



S1 Homework 1

Mathematics



Department

Whole Numbers
MP1

1) Calculate

a) 831×19

b) $3032 \div 8$

2) Calculate

a) 5^2

b) 6^3

3) Write down the square root of

a) 49

b) 81

4) Write each of these as a product of prime factors in index form.

a) 56

b) 68

5) Tins of beans are delivered to the supermarket in boxes of 30.
230 tins are needed to fill a shelf in the shop.
How many boxes must be opened?



6) A company sells pencils in packets of 20.



a) If they make 1280 pencils in one hour how many packets could they fill?

b) If each packet costs 85p how much would they earn in one hour?
(give your answer in £s and pence)

7) Jai eats in a hotel restaurant which charges £55 for lunch and £45 for dinner.

Calculate the money he will spend over a 7 day period.



S1 Homework 2

Mathematics



Department

Decimals
MP1

1. Calculate:

- a) $3.68 + 4.89$ b) $9.502 - 7.561$ c) $8.3 - 5.4$ d) $54.98 - 16.8$

2. Round to the given decimal place in the bracket

- a) 5.29 (1dp) b) 17.5436 (2dp) c) 0.347674 (3dp)

3. Calculate:

- a) 5.25×1000 b) 0.07×100 c) $7 \div 1000$ f) $0.62 \div 100$

4. Calculate:

- a) 5.72×3 b) $71.34 \div 3$ c) $40.81 \div 7$
d) 2.2×3.6 e) 1.6×5.8

5. A Milk carton holds 2.272 litres of milk. 1.75 litres are poured into jug. How much milk is left in the carton?



6. Lisa buys a CD player. She pays 6 monthly payments of £15.34 each. How much did the CD player cost?



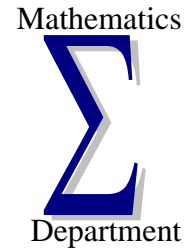
7. The table shows Graeme's wages for one month.

Week	Wages (£)
1	475.80
2	497.48
3	519.95
4	485.27

- a) Calculate his total wages for one month.
b) What is the difference between the highest and lowest weekly wage?
c) Round his wages to the nearest £10



S1 Homework 3

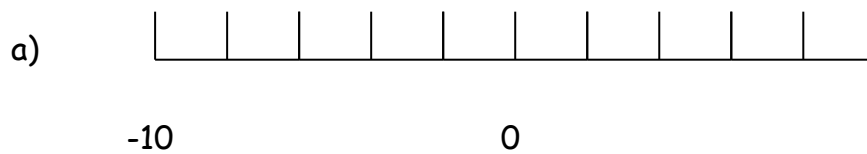


Integers
MP1

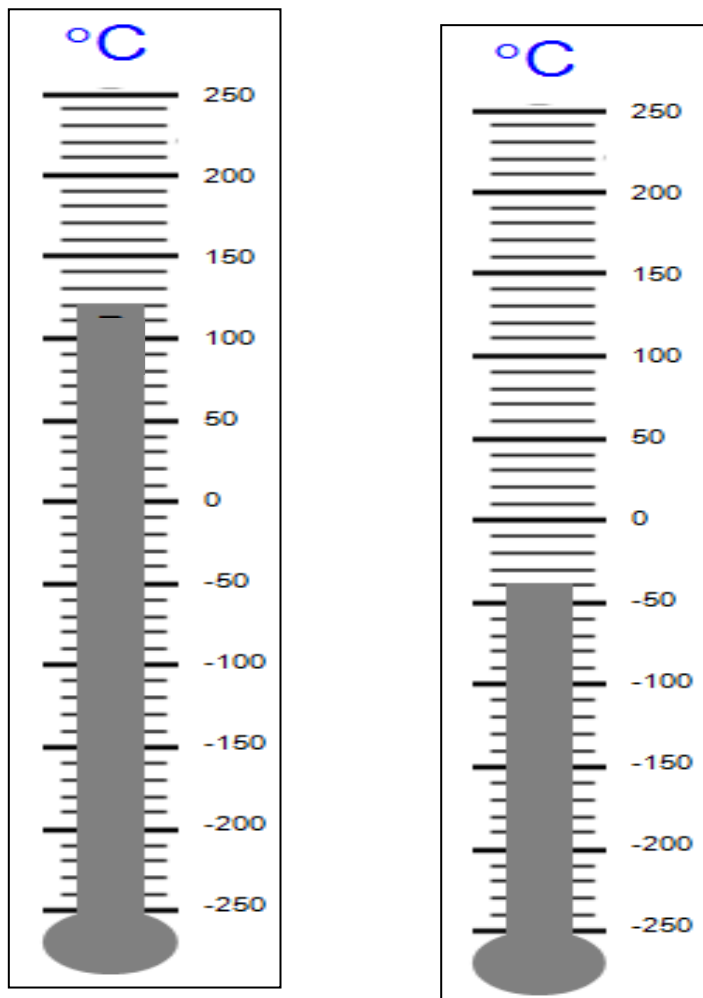
1) Write these temperatures in order from lowest to highest

-1°C , 8°C , -4°C , -10°C , 0°C , 3°C , -3°C

2) Copy and complete these scales



b) Record the temperatures of both scales and calculate the difference between them both.



