $y = 122°$
10. 1 didlii - 25000 splinkiis

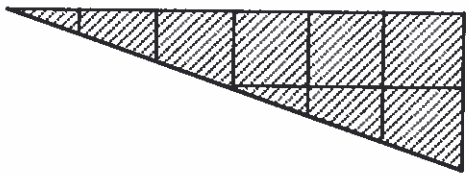
Exercise 1 Enlarging & Reducing Shapes

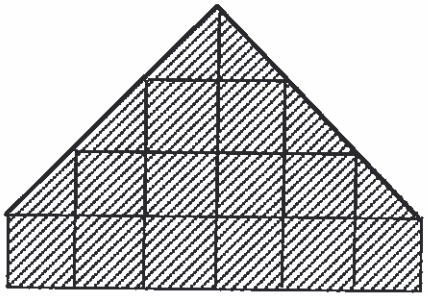
1. Make a **two-times enlargement** of these shapes.

   Each box represents a square 1 cm by 1 cm.

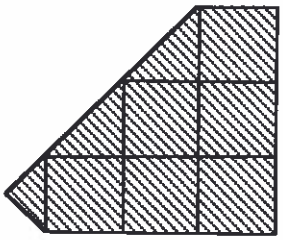
a 

b 

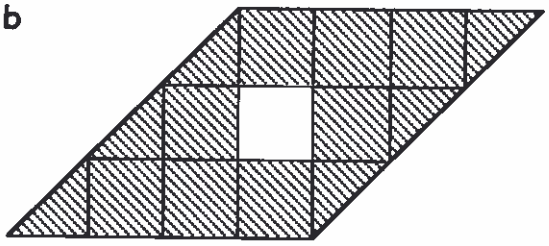
c 

d 

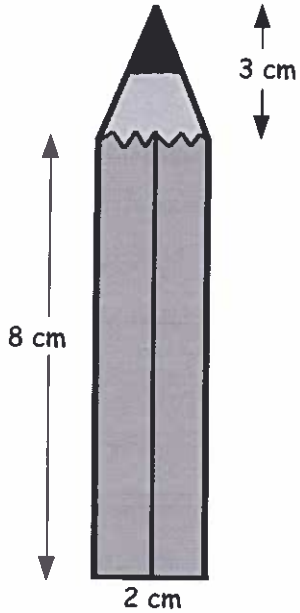
2. Make enlargements or reductions of the following using the given scale :-

a 

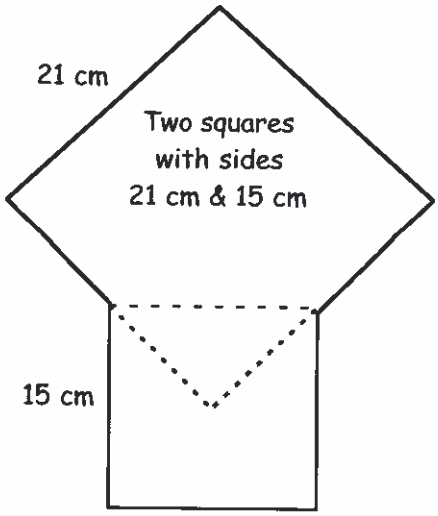
make a **three times** enlargement

b 

make a **two times** enlargement

c 

reduce this shape to **half** of its size

d 

reduce this shape to **one third** its size

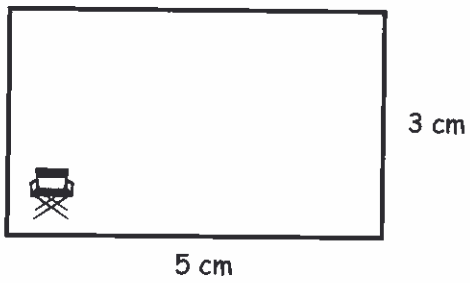
Exercise 2 — Using a Scale Drawing to find a length

1. This scale drawing of a large room is made using a scale of :-

   1 cm = 4 m.

   a Calculate the **real** length of the room.

   b Now calculate its **real** breadth.

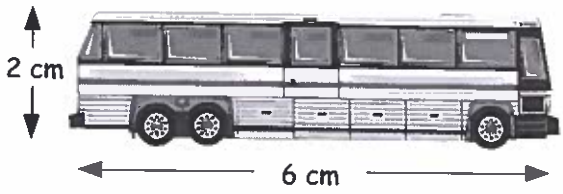


2. This bus has been drawn using the scale :-

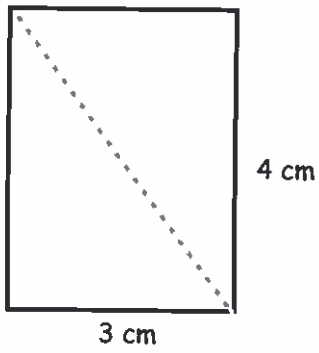
   1 cm = 1·5 m.

   a Calculate the **real** length of the bus.

   b Calculate its **real** height.



