S1 Final Assessment Revision Booklet B MP1/2

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Percentages

Exercise 1 Percentages - no calculator

1. Find each of the following **without** a calculator :-

   a 10% of £24 **b** 30% of £420 **c** 20% of $55 **d** $33\frac{1}{3}$% of 690 kg

   e 25% of £32 **f** 75% of 50 m **g** $66\frac{2}{3}$% of 39 km **h** 5% of $600

   i 3% of £7 **j** 22% of 7000 **k** 2·5% of 160 cm **l** 35% of €700

2. **a** A shop is giving a 20% discount on a £240 exercise bike.

   How much is the bike now ?

   b Julian cycles 30 km **per day** every day. He is going to reduce this by 15%.

   How many km will he cycle next **week** ?

3. A bank pays an annual rate of 5% interest on their High Fliers account. Gaz leaves £4800 in his account for a year.

   How much interest will he have after :-

   a one year **b** six months **c** three months ?

4. Five hundred students were asked their favourite take away.

   40% - Pizza 35% - Chinese 20% - Indian the rest - Chip shop

   How many students chose :- **a** Chinese **b** Chip shop ?

Exercise 2 Percentages with a calculator

1. Find using a calculator :- (Show all your working)

   a 23% of 136 km **b** 76% of 78 kg **c** 19% of 320 m

   d 38·5% of £700 **e** 0·6% of $1260 **f** 12·5% of €40

   g 9% of £340 **h** 111% of 750 km **i** 3·7% of £10.

Percentages

2. a A farmer has 3200 chickens. 32% have caught a virus.

   (i) What percentage of chickens do NOT have a virus ?

   (ii) How many chickens do NOT have a virus ?

   b Ninety percent of the chickens produce an egg every **day**.

   How many eggs are produced every **week** ?

   c 2·5% of the weekly produce has to be destroyed.

   How many eggs are destroyed ?

3. 

Last November, Norma weighed 64 kg.
After Xmas, her weight had increased by 9%.

What was her weight after Xmas ?

4. Twins Joe and Jack are sales directors who earn £28 000 each.

   - Joe is given a wage rise of 7·5%.
   - Jack has his wage reduced by 4%.

   How much **more** does Joe now earn than Jack ?

Exercise 3 Linking fractions, decimals & percentages

1. Change each of these fractions to percentages, correct to 1 decimal place :-

   a $\frac{2}{3}$ b $\frac{1}{7}$ c $\frac{71}{90}$ d $\frac{142}{80}$.

2. Heather scored the following in four tests :-

   Maths - $\frac{17}{20}$ *English* - $\frac{26}{32}$

   French - $\frac{33}{45}$ *Music* - $\frac{7}{10}$

   a Change each test mark into a percentage.

   b Which was her best score ?

3. Re-write the following in order, smallest first :-

   a 0·5, 47%, $\frac{24}{50}$, 0·49 b 45% of £72, $\frac{2}{3}$ of £48, 0·04 x £804.

Percentages

Revisit - Review - Revise Exercise 6a

1. Change each of the following into a fraction in its simplest form :-

a 50%	b 25%	c 75%	d 33·333....%
e 60%	f 70%	g 5%	h 77%.

2. Change each of the following to a percentage :-

a 0·43	b 0·09	c 0·3	d 0·225
e $\frac{2}{3}$	f $\frac{4}{5}$	g 1·25	h $1\frac{1}{2}$.

3. a David gets a 10% **increase** on his £1640 monthly wage.
   How much does he now earn ?
   b Angela has her £640 weekly wage **decreased** by 15%.
   How much is her weekly wage now ?

Revisit - Review - Revise Exercise 6b

1. Find using a calculator :- (Show all your working)

a 27% of 2300 km	b 57% of 18 kg	c 13% of 608 m
d 27·5% of £1100	e 0·3% of $4500	f 105% of €400
g 0·75 x £340	h 0·1 x 550 kg	i 0·005 x 8600
j $\frac{2}{3}$ of $810	k $\frac{4}{5}$ of 8855 m	l $\frac{12}{13}$ of 520 km.

2. Keith earns £18 400 per annum as a plumber.
   How much would he earn if his salary was :-
   a increased by 17% b decreased by 9·5% ?

3. 
   SpotsAlive buy football strips for £25.
   They intend to sell them at a profit of 28%.
   How much should they sell each strip for ?

4. A car costs £8600 cash.
   VirgoCars let you pay a 16% deposit and
   36 monthly payments of £224·35.
   How much cheaper is it to pay cash ?

Answers

Answers to Chapter 6

Exercise 1 - Percentages - No Calculator

1. a £2·40 b £126 c $11 c 230 kg
   d £8 e 37·5 m g 26 km h $30
   i 21p j 1540 k 4 cm l €245
2. a £192 b 178·5 km
3. a £240 b £120 c £60
4. a 175 b 25

Exercise 2 - Percentages with a Calculator

1. a 31·28 km b 59·28 kg c 60·8 m
   d £269·50 e $7·56 f €5
   g £30·60 h 832·5 km i 37p
2. a (i) 68% (ii) 2176 b 20160 c 504
3. 69·76 kg
4. £3220

Exercise 3 - Linking Fractions, Decimals % %ages

1. a 66·7% b 14·3% c 78·9% d 177·5%
2. a Maths - 85%, English - 81·25%,
   French - 73·3%, Music - 70%
   b Maths (obviously)
3. a 47% - $^{24}/_{50}$ - 0·49 - 0·5
   b $^{2}/_{3}$ of £48 - 0·04 x £804 - 45% of £72

Review - Revisit - Revise Exercise 6a

1. a $^{1}/_{2}$ b $^{1}/_{4}$ c $^{3}/_{4}$ d $^{1}/_{3}$
   e $^{3}/_{5}$ f $^{7}/_{10}$ g $^{1}/_{20}$ h $^{77}/_{100}$
2. a 43% b 9% c 30% d 22·5%
   e 66·66..% f 80% g 125% h 150%
3. a £1804 b £544

Review - Revisit - Revise Exercise 6b

1. a £621 b 10·26 kg c 79·04 m
   d £302·50 e $13·50 f €420
   g £255 h 55 kg i 43
   j $540 k 7084 m l 480 km
2. a £21528 b £16652
3. £32
4. £852·60

Further Algebra

Exercise 1 — Solving Equations

1. Copy each equation and solve to find the value of x :-

a $x + 6 = 11$	b $x + 1 = 23$	c $x + 7 = 6$
d $x + 14 = 14$	e $x - 7 = 8$	f $x - 3 = 2$
g $13 + x = 17$	h $9 + x = 7$	i $17 - x = -17$.

2. Copy each equation and solve to find the value of the letter :-

a $4x = 12$	b $5p = 35$	c $6k = 24$
d $3h = 33$	e $4g = 56$	f $7n = 0$
g $4m = 144$	h $6c = 9$	i $8d = 1$.

3. Find the value of x in the following equations (*Set down ALL your working*).

a $2x + 6 = 14$	b $5x + 4 = 29$	c $4x + 7 = 39$
d $3x + 1 = 31$	e $4x - 8 = 16$	f $7x - 11 = 3$
g $10x - 9 = 41$	h $3x - 6 = 0$	i $11x - 7 = 37$
j $6x - 3 = 12$	k $8x + 12 = 15$	l $9x + 1 = 43$.

Exercise 2 — Harder Equations

1. Copy and complete :-

*(You may have been shown a different method)

a

$8x + 1 = 6x + 17$

$\Rightarrow 2x + 1 = \ldots.$

$\Rightarrow 2x = \ldots.$

$\Rightarrow x = \ldots.$

b

$7x - 3 = x + 15$

$\Rightarrow 7x - \ldots = \ldots.$

$\Rightarrow 7x = \ldots.$

$\Rightarrow x = \ldots.$

2. Solve these equations :-

a $5x + 4 = 2x + 19$	b $3x + 7 = x + 11$	c $8x + 6 = 7x + 22$
d $4x - 5 = x + 16$	e $11x - 1 = 2x + 17$	f $6x - 4 = 4x + 23$.

3. These equations are a little "different". Solve :-

a $5x = 4x + 3$	b $3x = x + 44$	c $7x = 4x + 42$
d $12x = 8x + 1$	e $15x = 3x + 18$	f $6x - 2 = 8x$.

4. Joe bought 5 bags of marbles. Harry bought 3 bags, but he already had 20 loose marbles. They then had exactly the same number of marbles.

a Make up an equation to show this information.

b Solve the equation to determine how many marbles there are in a bag.

Further Algebra

Exercise 3 Solving Equations with Brackets

1. Solve these equations by multiplying out the brackets first :-

   a $3(x+4)=21$ b $5(x+2)=80$ c $4(x-3)=28$

   d $9(x+2)=63$ e $8(x+7)=72$ f $3(x+3)=0$.