3) Calculate

a) $-7 + 11$

b) $-4 - 3$

c) $10 - 13$

d) $3 - 12$

e) $4 + (-9)$
 $- (-1)$

f) $6 - (-7)$

g) $-1 + (-5)$

h) -5

4) Calculate

a) $35 \div (-5)$
 (-6)

b) $-42 \times (7)$

c) $-50 \div (-10)$

d) $36 \div$

- 5) It is December in Glasgow and the temperature outside is -3°C . Tomorrow I am going on holiday to Spain and it will be 27°C higher. When I return home from holiday the temperature will be lower than Spain by 32°C .

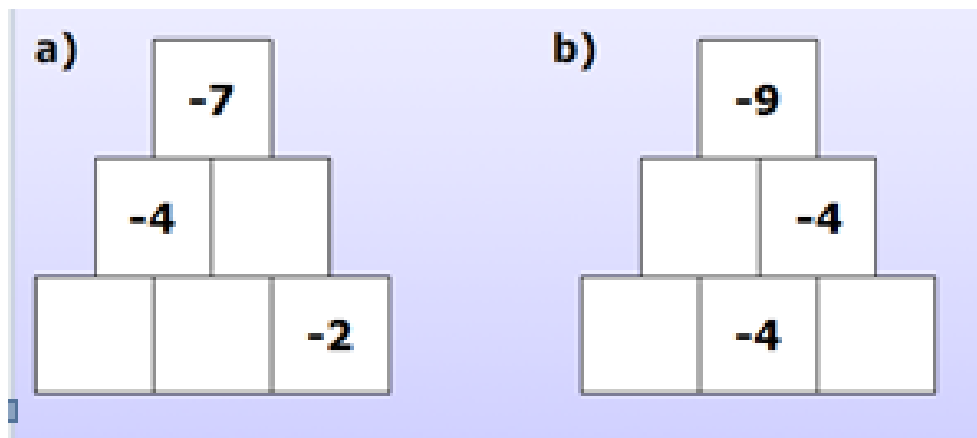
What will the temperature be in Glasgow when I get home?

- 6) Metal mercury at room temperature is a liquid. Its melting point is -39°C . The freezing point of alcohol is -114°C . How much warmer is the melting point of mercury than the freezing point of alcohol?



- 7) Complete the following number triangle.

A number must equal the sum of the two numbers that it rests on





S1 Homework 4(a)

Mathematics



Department

Algebra 1
MP1

1. Simplify each expression:

- a) $x + 2x + 4x - x$ b) $7y + 5z - 2y - z$ c) $8u + 7 - 3u + 4$ d) $6k - 4 - k + 6$
e) $4 - 2x - 8 + 8x$ f) $4 - 3y - 5 - 2y$

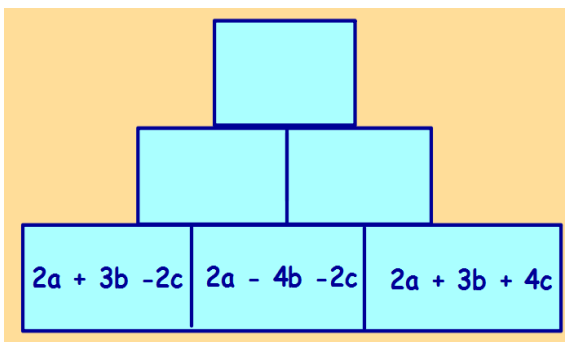
2. Simplify each expression:

- a) $ad + ad$ b) $2a^2 + a^2 + a^2$ c) $5m \times 2m$
d) $4a + 2 \times a$ e) $4 - 5 \times e$

3) If $x = 3$, $y = 4$ and $z = -2$ evaluate:

- a) $3x - 2y$ b) $10y - 4x$ c) $3z + 2y$
d) $2x - 2z$ e) z^2 f) $2x^2$

4)



In the pyramid, the sum of the bottom two blocks is equal to the block above. Find the expressions for the three missing blocks.