3.



This picture frame is drawn to a scale of :-

1 cm represents 9 cm.

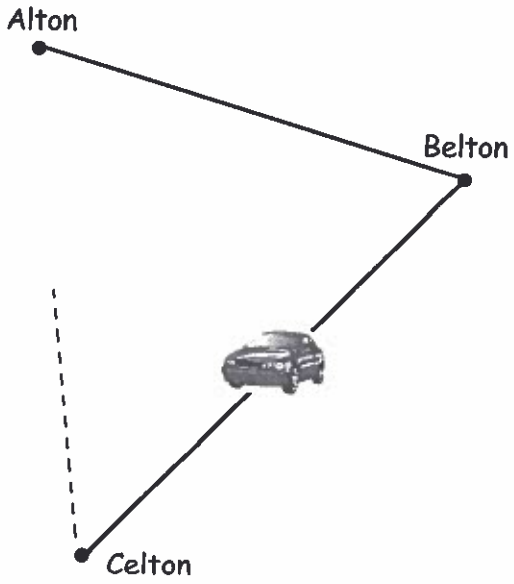
a Calculate the **real** height of the frame.

b Calculate the **real** width of the frame.

c The real length of a diagonal is 45 cm.

What is the length of the diagonal in the picture.

4. The map below shows three towns on a road map. Scale :- **1 cm represents 6 km.**



a Use your ruler to measure the distance from Alton to Belton.

b Use the scale of the map to work out the **real** distance between the 2 towns.

c Measure the distance between Belton and Celton and then use the given scale to calculate the **real** distance between them.

d A road going directly from Alton to Celton is to be constructed.

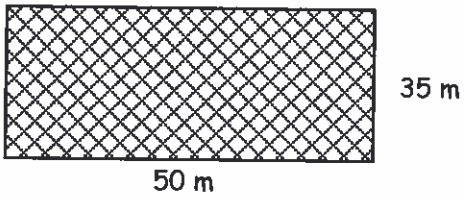
Find the length of the new road in km.

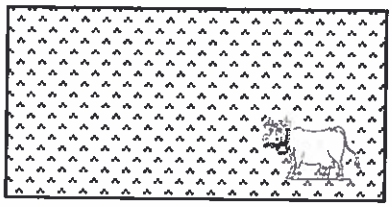
Exercise 3 Basic Scale Drawing

1. Here is a sketch of an assembly hall.

   Make an accurate scale drawing of the hall using the simple scale of :-

   1 cm = 10 metres.



2. 

   This is a sketch of a farmer's rectangular field.

   Below are the instructions as to how to make an accurate scale drawing of the field using a scale of :-

   1 : 2000. *(i.e. 1 cm = 2000 cm = ... m).*

   a Copy and complete the scale used.

   b If 20 metres is represented by 1 centimetre in the scale drawing
   => 80 metres (length) will be represented by (80 ÷ **20**) = 4 centimetres.

   Start your scale drawing by drawing a vertical line 4 centimetres long.

   c Complete the scale drawing.

3. A village square has side length 60 metres.

   a Which of the following would be a suitable scale :-

   (i) 1 cm : 1 m **(ii)** 1 cm : 10 m **(iii)** 1 cm : 50 m.

   b Use your chosen scale to make a scale drawing of the village square.

4. Stalls are set up in a rectangular market area measuring 35 metres by 55 metres.

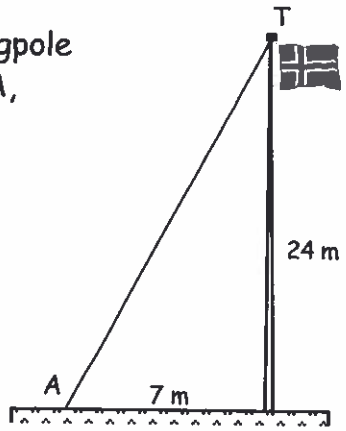
   Make a scale drawing of the market area using a scale :- ***1 cm represents 5 m.***

5. a Make a scale drawing to show this 24 m tall flagpole with a support wire as it is viewed from point A, 7 metres from the base of the tower.

   The scale is ***1 cm = 2 m.***

   b Measure the length of the support wire on your scale drawing.

   c What is the **real** length of the wire ?