2. Solve these equations :-

   a $2(4x+2)=20$ b $3(2x-1)=21$ c $4(4x-5)=28$

   d $6(2x-1)=10x$ e $10(3x-3)=11x+8$ f $7(x+9)=6x$.

3. Solve :-

   a $2(x+4)-x-6=7$ b $3(x+1)+3x-8=13$

   c $4(x+2)-3x=14$ d $8(x-2)+2x+6=10$

   e $3(3x+2)+4(x-1)=6x+9$ f $2(5x-4)+6(x+1)=3x+24$

   g $3(x+7)-4(x+3)=10$ h $2(x-3)-3(x-4)=7$

   i $3(3x+1)-2(x-5)=x+37$ j $13(x+3)-2(3x+11)=2x+7$.

Answers

Ch 5 Ex 1 Solving Equations

1.	a	5	b	22	c	-1
	d	0	e	15	f	5
	g	4	h	-2	i	34
2.	a	3	b	7	c	4
	d	11	e	14	f	0
	g	36	h	$^{3}/_{2}$	i	$^{1}/_{8}$
3.	a	4	b	5	c	8
	d	10	e	6	f	2
	g	5	h	2	i	4
	j	$^{16}/_{6}$ = 2·5	k	$^{3}/_{8}$		
	l	$^{42}/_{9}$ = $^{14}/_{3}$ = 4 $^{2}/_{3}$				

Ch 5 Ex 2 Harder Equations

1.	a	8	b	3		
2.	a	5	b	2	c	16
	d	7	e	2	f	$^{27}/_{2}$
3.	a	3	b	22	c	14
	d	$^{1}/_{4}$	e	$^{18}/_{12}$ = 1·5	f	-1
4.	a	5x = 3x + 20			b	10

Ch 5 Ex 3 Solving Equations with Brackets

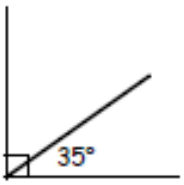
1.	a	3	b	14	c	10
	d	5	e	2	f	-3
2.	a	2	b	4	c	3
	d	3	e	2	f	-63
3.	a	5	b	3	c	6
	d	2	e	1	f	2
	g	-1	h	-1	i	4
	j	-2				

Angles

Exercise 1 Complementary & Supplementary Angles

1. Calculate the missing angles in each of the following :-

a



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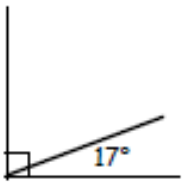

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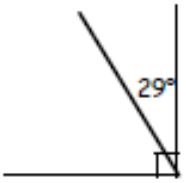

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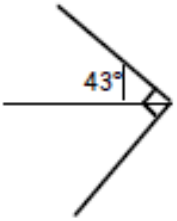

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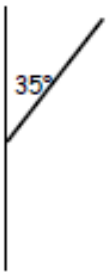

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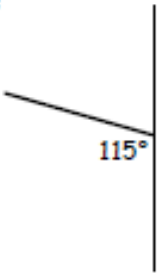

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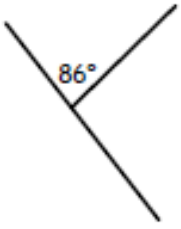

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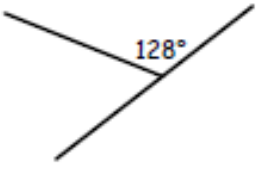

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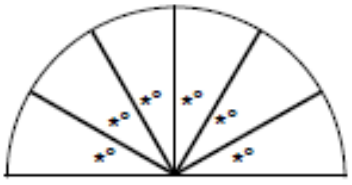


all equal angles

j

all angles equal

2. Write down the complement of :-

a 60° b 20° c 37° d 1°.

3. Write down the supplement of :-

a 30° b 110° c 77° d 9·5°.

4. What angle is its own :- a complement b supplement ?

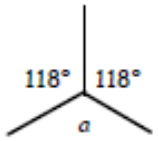
5. What is the **sum** of all the angles round a point ?

Angles

Exercise 2 Angles Round a Point

1. Calculate (do not measure) the sizes of the angles marked *a*, *b*, *c*, ...

a



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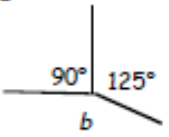

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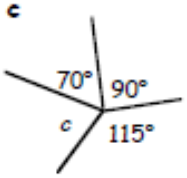

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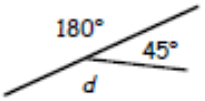

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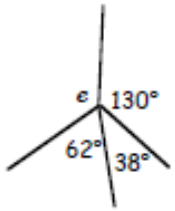

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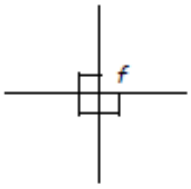

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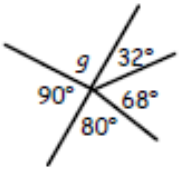

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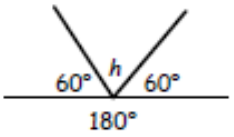

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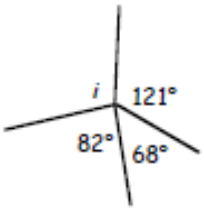

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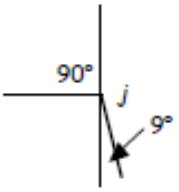

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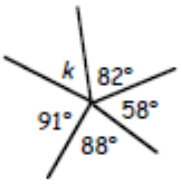

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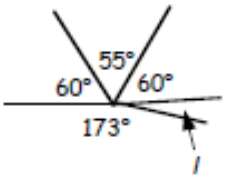
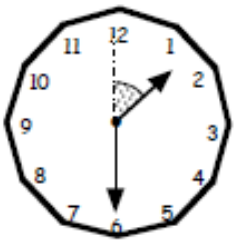


2. An arrow lands on a target as shown.
Calculate the size of the shaded angle.

3. 

This clock shows a time of 1.30.
Calculate the size of the shaded angle.

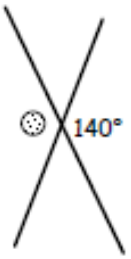
4. Five angles round a point are 39°, 122°, 77°, and two unknown **equal** angles.
Find one of the unknown angles.

Anales

Exercise 3 Vertically Opposite Angles

1. Write down the sizes of all the angles marked with a ⊛ .

a



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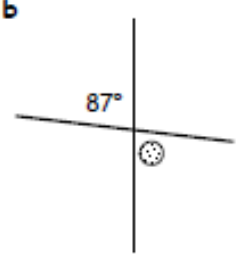

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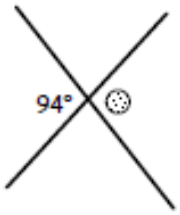

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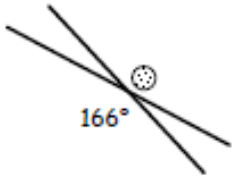

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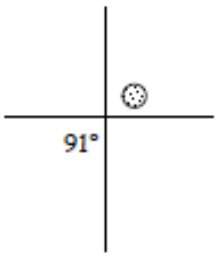

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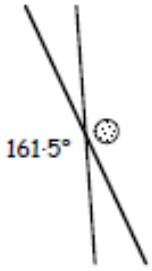

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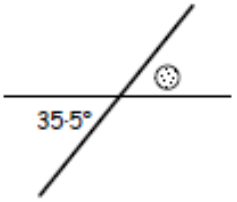
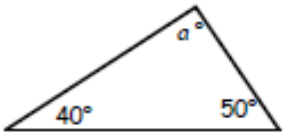


2. Sketch all the diagrams above and fill in **all** the missing angles.

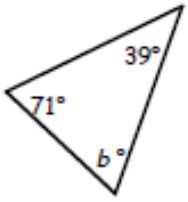
Exercise 4 Angles in a Triangle

1. Calculate the size of the angles marked *a*, *b*, *c*, ...

a



b



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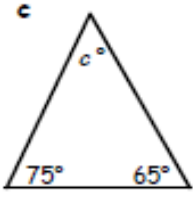

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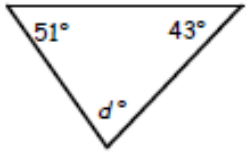
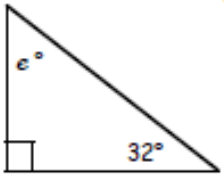
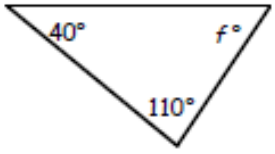