S1 Homework 4(b)

Mathematics



Department

Brackets
MP1

Break the brackets and simplify where appropriate

1. a) $4(r + 7)$

b) $3(f - 2)$

c) $5(x - 10)$

2. a) $2(2c + 1)$

b) $5(3x - 5)$

c) $4(4x + 7)$

3. a) $x(x - 2)$

b) $2x(x - 7)$

c) $3x(2x + 8)$

4. a) $-2(4x + 1)$

b) $-5(3x - 2)$

c) $-x(3x - 4)$

5. a) $a(b + d)$

b) $3a(d + 2g)$

c) $2a(3c + 2d - 5g)$

5. a) $10 + 3(2a - 1)$

b) $6 - 2(3d + 2)$

c) $3 - (3x + 4)$

6. a) $3(2x + 3) - 8x$

b) $2(3x - 7) - 10$

c) $-3(4c - 1) - 4c$

7. a) $2(3x - 2) + 2(x + 1)$

b) $3(2y + 2) - 2(y + 3)$



S1 Homework 5

Mathematics



Department

Fractions

MP1

Simplify

1. a) $\frac{9}{12}$ b) $\frac{22}{55}$

2. a) Express as a mixed number b) Express as an improper fraction

(i) $\frac{75}{4}$

(i) $3\frac{2}{3}$

Evaluate

3. a) $\frac{2}{7} + \frac{3}{7}$

b) $\frac{1}{4} - \frac{5}{8}$

c) $3\frac{1}{2} + \frac{1}{3}$

d) $\frac{1}{6} \times \frac{2}{7}$

e) $3\frac{1}{4} \times 2\frac{1}{3}$

f) $\frac{2}{3} \div \frac{5}{6}$

g) $6\frac{2}{5} \div 2\frac{2}{3}$

4. Clare's test marks in three subjects are:

French - $\frac{18}{25}$ English - $\frac{12}{20}$ Maths - $\frac{21}{30}$

What subject does she perform best in?

5. I spend $\frac{3}{5}$ of my birthday money on clothes and I am left with £25.80.

a) What fraction of the birthday money do I have left?

b) How much birthday money did I have to spend in the first place? (THINK)

6. CHALLENGE

Find the difference between:

$\frac{1}{x} + \frac{1}{y}$ and $\frac{1}{x} \times \frac{1}{y}$



S1 Homework 6

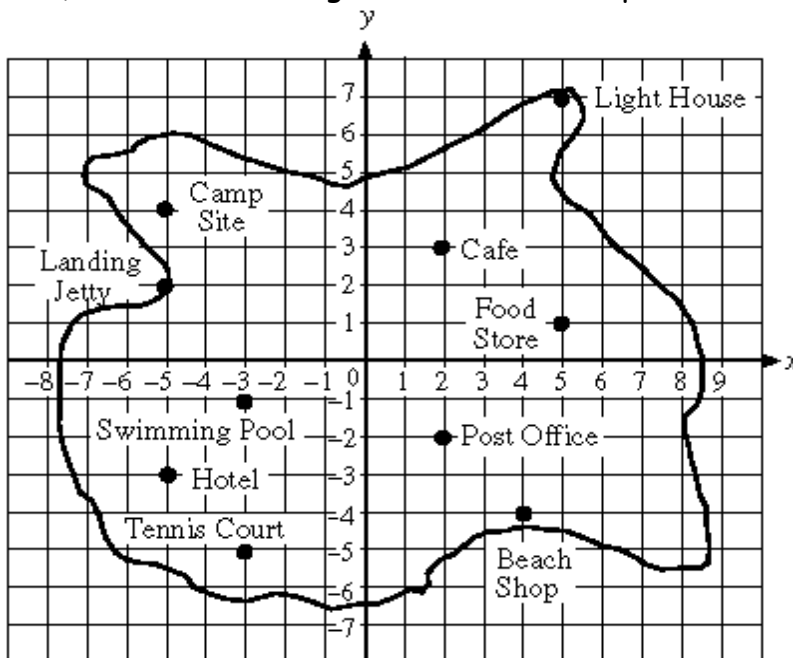
Mathematics



Department

Coordinates
MP1

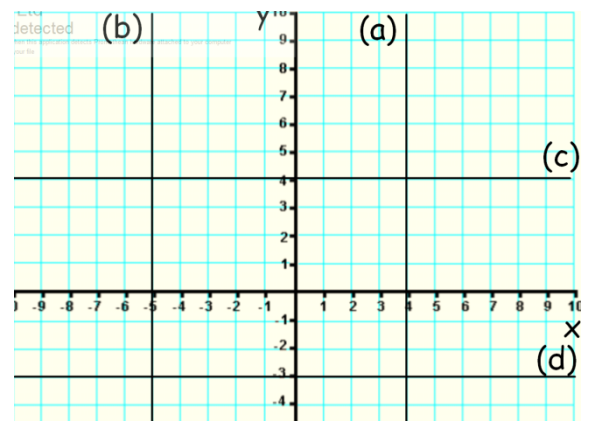
- Plot the points $A(-2, 2)$, $B(4, 2)$, $C(4, -2)$ and join.
 - Plot the point D so that $ABCD$ becomes a rectangle.
 - Write down the coordinates of the midpoint of AB .
 - Draw in the diagonals and state the point of intersection.
- Look at the diagram and state the points of the following places



- Landing jetty _____
- Swimming pool _____
- Camp site _____
- Food store _____
- Tennis court _____

- Write down the coordinates :-
 - that lie in quadrant 4
 - that share an x coordinate in quadrant 2
 - that share a y coordinate in quadrant 3.