Exercise 4 — Making a Scale Drawing using a Protractor

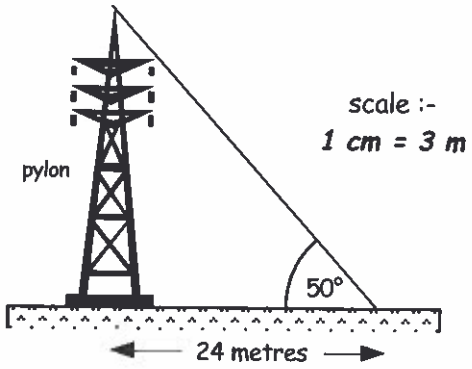
1. Eddie is standing 24 metres from a pylon.

   The angle between Eddie's feet and the top of the tower is 50°.

   a Make a scale drawing of the sketch.

   Scale :- ***1 cm = 3 metres***

   b Calculate the height of the **real** pylon.

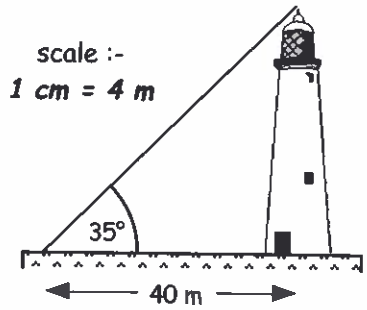


2. For each of the following :-

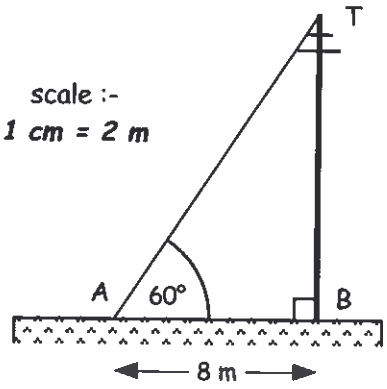
   (i) Make a scale drawing using the given scale.

   (ii) Calculate the **real** height of the given object.

a



b



Exercise 5 — Scale Drawing involving Bearings

1. In what direction do you end up heading each time here :-

   a Walk North, then make a 45° turn anti-clockwise.

   b Drive South West, then make a 90° turn clockwise.

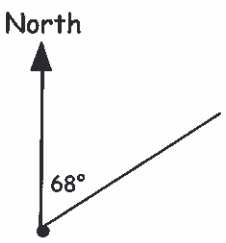
   c Fly East, then make a 315° turn anti-clockwise.

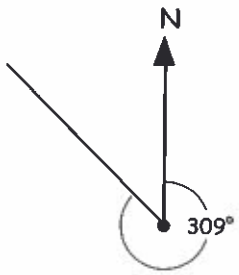
   d Sail North East, then make a 270° turn anti-clockwise.

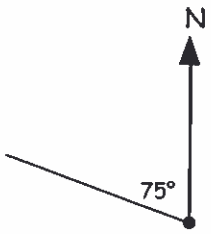
2. Write each of the following compass directions as a **3 figure bearing** :-

a	West	b	North West	c	South	d	South West
e	East	f	North	g	North East	h	South East.

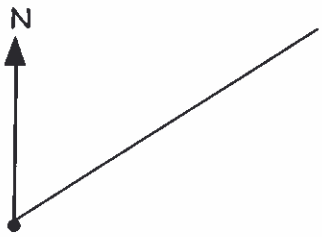
3. For each of these directions, write down its **3 figure bearing** :-

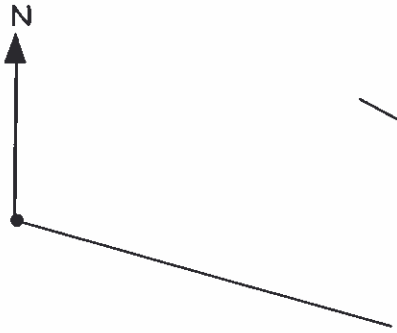
a 

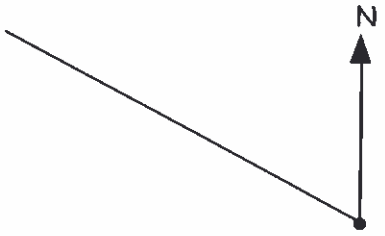
b 

c 

4. Using a protractor, measure and write the **3 figure bearing** for these directions :-

a 

b 

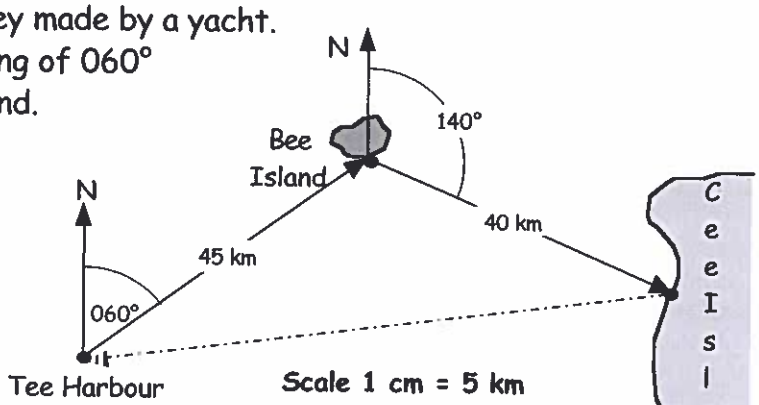
c 

5. Similar to Qu 4, use a protractor to show a **3 figure bearing** of :-

a 045° **b** 110° **c** 255° **d** 335°.