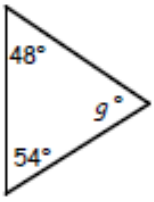
e



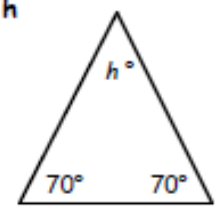
f



g



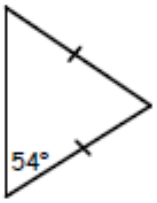
h



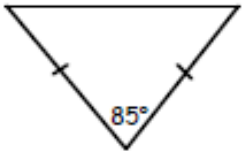
Angles

2. Copy each diagram below and fill in all the missing angles :-

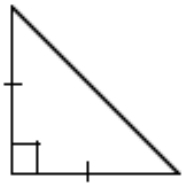
a



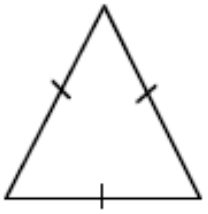
b



c

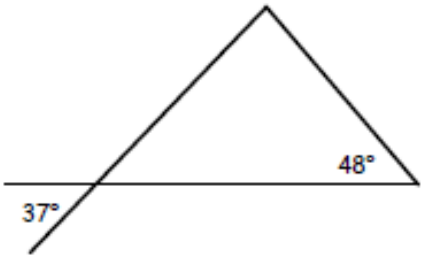


d

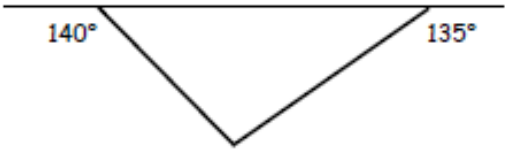


3. Copy each diagram below and fill in **all** the missing angles :-

a



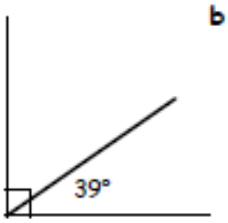
b



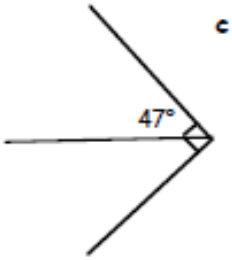
Exercise 5 Angles Mixed Exercise

1. Copy all the diagrams below filling in **all** missing angles :-

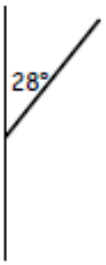
a



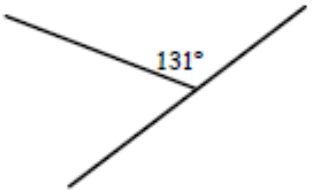
b



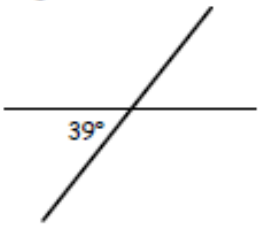
c



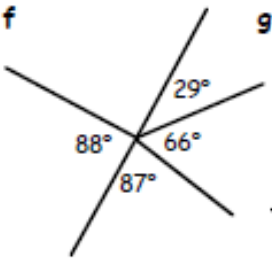
d



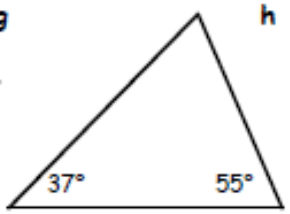
e



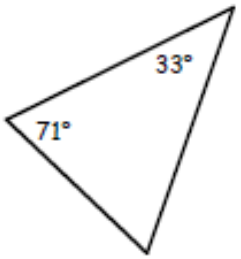
f



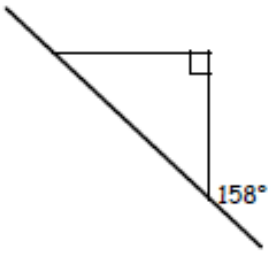
g



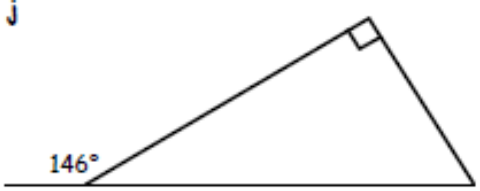
h



i



j



Answers

Answers to Chapter 3

Exercise 1 – Complementary & Supplementary Angles

1. a 55° b 73° c 61° d 47°
   e 145° f 65° g 94° h 52°
   i 30° j 22·5°
2. a 30° b 70° c 53° d 89°
3. a 150° b 70° c 103° d 170·5°
4. 45° b 90°
5. 360°

Exercise 2 – Angles Round a Point

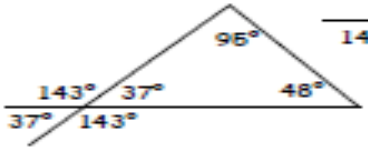
1. a 124° b 145° c 85° d 135°
   e 130° f 90° g 90° h 60°
   i 89° j 171° k 41° l 12°
2. 108°
3. 45°
4. 61°

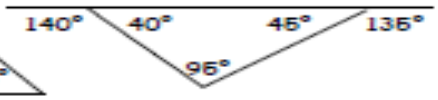
Exercise 3 – Vertically Opposite Angles

1. a 140° b 87° c 94° d 166°
   e 91° f 161·5° g 90° h 35·5°
2. See drawings

Exercise 4 – Angles in a Triangle

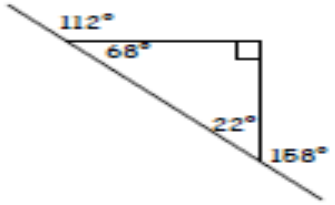
1. a 90° b 70° c 40° d 86°
   e 58° f 30° g 78° h 40°
2. a 54°, 72° b 47·5°, 47·5°
   c 45°, 45° d 60°, 60°, 60°
3. a b

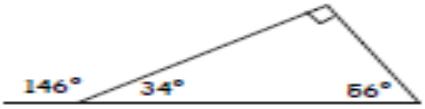




Exercise 5 – Mixed Exercise

1. a 51° b 43° c 152° d 49°
   e 39°,141° f 90° g 88° h 76°
   i j





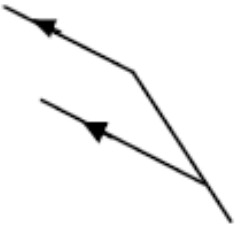
More Angles

Exercise 1 Corresponding Angles

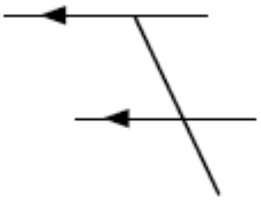
1. Copy and complete :- Corresponding (F) angles are e.....

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

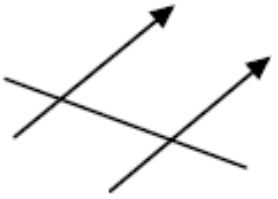
a



b

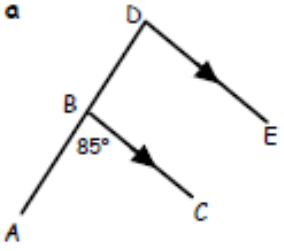


c

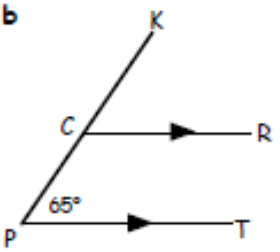


3. Write down the sizes of all the angles in the following diagrams :- ($\angle ABC = 85°$).

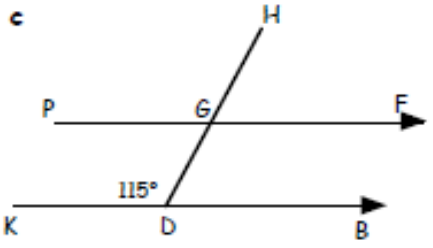
a



b

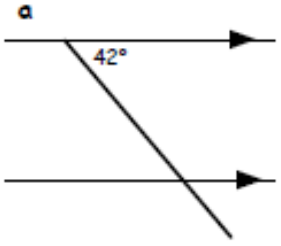


c

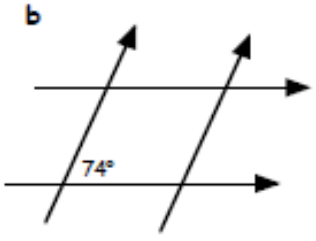


4. Sketch each of the following and fill in all the missing angles :-

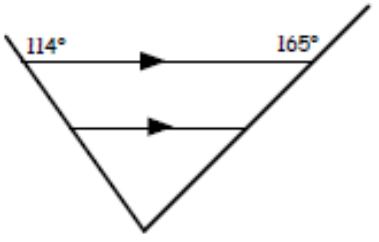
a



b



c

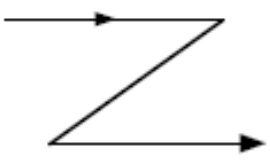


Exercise 2 Alternate Angles

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

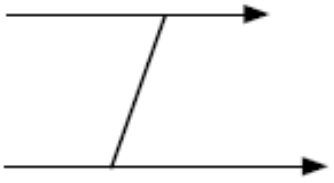
2. Copy the diagrams and mark all the alternate (Z) angles with a * :-

a



b

c

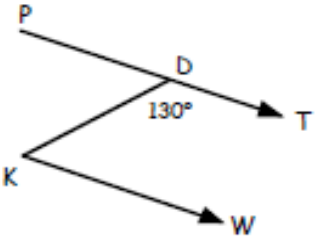


More Angles

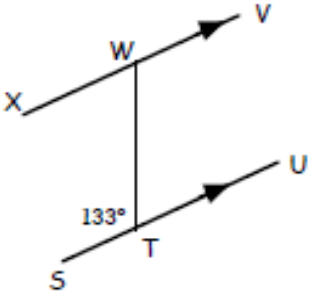
3. Write down all the sizes of the angles in the following diagrams :- (e.g. $\angle ABC = 69°$).