- State the names of the lines in the diagram in the form $x = a$ or $y = b$





S1 Homework

Mathematics



Department

Percentages
MP1

1. Change these percentages to decimals.

- a) 3% b) 85% c) 45.5%

2. Change these decimal fractions to percentages.

- a) 0.03 b) 0.75 c) 0.4

3. Change these percentages to fractions AND decimals

- a) 24% b) 8% c) 2.5%

4. Calculate:

- a) 10% of 670kg b) 25% of 160mm c) 15% of £160
c) 18% of 120g d) 12.5% of £60

5. A shop has a 17% off sale. Fiona bought a skirt that originally cost £45.00.

How much did the skirt cost her?



6. Thomas wants to buy an ipod

The ipod that Thomas wants is sold in two different ways.

Which shop is the best buy?

Show your working

Pod Direct
15% off
usual price
£120

Music City
£84
plus VAT at 20%



S1 Homework 8(a)

Mathematics



Department

Algebra 2 MP1

1. Solve these equations:

a) $7x = 56$

b) $5x + 8 = 28$

2. Simplify and then solve these equations:

a) $7k - k + 2 = 38$

b) $3k - k - 12 + 2k = 12$

3. Solve these equations with fractions:

a) $10 = \frac{1}{2}x - 2$

b) $6 - \frac{1}{4}x = 2$

4. Solve these equations:

a) $3x = 2x + 4$

b) $4t - 9 = t$

c) $7a - 5 = 6a$

d) $8x + 7 = 7x + 11$

e) $6p - 2 = 5p + 6$

5. Mary goes on holiday with £ x . Anne has three times as much as Mary; Joanne has £6 more than Mary. Altogether they have £41.

a) How much (in terms of x) have Anne and Joanne?

b) Write down an equation in x and solve it.

c) How much money do Anne and Joanne have?



6. A triangle has 3 sides.

- One side is labelled x .
- Another side is 8cm longer than x .
- The remaining side is double the length of x .

The perimeter of the triangle is 26cm.

a) Form an equation to find x .

b) Calculate the lengths of each side.



S1 Homework 8(b)

Mathematics



Department

Algebra 2
MP1

1. Solve these equations:

a) $7 - m = 2$

b) $12 - 3y = 3$

c) $2t - 2 = -6$

d) $-5 - 4k = k - 10$

e) $3a - 2 = -5a - 18$

2. Solve these equations:

a) $2(x + 3) = 20$

b) $5(w + 2) = 15w$

c) $2(x + 4) + x = 23$

d) $3m + 6(2m - 1) = 24$

e) $3(x + 2) + 5(x - 1) = 17$

f) $3(2x + 3) - 2(x + 1) = 11$

3. A class has 27 pupils of whom 'x' are boys.

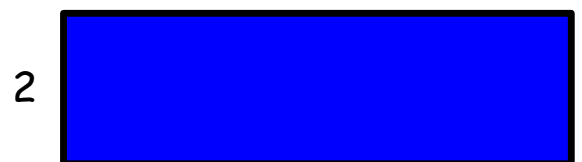
a) How many girls (in terms of x) are there in the class?

b) If the number of girls is twice the number of boys, find the value of x.