6. This sketch highlights a journey made by a yacht.
It sailed for 45 km on a bearing of 060° from Tee Harbour to Bee Island.

From there, it sailed on a bearing of 140° for 40 km to Cee Isle.



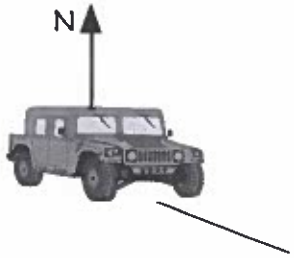
a Make a scale drawing showing the route taken by the yacht.

b Measure the distance from Tee Harbour to Cee Isle on your scale drawing.

c Calculate the distance the yacht had to travel to return to Tee Harbour from Cee Isle.

7. An army platoon begins a manoeuvre by leaving HQ and heading off on a bearing of 115° .

On what bearing must the platoon then set off in order to return directly to HQ ?



Revisit - Review - Revise 9

1. Write the **3 figure bearing** representing :-

   a South West b South East c North East.

2. 

   A toy school bus has been made to a scale :- **1 cm to 1·5 m.**

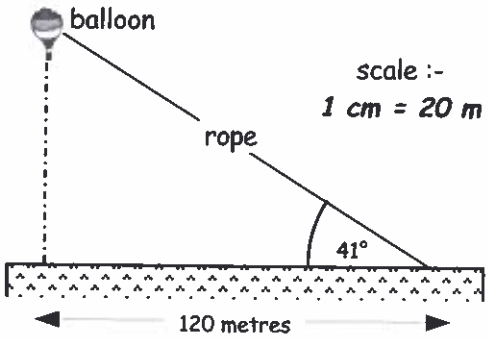
   If the length of the toy bus is 6 cm, what is the length of the **real** school bus ?

3. On a scale drawing, two train stations are 4 cm apart.
   The scale of the drawing is :- **1 : 100000.**

   Calculate the **real** distance between the train stations, in kilometres.

4. a Make a **scale drawing** of this balloon.

   b Determine the **real** height of the balloon.



5. A helicopter leaves a pad on a 060° bearing.

   On what bearing would the helicopter pilot then have to fly on in order to return to the pad ?*(a sketch should help)*

6. Two planes leaves Aral Airport.

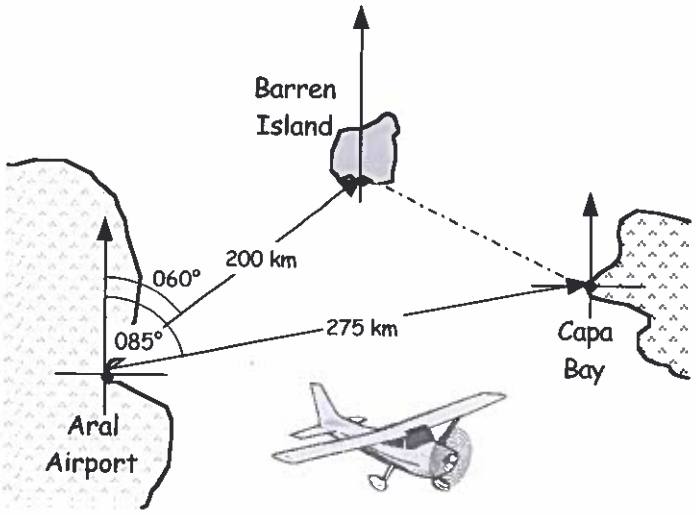
   One flies for 200 kilometres on a bearing of 060° to Barran Island.

   The 2nd flies from to Capa Bay, 275 km away on a bearing of 085°.

   a Make a **scale drawing** showing the two stages of the trip.

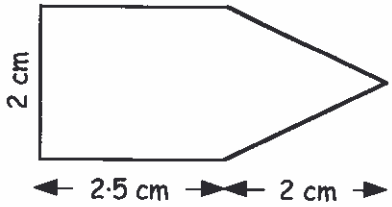
   scale ***1 cm = 25 km.***

   b Measure the distance from Barren Island to Capa Bay in centimetres.