a

b

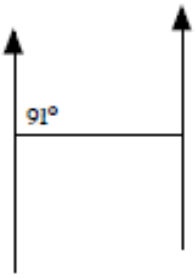


c

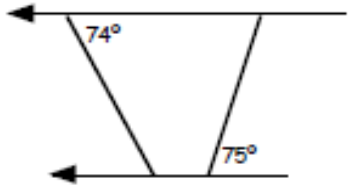


4. Sketch each of the following and fill in all the missing angles :-

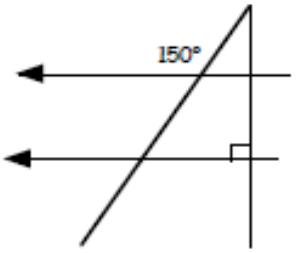
a



b



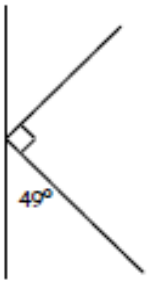
c



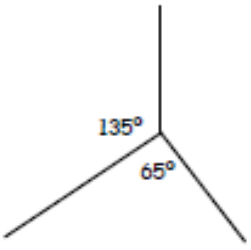
Exercise 3 Mixed Exercise

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

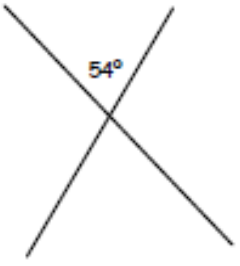
a



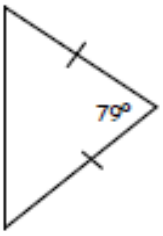
b



c

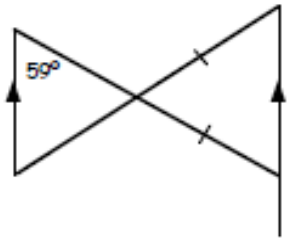


d

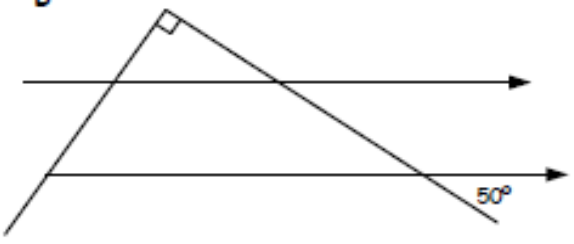


2. Sketch each of the following and fill in all the missing angles :-

a



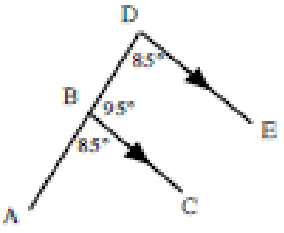
b

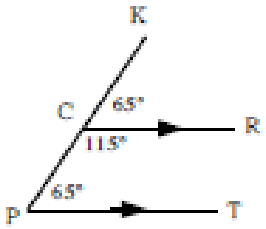


Answers

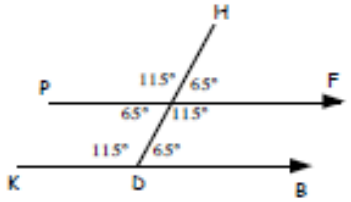
Ch 6 Ex 1 Corresponding Angles

1. equal
2. Check diagrams
3. a b

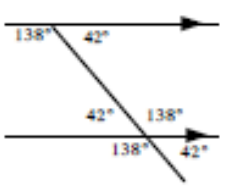


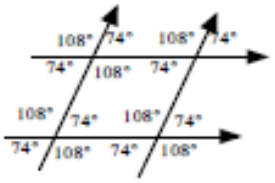


c

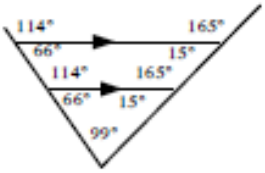


4. a b



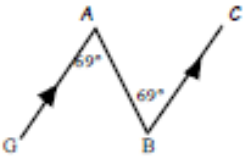


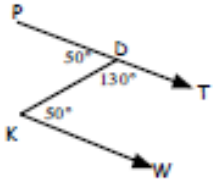
c



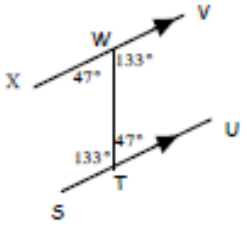
Ch 6 Ex 2 Alternate Angles

1. equal
2. check diagrams
3. a b

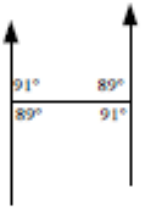


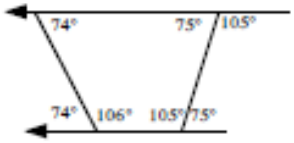


c



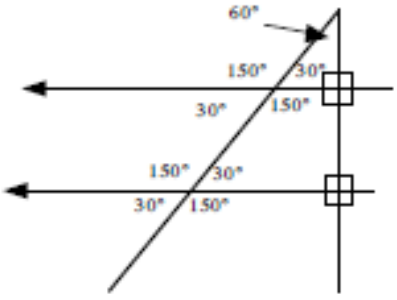
4. a b





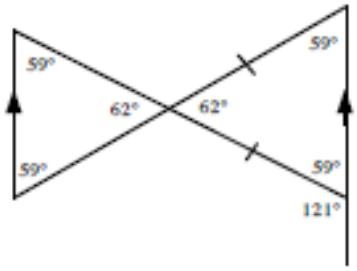
Answers

c

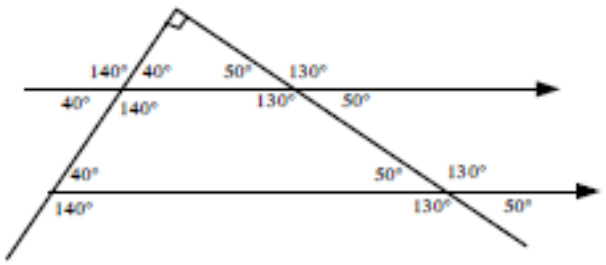


Ch 6 Ex 3 Mixed Exercise

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



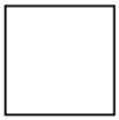
b

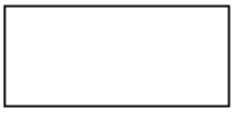


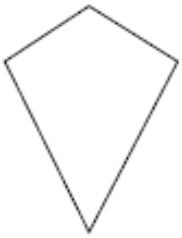
Symmetry

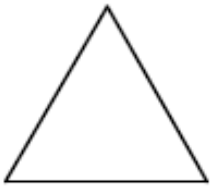
Exercise 1 Line Symmetry

1. Make a neat tracing of each of the following shapes.

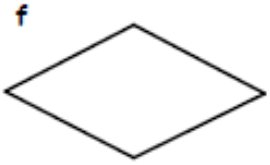
a 

b 

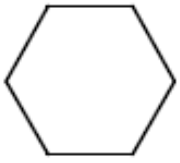
c 

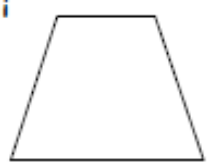
d 

e 

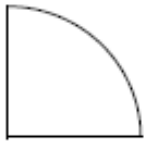
f 

g 

h 

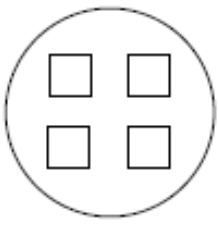
i 

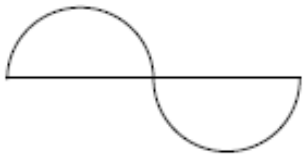
j 

k 

l 

m 

n 

o 

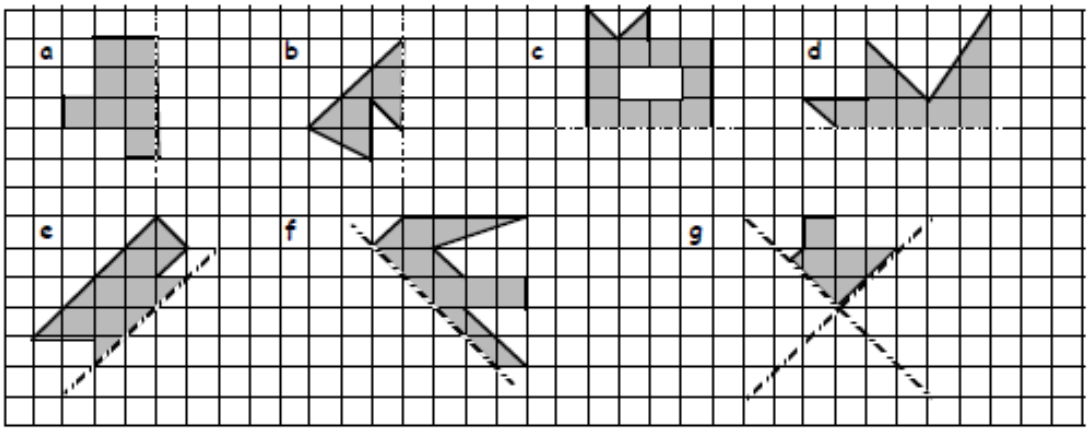
2. a For each shape you have traced (or copied) show all lines of symmetry.
   b Write down next to each shape how many lines of symmetry it has.