4. The Areas of the shapes below are equal. Calculate the lengths of the sides.



$2x - 3$



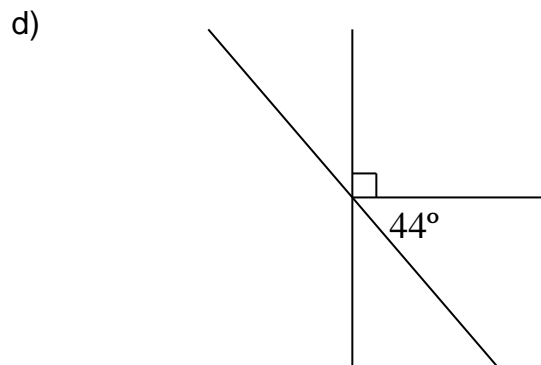
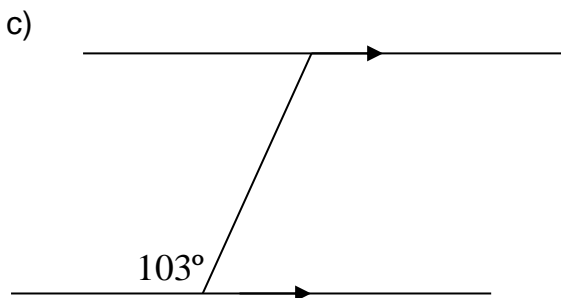
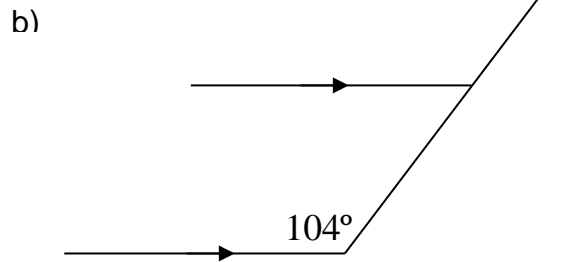
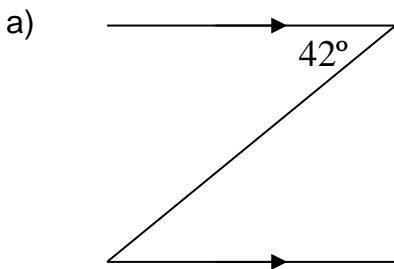
$4x + 2$



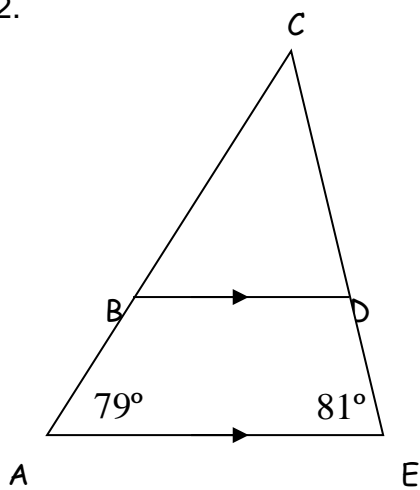
S1 Homework 9

Angles
 MP1

1. Copy each diagram and fill in the size of the missing angles.

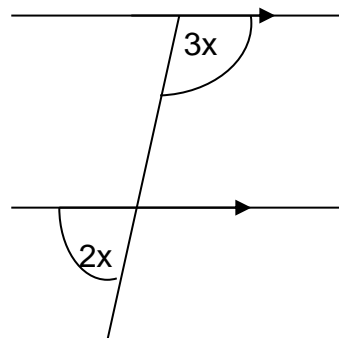


2.



Write down the name and size of each angle in the diagram.

- 3a) Copy the diagram below.
 b) Form an equation and solve to find the value of x .
 c) Now fill in all the angles you can.

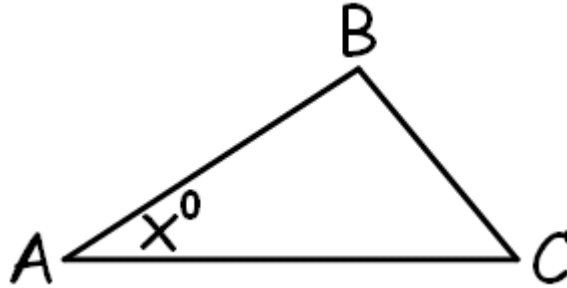


4. In triangle ABC, angle A = x° . Angle B is three times larger than angle A. Angle C is twice the size of angle A.

(a) Write down (in terms of x) the sizes of angles B and C

(b) Form an equation for x and solve it.

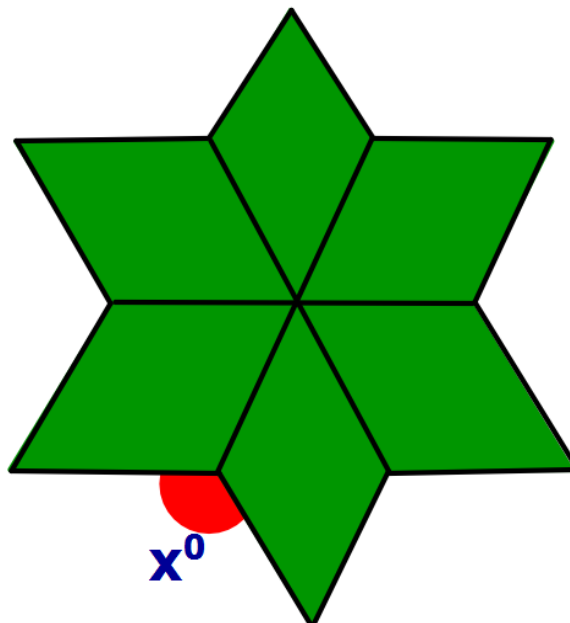
(c) What are the sizes (in degrees) of angles B and C?