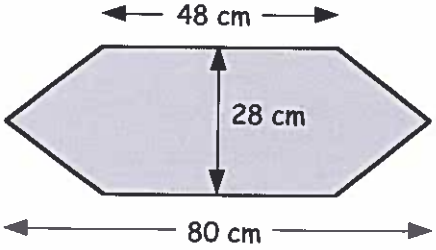


   c Calculate the **real** distance from Barren Island to Capa Bay, in kilometres.

7. Draw a neat **2 times** enlargement of this shape.



8.

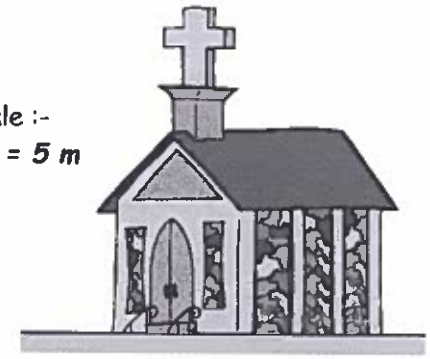


Make an accurate drawing of this shape but with its dimensions **one quarter** of those shown.

9. A church is to be drawn using a scale of **1 cm represents 5 metres**.

If the height in the scale drawing is 4·5 cm, find the height of the **real** church.

scale :-
1 cm = 5 m



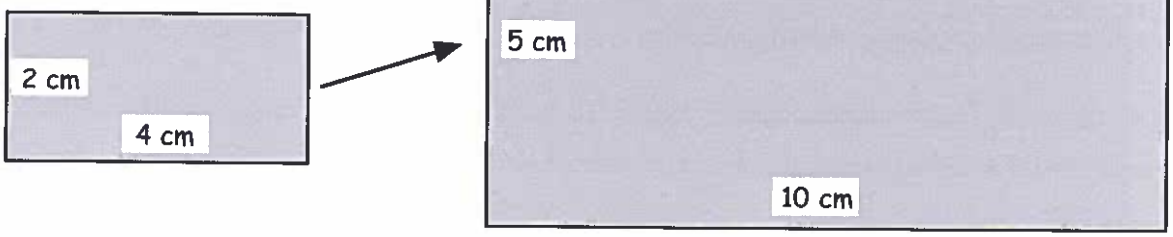
10.

A model of a house is to be built $\frac{1}{40}$ of its real size.

The actual house is 12 metres tall.

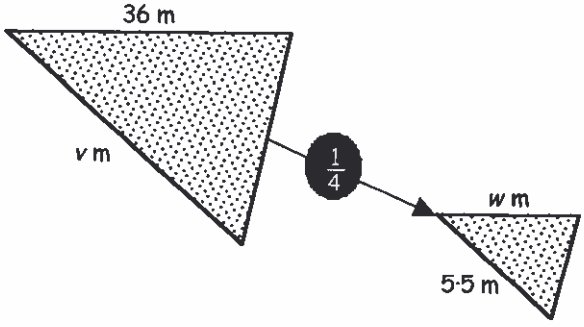
What will the height of the model be, in centimetres ?

11. What is the **enlargement scale factor** in this diagram ?

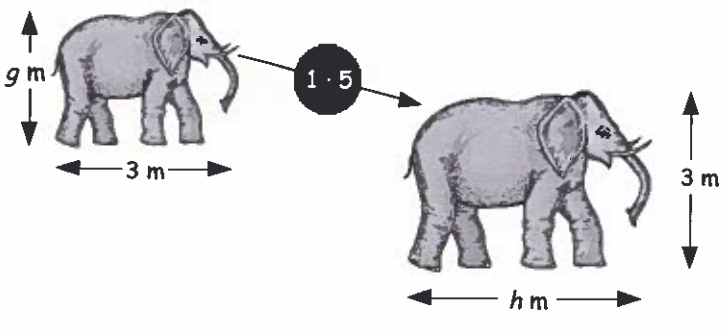


12. The scale factors of each diagram below are shown. Find the values of v, *w*, *g* and *h*.

a



b



5. a $1/20$ b $8\,4/5$
c 3 d $4\,1/2$
6. $19\,2/21$
7. $2\,2/3$ cm
8. $1/5$

Ch 8 Revisit - Review - Revise 8

1. a $5\,1/3$ b $7\,7/9$
c $14\,2/7$ d $3\,1/2$
2. a $13/6$ b $14/3$
c $63/4$ d $98/9$
3. 23
4. a $1/12$ b $1/2$ c $16/27$
d $7/20$ e $5\,1/2$ f 8
g $4\,2/3$ h $13\,1/3$
5. a 6 b $1\,1/3$ c $8/9$
d $1/2$ e $1\,1/2$ f $3\,3/4$
g $1\,1/8$ h 10
6. a $7\,7/8$ b 33 c $36\,2/3$ kg
7. $2\,10/27$ cm^3
8. $3\,3/4$ cm^2