3. Make a list of those capital letters of the alphabet that have lines of symmetry.

A B C .....

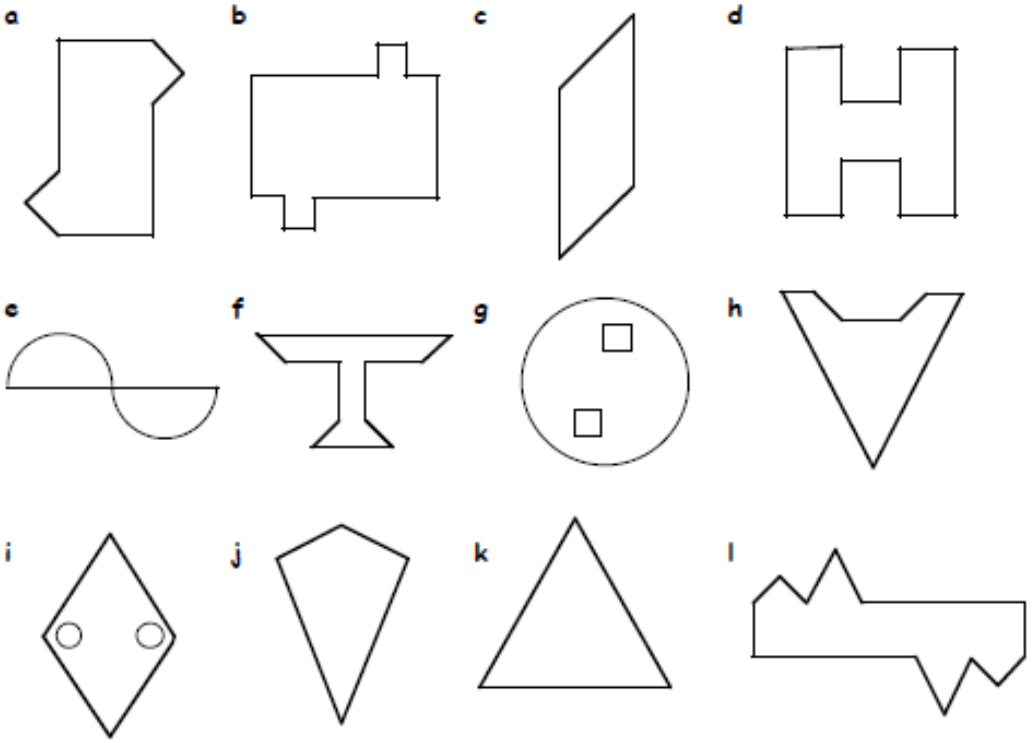
Symmetry

4. Copy each of the following shapes neatly and complete each one such that the **dotted** line is a line of symmetry each time.



Exercise 2 Rotational Symmetry

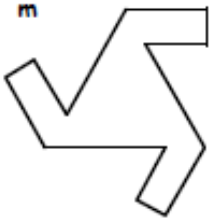
1. Which of the following shapes have **half-turn** symmetry ? (Answer **yes** or **no**).



continues over the page ...

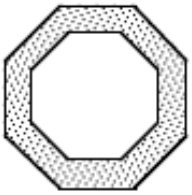
Symmetry

m

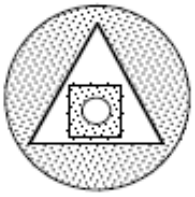


n

o



p



2. For each shape in Question 1, state the **order** of symmetry.

3. a Which seven capital letters of the alphabet have $\frac{1}{2}$-turn symmetry ?

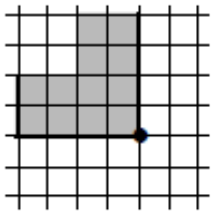
A B C .....

b Of these seven letters, only three do **not** have a line of symmetry.
Which three ?

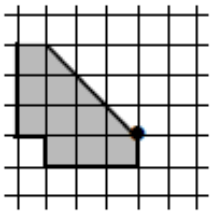
Exercise 3 Creating a Shape with Half-turn Symmetry

1. Make a copy of each of the following shapes.
Create a shape which has half turn symmetry by rotating each shape by 180° about the dot.

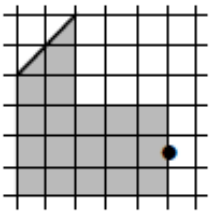
a



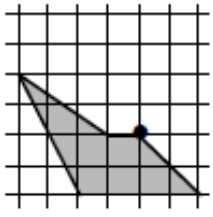
b



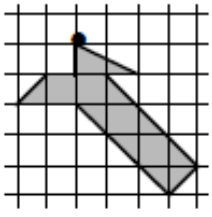
c



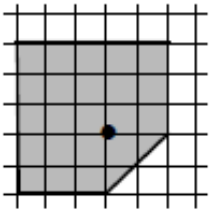
d



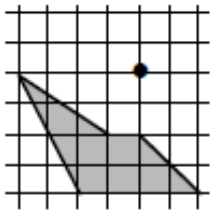
e



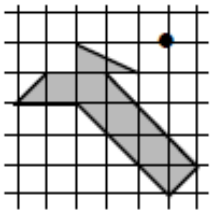
f



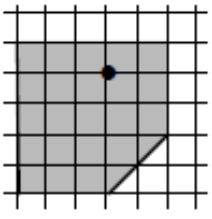
g



h



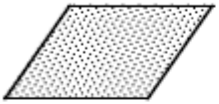
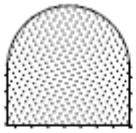
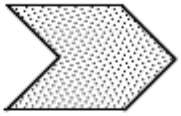
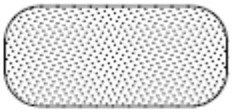
i

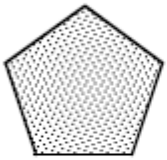
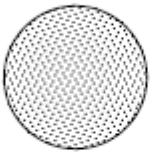
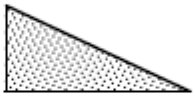
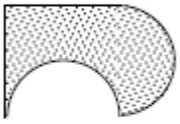


Symmetry

Exercise 4 Translation (Slide) Symmetry

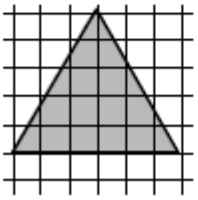
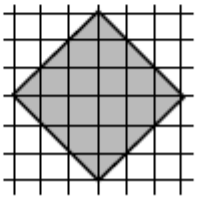
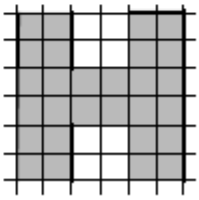
1. Which of the following shapes would **not** "tile the plane".

a  b  c  d 

e  f  g  h 

2. a Draw each shape shown below and shade it in.

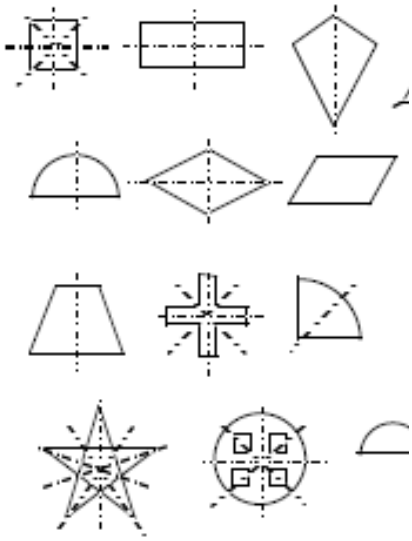
   b Tile the plane using 6-8 congruent tiles

(i)  (ii)  (iii) 

Answers

Ch 11 Ex 1 Line Symmetry

1.