5. Calculate the value of d .



6. Calculate the value of x where the star is made up of 6 identical rhombii.





S1 Homework 10

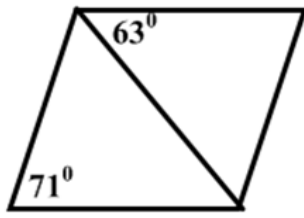
Mathematics



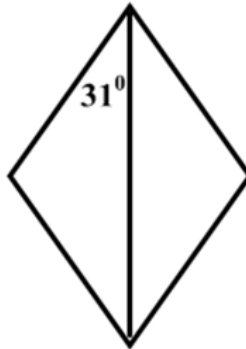
Department

2 D Shapes
MP1

1. Copy and complete the following shapes and fill in all of the missing angles.



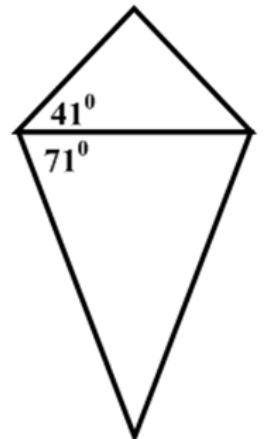
parallelogram



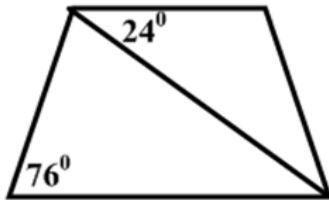
rhombus



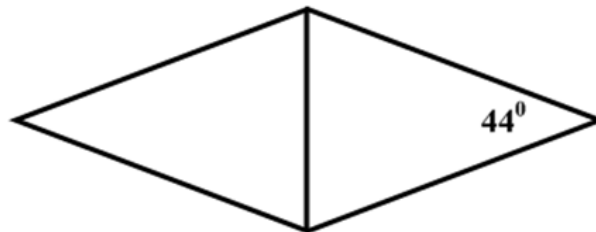
rectangle



kite

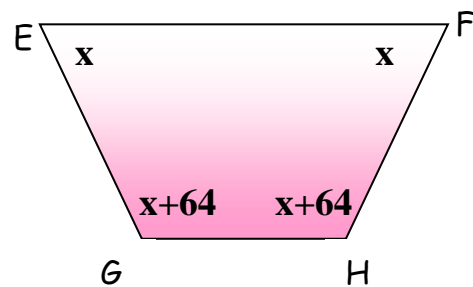


trapezium



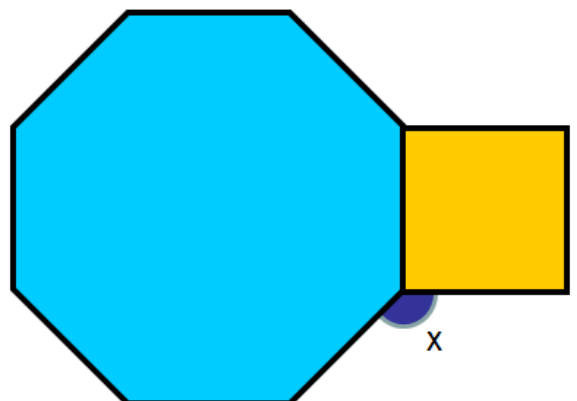
rhombus

2. a) Form an equation and solve it to find x
b) Calculate the size of each angle



- 3 Calculate the angle at x given that a regular octagon is attached to one side of a square.

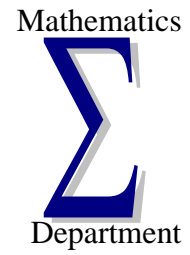
(Hint: Draw lines to centre of octagon)