Chapter 9 : Coordinates

Review 8 Coordinates

1. a P(1, 4), Q(2, 3), R(4, 1), S(3, 0), T(1, 0), U(1, 1), V(0, 2)
b U c R
2. Check diagram
3. a G(2, 4), H(0, 2), I(1, -1), J(6, -2), K(0, -2), L(-1, -3), M(-3, -3), N(-4, -1), O(0, 0), P(-1, 0), Q(-3, 4)
b G & Q, N & I, K & J, L & M
c M d R(6, 2) e S(4, 1)
4. ab Check diagram
c (i) P'(0, 3), Q'(-3, 4), R'(-4, -1)
(ii) P''(0, -3), Q''(3, -4), R''(4, 1)
5. (i) G'(3, -4), H'(4, 2), I'(-1, 0), J'(-3, -5),
(ii) G''(-3, 4), H''(-4, -2), I''(1, 0), J''(3, 5)

Ch 9 Ex 1 Enlarging & Reducing Shapes

1.2. Check diagrams

Ch 9 Ex 2 Using a Scale Drawing to find a Length

1. a 20 m b 12 m
2. a 9 m b 3 m
3. a 36 cm b 27 cm c 5 cm
4. a 6 cm b 36 km
c 42 km d 45 km

Ch 9 Ex 3 Basic Scale Drawing

1. rectangle 5 cm by 3·5 cm
2. rectangle 7·5 cm by 4 cm
3. a 1 cm : 10 m b square with side 6 cm
4. rectangle 7 cm by 11 cm
5. a triangle base 3·5 cm, height 12 cm
b 12·5 cm c 25 m

Ch 9 Ex 4 Scale Drawing using a Protractor

1. a check diagram b 28·5 m
2. check diagrams
a 28 m b 14 m

Ch 9 Ex 5 Scale Drawing involving Bearings

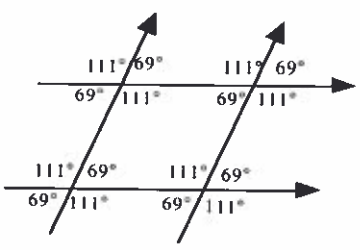
1. a NW b NW
c SE d SE
2. a 270° b 315° c 180°
d 225° e 090° f 000°
g 045° h 135°
3. a 068° b 309° c 285°
4. a 057° b 105° c 298°
5. check diagrams
6. a check b 13 cm c 65 km
7. 295°

Ch 9 Revisit - Review - Revise 9

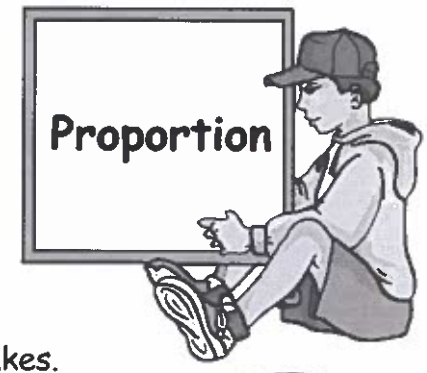
1. a 225° b 135° c 045°
2. 9 m
3. 4 km
4. a check drawing b 104 m
5. 240°
6. a check drawing b 5·0 cm
c 125 km
7. Check diagram
8. Check diagram
9. 22·5 m
10. 30 cm
11. 2·5
12. a $w = 9$, $v = 22$ b $h = 4{\cdot}5$, $g = 2$

Ch 9 Cumulative Ex 3 (Chapters 1-9)

1. a 125 b 3
2. a 60 b 1
3. 83, 89, 97
4. a $3 \times 3 \times 5$ b $2 \times 2 \times 5 \times 7$
5. $y = x - 7$
6. a -6 b 2 c 4
d $x < 11$ e $x < -1$ f $x < 2$
7.



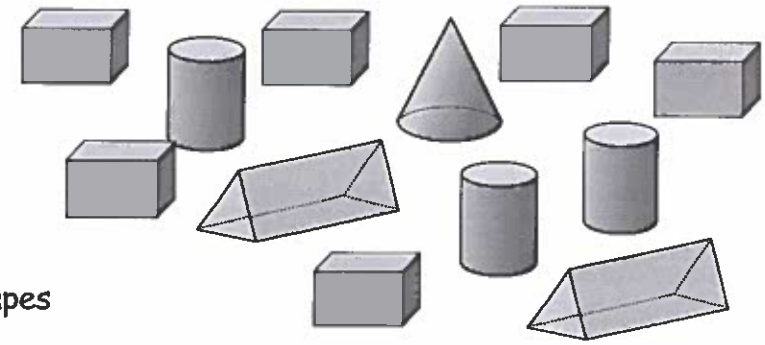
CHAPTER 10



Review 9 Ratio

1. In a cake shop window there are 17 tarts, 9 pies and 11 cakes.
   Write down the ratio of : -
   a tarts : pies
   b cakes : total number of items.