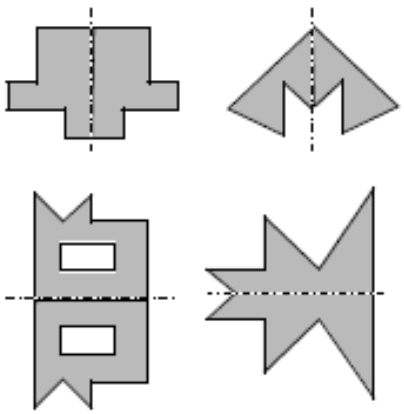


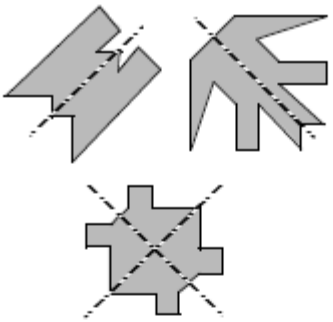
2.

a	4	b	2	c	1
d	3	e	1	f	2
g	0	h	6	i	1
j	4	k	1	l	1
m	5	n	4	o	0

3. A, B, C, D, E, H, I, K, M, O, (Q), T, U, V, W

4.





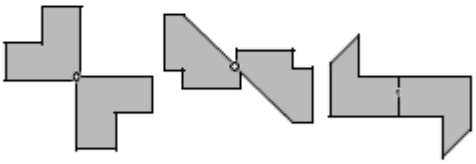
Ch 11 Ex 2 Rotational Symmetry

1.	a	yes	b	yes	c	yes
	d	yes	e	yes	f	no
	g	yes	h	no	i	yes
	j	no	k	no	l	yes
	m	no	n	yes	o	yes
	p	no				
2.	a	$\frac{1}{2}$, 2	b	$\frac{1}{2}$, 2	c	$\frac{1}{2}$, 2
	d	$\frac{1}{2}$, 2	e	$\frac{1}{2}$, 2	f	--
	g	$\frac{1}{2}$, 2	h	--	i	$\frac{1}{2}$, 2
	j	--	k	$\frac{1}{3}$, 3	l	$\frac{1}{2}$, 2
	m	$\frac{1}{3}$, 3	n	$\frac{1}{6}$, 6	o	$\frac{1}{8}$, 8

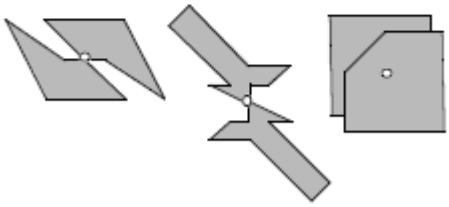
3. a H, I, N, O, S, X, Z b N, S, Z

Ch 11 Ex 3 Half-turn Symmetry

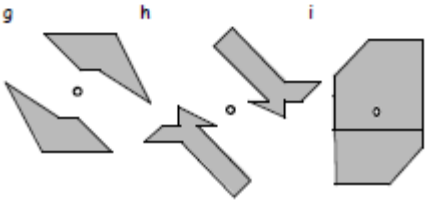
1. a b c



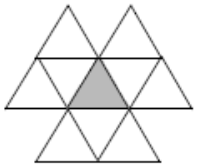
d e f



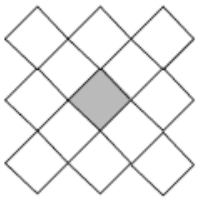
g h i



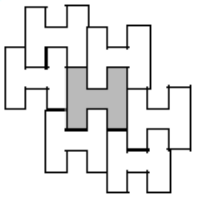
1. b d f
2. (i)



(ii)



(iii)

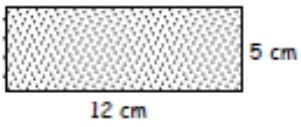


Area/Perimeter

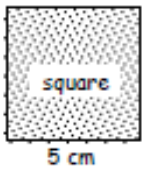
Exercise 1 Perimeter & Area

1. Calculate :- (i) the perimeter (ii) the area of each shape below :-

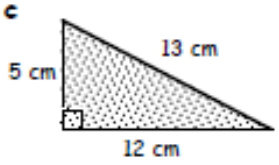
a



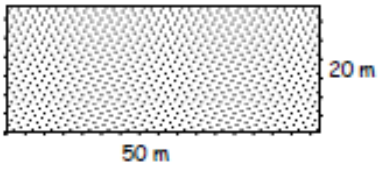
b



c

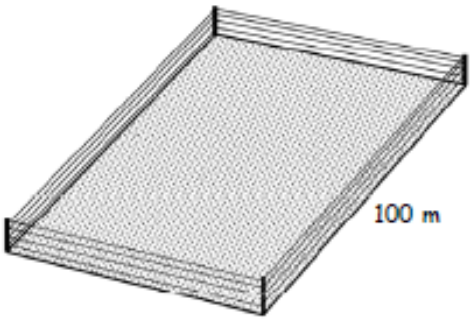


d



e

2. Four strips of electrical wire fence surround a rectangular field with area 8000 square metres.



a Find the width of the field given that the length is 100 metres.

b What is the total length of wire needed ?

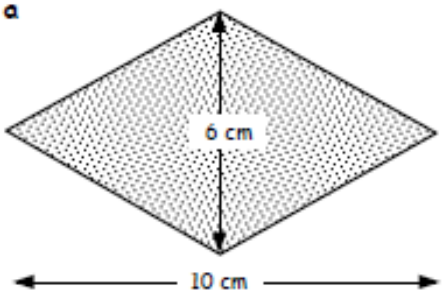
c The wire costs 18p per metre.

How much will the wire cost in total ?

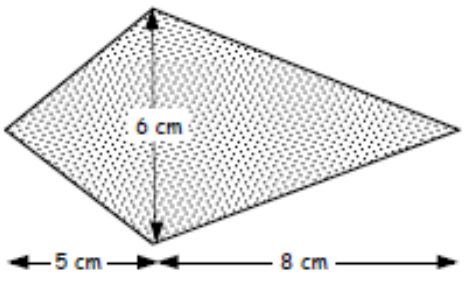
Exercise 2 Area of a Rhombus & Kite

1. Using $A = \frac{1}{2}(D \times d)$, calculate the **area** of each rhombus and kite below :-

a

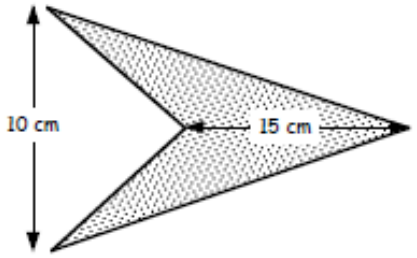


b

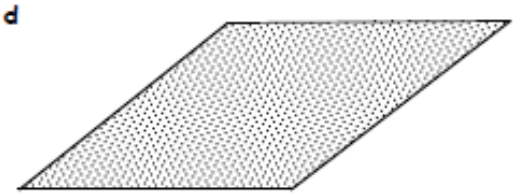


Area/Perimeter

1. c



d

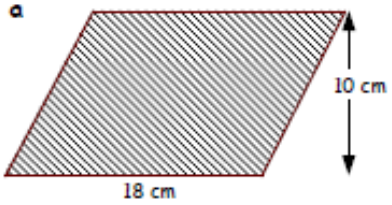


Rhombus with diagonals 12 cm and 9 cm

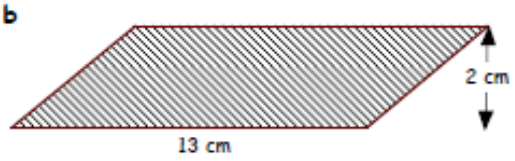
Exercise 3 Area of a Parallelogram

1. Using $A = B \times H$, calculate the **area** of each parallelogram below :-

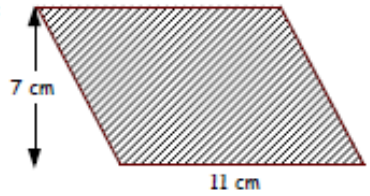
a



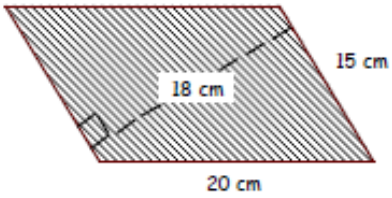
b



c



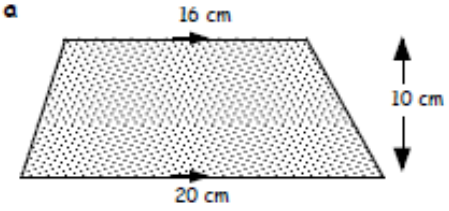
d



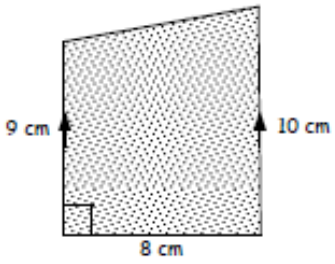
Exercise 4 Area of a Trapezium

1. Calculate the **area** of each trapezium below :-

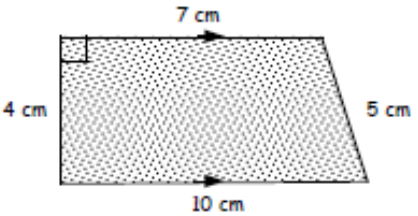
a



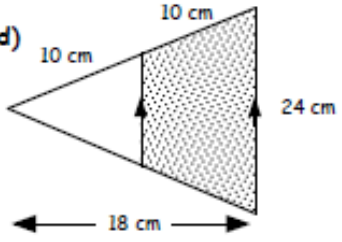
b



c



d (Hard)