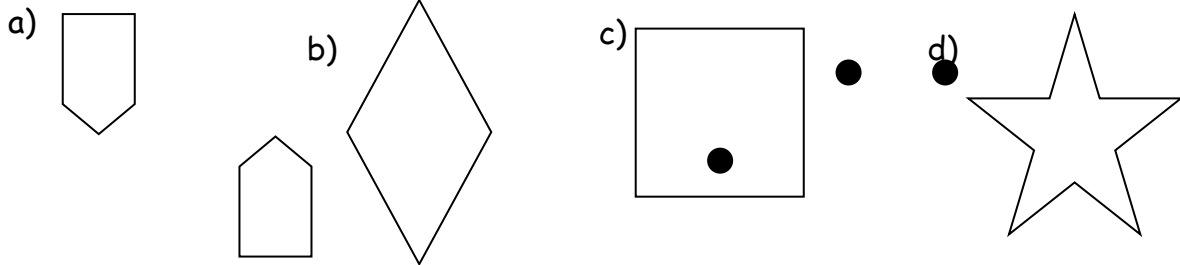


S1 Homework 1.1

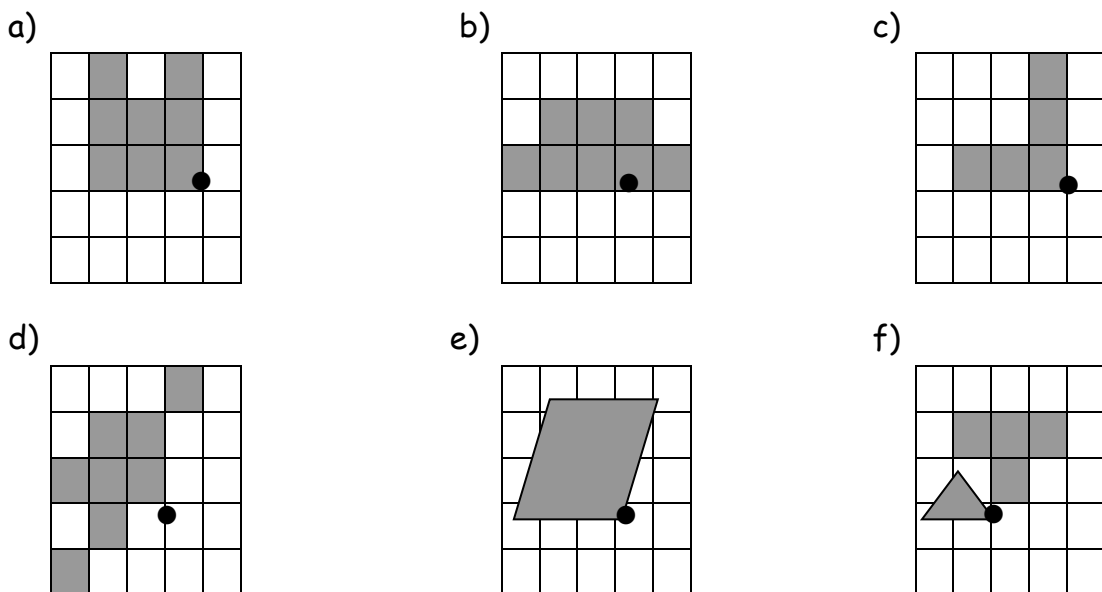
Tiling and Symmetry
MP1



1. For each shape state i) How many lines of symmetry;
ii) what order of rotational symmetry it has.



2. Copy and complete each shape, rotating around the dot, so as each shape has rotational symmetry of order 2.

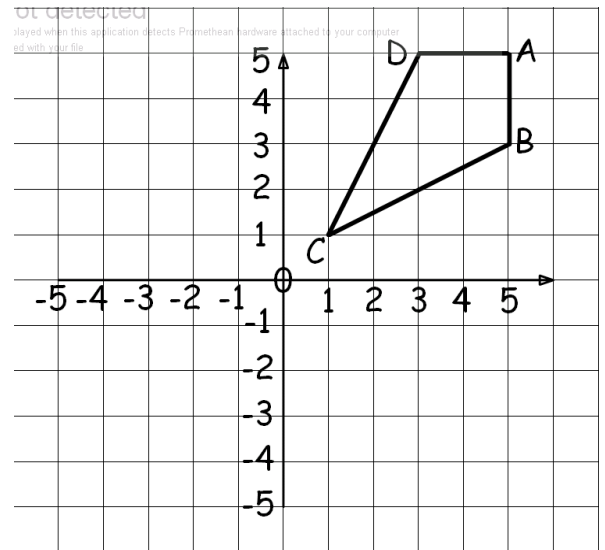


3. Copy the diagram.

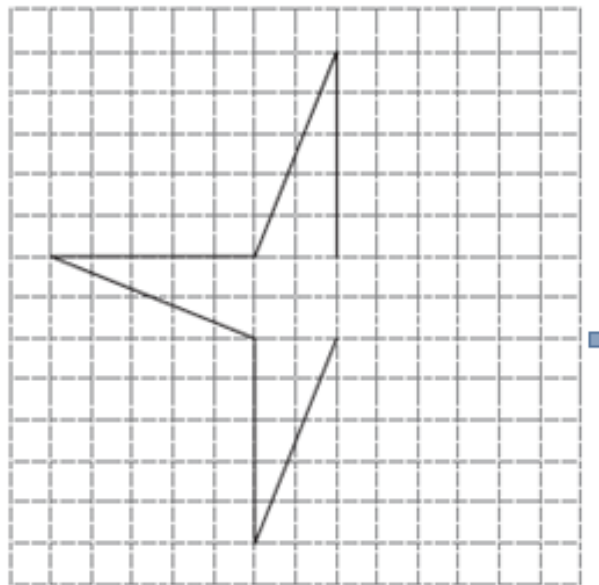
a) Draw the image of the kite under a translation

- (i) 5 to the left
- (ii) 5 down
- (iii) 5 to the left and 5 down.

b) State the coordinates of the vertices of the kite after the third translation.