2. Write down each ratio in its **simplest form** : -
   a cylinders : cuboids
   b cuboids : triangular prisms
   c cones : cuboids
   d cuboids : total number of shapes



3. Write each of these ratios in its **simplest form** :-
   a 1 centimetre : 1 metre
   b 1 minute : 1 hour
   c 20 minutes : 4 hours
   d 20p : £5
   e 5 days : days in June
   f 150 cm : 3 metres.

4. In a week Rhea earns £350, Maggie earns £400 and Vi earns £550.
   Write down each of the following ratios of wages in their **simplest form** : -
   a Rhea : Vi
   b Maggie : total wages
   c Vi : Maggie : Rhea.

5. In a zoo, the ratio of cats to penguins is 3 : 7.
   a If there are 27 cats, how many penguins must there be ?
   b If there are 42 penguins, how many cats are there ?

6. Mark is making a model plane to a scale of 1 : 40.
   a His model is 20 cm in height. What is the height of the **real** plane, in metres ?
   b The real plane is 20 metres long. What length, in cm, should his **model** be ?

7. Share 35 sweets between Sara and Sue in the ratio of 3 : 2 so that Sara gets the larger share.

Exercise 1 Proportional Division

1. Share £18 000 between Joanne and Paul in the ratio 2 : 7.
   (*Show all your working and remember to check your total comes to £18 000*).

2. Show all your working for each of the following :-
   a Share £44 000 between Rita and Rose in the ratio 3 : 8.
   b Share £3200 between Avril and Tam in the ratio 11 : 5.
   c Share two million pounds between Adam and Eve in the ratio 3 : 2.

3. Each month Jo and Joy spend £20 on Lottery tickets.
   Jo pays £4 and Joy pays £16.
   a Write the payment as a ratio in its simplest form.
   b Last week their ticket won £24 000.
   How much money should each receive ?

4. a Share £90 amongst Gran, Grandad and me in the ratio 1 : 2 : 3.
   b Share $6000 amongst Jake, Jack and Joe in the ratio 3 : 7 : 10.

Exercise 2 Proportion

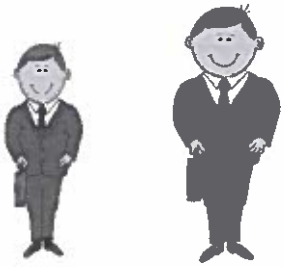
1. The cost of 5 lemons is £1·50. Find the cost of one lemon.

2. Find the cost per item : -
   a 5 pencils costing 85p
   b 9 T-shirts costing £72
   c 7 CD's costing £84
   d 11 candles costing £22·55
   e 12 tiles costing £48·60
   f 10 mice costing £145.

3. 
   A worm wriggles 240 metres in 4 hours.
   Calculate its travel rate in metres per hour.

4. Razz exchanges £30 for $36. What is the rate of $ per £.

5. John bought 3 identical suits for a total of £96.
   Tim bought two of these suits for £66.
   Who got the better deal ? *Explain.*



Exercise 3 Direct Proportion

1. The cost of 4 books is £48·80. Find the cost of 3 books.

2. It takes a food mixer 2 minutes to puree 0·7 kg of fruit.
   What weight of fruit could the mixer do in 5 minutes ?

3. a 30 litres of car oil costs £135. Find the cost of 250 litres.
   b It takes 3 hours to iron 90 shirts. How long would it take to iron 20 shirts ?
   c 400 ml of OJ concentrate costs £1·88. What would be the cost of one litre ?
   d 25 metres of cord costs £37·50. How much would it cost for 24 metres ?

4. The time it takes to fill a water tank is directly proportional to its volume.
   a A tank 3 m by 2 m by 1 m takes 3 hours to fill .
   How long would it take to fill a tank 4 m by 3 m by 2 m ?
   b A swimming pool (50 m by 20 m by 4 m) takes 8 hours to fill.
   How long would it take to fill a pool 40 m by 15 m by 3 m ?

Exercise 4 Linear Graph of Direct Proportion

1. a Copy and complete this table.
   b Use an appropriate scale to plot the points (1, 3), (2, ...), etc.
   c (i) Join the points with a straight line.
   (ii) Does the line pass through the origin ?

x	1	2	3	4
y	3	6	9	...

2. a Copy and complete this table for a bus travelling at 40 km/hr.
   b Using an appropriate scale for your axes, plot the points and draw a line through them.
   c What distance should the bus travel in :-
   (i) 8 hours (ii) $6\frac{1}{2}$ hrs ?

x	1	2	3	4
y	40	80	...	...