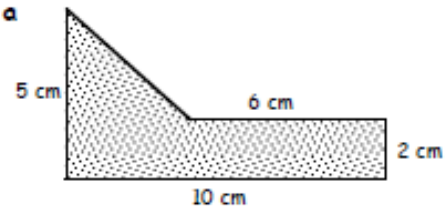


Area/Perimeter

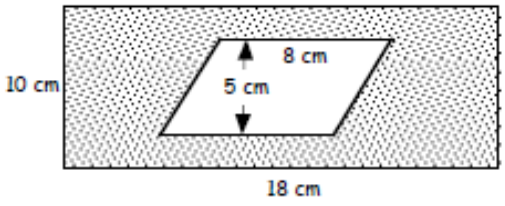
Exercise 5 Composite Areas

1. Calculate the **area** of each composite shape below :-

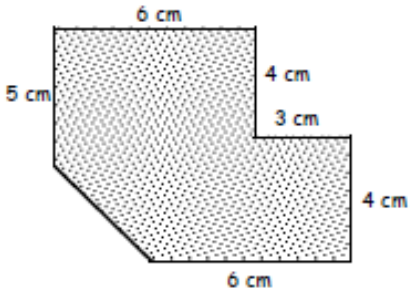
a



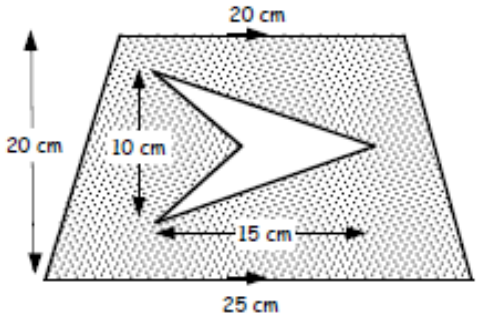
b



c



d



Answers

Exercise 1 - Perimeter & Area

1. a (i) 34 cm (ii) 60 cm^2
   b (i) 20 cm (ii) 25 cm^2
   c (i) 30 cm (ii) 30 cm^2
   d (i) 140 m (ii) 1000 m^2
   e (i) 440 cm (ii) 4000 cm^2
2. a 80 m b 1440 m c £259·20

Exercise 2 - Area of a Rhombus & Kite

1. a 30 cm^2 b 39 cm^2 c 75 cm^2 d 54 cm^2

Exercise 3 - Area of a Parallelogram

1. a 180 cm^2 b 26 cm^2 c 77 cm^2 d 270 cm^2

Exercise 4 - Area of a Trapezium

1. a 180 cm^2 b 76 cm^2 c 34 cm^2 d 162 cm^2

Exercise 5 - Composite Area

1. a 26 cm^2 b 140 cm^2 c 55·5 cm^2 d 375 cm^2

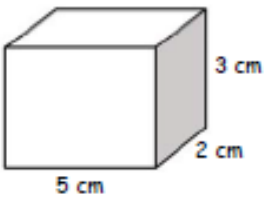
3D Shapes

Exercise 1 Volumes of Cubes & Cuboids

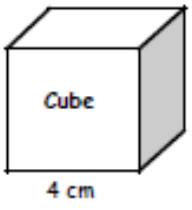
1. Copy and complete :- Volume = length x br..... x h.....

2. Use the formula to calculate the **volume** of the following cuboids :-

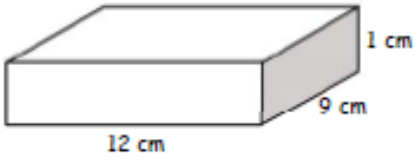
a



b

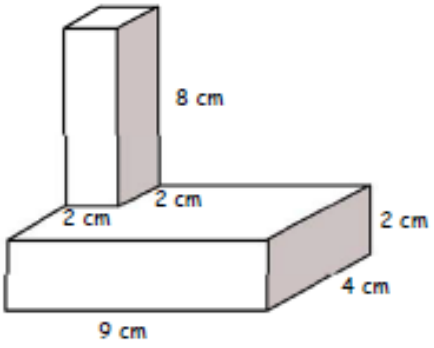


c

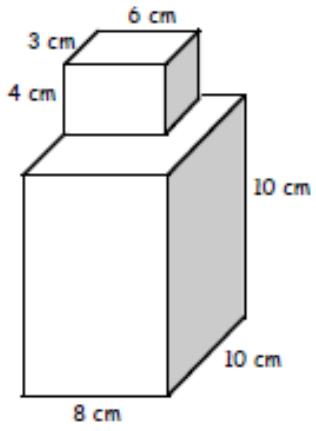


3. Find the total **volume** of each of the following shapes :-

a

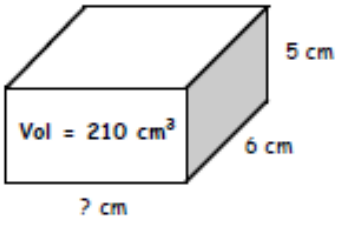


b

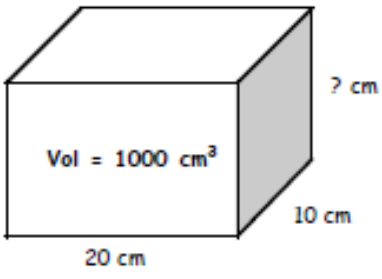


4. Calculate the length of the missing edge of each of the following cuboids :-

a



b



3D Shapes

Exercise 3 Liquid Volume – Capacity 

1. Change each of the following to millilitres :-

   a 3 litres **b** 10 litres **c** 1·5 litres **d** 10·1 litres

   e half a litre **f** 5·12 litres **g** $^3/_4$ litre **h** 0·02 litres.

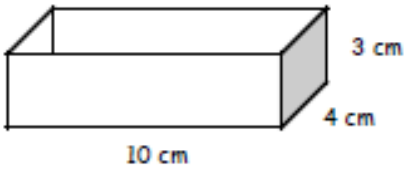
2. Change each of the following to litres :-

   a 8000 ml **b** 100 000 ml **c** 7500 ml **d** 1250 ml

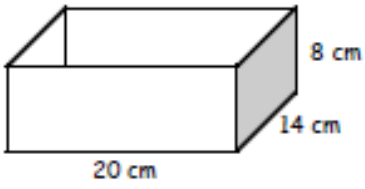
   e 10 010 ml **f** 300 ml **g** 50 ml **h** 8 ml.

3. Find the capacity (in millilitres) of each of these containers :-

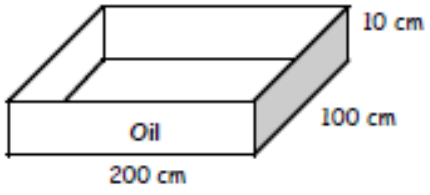
   a



   b



4. How many **litres** would it take to **half fill** the oil tray shown ?



Answers

Exercise 1 – Volumes of Cubes & Cuboids

1. $V = L \times B \times H$
2. a $30\ cm^3$ b $64\ cm^3$ c $108\ cm^3$
3. a $104\ cm^3$ b $872\ cm^3$
4. a $7\ cm$ b $5\ cm$

Exercise 3 – Liquid Volume – Capacity

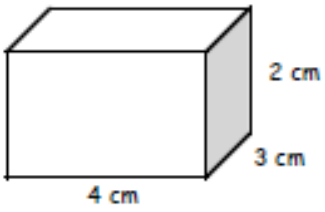
1. a 3000 ml b 10000 ml
   c 1500 ml d 10100 ml
   e 500 ml f 5120 ml
   g 750 ml h 20 ml
2. a 8 l b 100 l c 7·5 l d 1·25 l
   e 10·01 l f 0·3 l g 0·05 l h 0·008 l
3. a 120 ml b 2240 ml
4. a 100 litres

More 3D Shapes (No Answers)

Exercise 1

Remember :- To calculate the **surface area**, you find the area of each face and add them together.

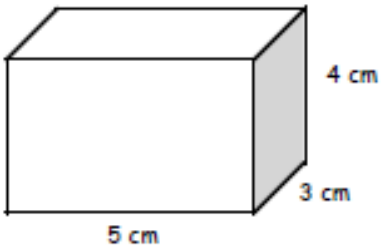
1. Copy and complete to find the total **surface area** of this cuboid.