3. Does this table indicate direct proportion ?
   Explain.

x	1	2	3	4
y	12	24	32	48

Revisit - Review - Revise 10

1. a One coffee costs £2·50. How much would it cost for 4 coffees ?

   b One set of tyres costs £245. How much would it be for 3 sets ?

2. a Five garden gnomes cost £25·50.
   What is the cost of one gnome ?

   b Nine packets of seeds costs £13·50.
   How much would it cost for each packet ?

3. a Two keys cost £7. How much would three keys cost ?

   b Eight chocolate bars cost £16·80. How much would five bars cost ?

   c How much would six chairs cost, if five chairs cost £85 ?

4. a Which is the better deal when buying cup cakes ?

4 cupcakes
£1·08

6 cupcakes
£1·68

   b Explain why.

5. a Share £6000 in a ratio of 4 : 1. b Share 140 marbles in a 4 : 3 ratio.

6. Three friends won one £100 000 in the lottery.
   Their winnings are to be split into the ratio 4 : 3 : 1.
   How much will each person receive ?

7. a Copy and complete this table showing the distance travelled by a truck travelling at 60 km/hr.

Time (hrs)	1	2	3	4	5	6
Distance (km)	60	120	....	....	....	....

   b Using an appropriate scale for your axes, plot the points and draw a line through them.

   c How far will the truck travel in 11 hours ?

8. a 8·6 l b 0·05 l
   c 0·003 l d 10000 l
9. a 6000 ml b 20 ml c 8070 ml
10. Check drawing
11. a $9\frac{1}{8}$ b $16\frac{1}{3}$
12. a $\frac{11}{5}$ b $\frac{39}{8}$
13. a $\frac{7}{12}$ b $\frac{8}{45}$ c $4\frac{1}{6}$
    d $\frac{1}{8}$ e $3\frac{3}{5}$ f $1\frac{5}{16}$
    g $3\frac{5}{8}$ h 6
14. 2 cm
15. a 090° b 315°
16. 20 m
17. a Check drawing
    b 17 m
18. 295°
19. a see drawing b 9·2 cm
    c 46 km e 9 hr 12 mins
20. Check drawing
21. Check Drawing

Chapter 10 : Proportion

Review 9 Ratio

1. a 17:9 b 11:37
2. a 1:2 b 3:1
   c 1:6 d 1:2
3. a 1:100 b 1:60 c 1:12
   d 1:25 e 1:6 f 1:2
4. a 7:11 b 4:13 c 11:8:7
5. a 63 b 18
6. a 8 m b 50 cm
7. Sara 21, Sue 14

Ch 10 Ex 1 Proportional Division

1. £4000 and £14000
2. a £12000 and £32000
   b £2200 and £1000
   c £1200000 and £800000
3. a 1:4 b £4800 and £19200
4. a £15, £30 and £45
   b $900, $2100 and $3000

Ch 10 Ex 2 Proportion

1. 30p
2. a 17p b £8 c £12
   d £2·05 e £4·05 f £14·50
3. 60 metres per hour
4. £1 = $1·20
5. John - each suit cost £32. Tim paid £33.

Ch 10 Ex 3 Direct Proportion

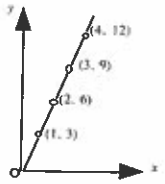
1. £36·60
2. 1·75 kg
3. a £1125 b 40 mins
   c £4·70 d £36
4. a 12 hrs b 3·6 hrs (3hrs 36 mins)

Ch 10 Ex 4 Linear Graph of Direct Proportion

1. a

x	1	2	3	4
y	3	6	9	12

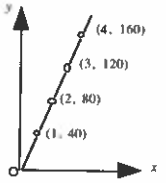
   b (1, 3), (2, 6), (3, 9), (4, 12)
   c (i) (ii) yes



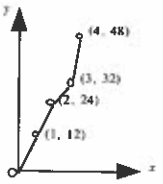
   a

x	1	2	3	4
y	40	80	120	160

   b (1, 40), (2, 80), (3, 120), (4, 160)



   c (i) 320 km (ii) 260 km
3. No, because the 4 points do not lie on a line

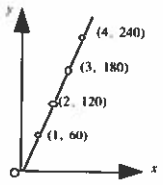


Ch 10 Revisit - Review - Revise 10

1. a £10·00 b £735
2. a £5·10 b £1·50
3. a £10·50 b £10·50 c £102
4. a four
   b four cost 27p each, 6 cost 28p each
5. a £4800 and £1200
   b 80 and 60
6. £50000, £37500 and £12500
7. a

x	1	2	3	4	5	6
y	60	120	180	240	300	360

   b



   c 660 km