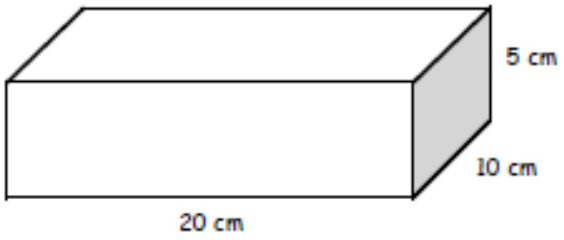
Area of front	= $l \times b$	= 4 cm × 2 cm	= 8 cm^2
Area of back		= same	= 8 cm^2
Area of top	= $l \times b$	= 4 cm × 3 cm	= 12 cm^2
Area of bottom		= same	= .... cm^2
Area right side	= $l \times b$	= ... cm × ... cm	= .... cm^2
Area left side		= same	= .... cm^2
		Total Surface Area	= ....cm^2

2. Find the total surface area of these cuboids. (*Show your working*).

a

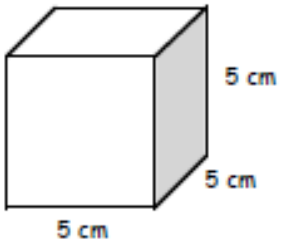


b



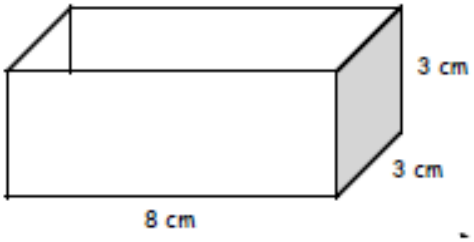
3. A cube has side 5 centimetres.

Find the total surface area of the cube.



4. This carton has **no lid**.

Find the surface area of the outside of the carton.

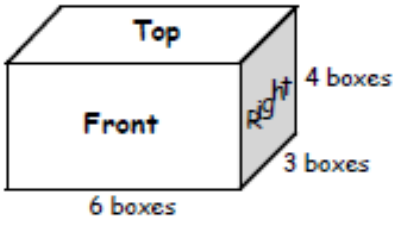


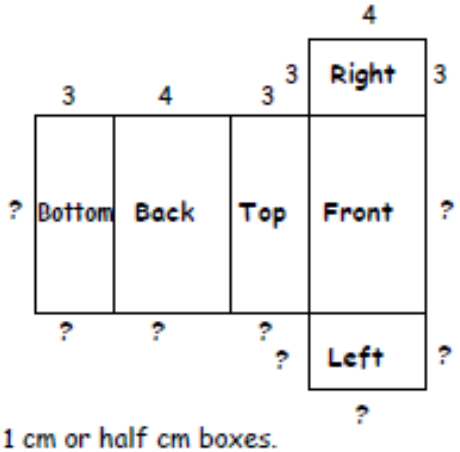
More 3D Shapes (No Answers)

Exercise 2

1. Shown is a net of a cuboid.

   Copy the net and complete the unknown lengths.

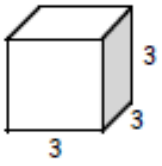




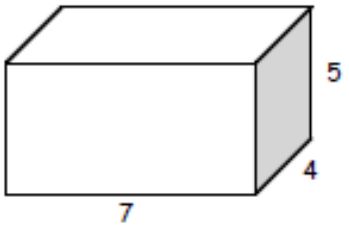
2. For each of the following :- (i) draw a net using 1 cm or half cm boxes.

   (ii) calculate the surface area using the net to help you.

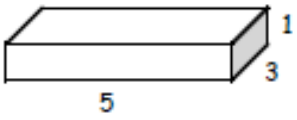
a



b



c



Patterns

Exercise 1 — Sequences & Patterns

1. Give a rule for each of these sequences :- (*begin with " start at ... and then ....."*).

   a 2, 5, 8, 11, 14, ... b 7, 13, 19, 25, ... c 25, 20, 15, 10, ...

   d 98, 81, 64, 47, ... e 3, 9, 27, 81, ... f 1, 6, 36, 216, ...

2. Write down the next two numbers in each sequence from question 1.

3. Find the next two numbers in each sequence :-

   a 7, 9, 11, 13, ... b 5, 9, 13, 17, ... c 24, 22, 20, ...

   d 70, 58, 46, 34, ... e 1, 3, 9, ... f 2, 4, 8, 16, ...

4. Shown is the pattern for **square numbers**.
   Write down the first 12 square numbers.

5. A pattern of numbers is defined as :- (2 x 3), (3 x 4), (4 x 5), (5 x 6) ....

   Write down the :- a 10^{th} term b 1000^{th} term c n^{th} term.

Exercise 2 — Simple Linear Patterns

1. Each door has six window panes.

   a Copy and complete the table.

   b Copy and complete the formula :- P = ... x D

   c How many panes would there be in 11 doors ?

   d How many doors are there if there are 78 panes ?

No. of Doors (D)	1	2	3	4	5
No. of Panes (P)	6	12	?	?	?
rises by : →		6	6	?	?	?

2. For the tables below :- (i) complete each one (ii) construct a formula.

   a No. of toys and price

T	1	2	3	4	5	6
P	9	18	27	..	..	..

P = ... x T

   b No. of seconds and no. of minutes

M	1	2	3	4	5	6
S	60	120	180	..	..	..

S = ... x M

   c No. of pentagons and no. of vertices

P	1	2	3	4	5	6
V	5	10	15	..	..	..

   d No. of tables to legs

T	1	2	3	4	5	6
L	8	16	24	..	..	..

Patterns

3. **Linear Graphs** – For each of the tables below :-

(i) complete each table (ii) construct a formula

(iii) take each pair of numbers as coordinates (iv) plot on a coordinate graph

(v) draw a line through the points and label the line with your formula.

a

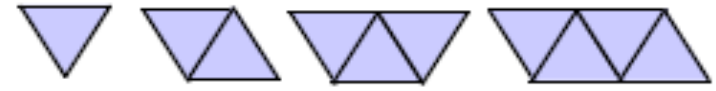
x	0	1	2	3	4	5
y	0	3	6	9	..	..

b

x	0	1	2	3	4	5
y	0	2	4	6	..	..

Exercise 3 Harder Linear Patterns

1. Look at the pattern shown.



1 triangle perimeter 3 | 2 triangle perimeter 4 | 3 triangle perimeter 5 | 4 triangle perimeter 6

a Copy and complete the table shown.

No. of triangles (T)	1	2	3	4	5	6
Perimeter (P)	3	4	5	..	..	..
		1	1	1		

b Copy and complete the formula for the above pattern :- $P = \ldots \times T + \ldots$

c Find the perimeter of the pattern with 21 triangles.

d Find the number of triangles if the perimeter is 27.

2. For each of the tables below :-

(i) complete each table (ii) construct a formula.

a

x	0	1	2	3	4	5
y	3	5	7	9	..	..

b

x	0	1	2	3	4	5
y	5	6	7	8	..	..

c

x	0	1	2	3	4	5
y	-2	1	4	7	..	..

d

x	0	1	2	3	4	5
y	-1	4	9	14	..	..

e

x	-2	-1	0	1	2	3
y	..	-4	-2	0	2	...

f

x	-2	-1	0	1	2	3
y	...	-11	-4	3	...	...

Answers

Ch 4 Ex 1 Sequences & Patterns

1. a start at 2 then add 3
   b start at 7 then add 6
   c start at 25 then subtract 5
   d start at 98 then subtract 17
   e start at 3 then times by 3
   f start at 1 then times by 6
2. a 17, 20 b 31, 37 c 5, 0
   d 30, 13 e 243, 729 f 1296, 7776
3. a 15, 17 b 21, 25 c 18, 16
   d 22, 10 e 27, 81 f 32, 64
4. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144
5. a 11×12 b 1001×1002 c $(n+1) \times (n+2)$

Ch 4 Ex 2 Simple Linear Patterns

1. a 1 2 3 4 5 6
   6 12 18 24 30 36
   b $P = 6D$ c 66 d 13
2. a 1 2 3 4 5 6
   9 18 27 36 45 54 $P = 9T$
   b 1 2 3 4 5 6
   60 120 180 240 300 360 $S = 60M$
   c 1 2 3 4 5 6
   5 10 15 20 25 30 $V = 5P$
   d 1 2 3 4 5 6
   8 16 24 32 40 48 $L = 8T$
3. a 0 1 2 3 4 5 6
   0 3 6 9 12 15 18 $y = 3x$
   check linear diagram
   b 0 1 2 3 4 5 6
   0 2 4 6 8 10 12 $y = 2x$
   check linear diagram

Ch 4 Ex 3 Harder Linear Patterns

1. a 1 2 3 4 5 6
   3 4 5 6 7 8
   b $P = T + 2$ c 23 d 25
2. a 0 1 2 3 4 5
   3 5 7 9 11 13 $y = 2x + 3$
   b 0 1 2 3 4 5
   5 6 7 8 9 10 $y = x + 5$
   c 0 1 2 3 4 5
   -2 1 4 7 10 13 $y = 3x - 2$
   d 0 1 2 3 4 5
   -1 4 9 14 19 24 $y = 5x - 1$
   e -2 -1 0 1 2 3
   -6 -4 -2 0 2 4 $y = 2x - 2$
   f -2 -1 0 1 2 3
   -18 -11 -4 3 10 17 $y = 7x - 4$