4.



Complete this shape so that it has rotational symmetry order 4.



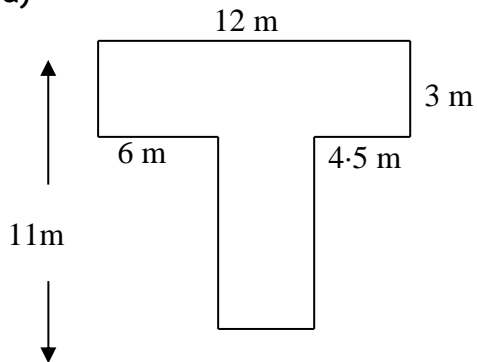
S1 Homework 12

Area

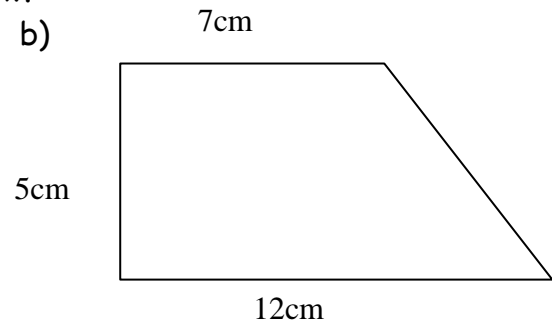
MP1

1. Calculate the area of each shape below.

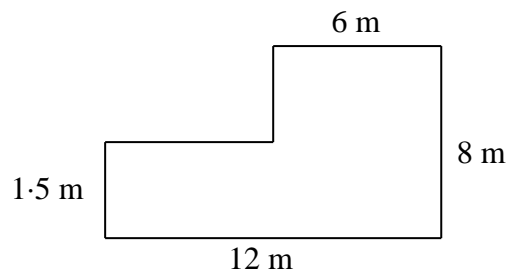
a)



b)

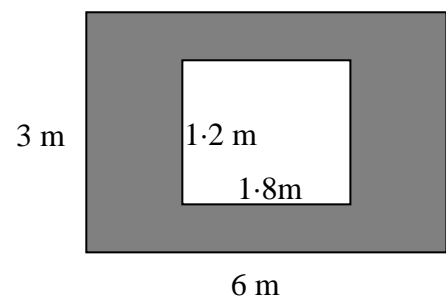


2. Monica is buying a new carpet for her bedroom shown below. The carpet costs £5.20 per square metre. How much does the new carpet cost?

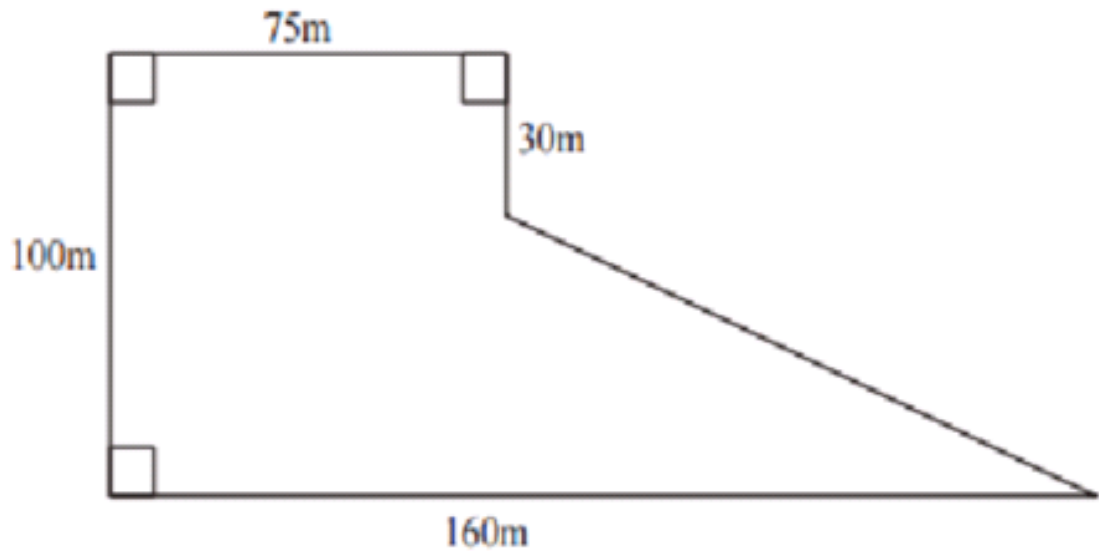


3. The garden below consists of a rectangular grass patch and square flower bed in the centre.

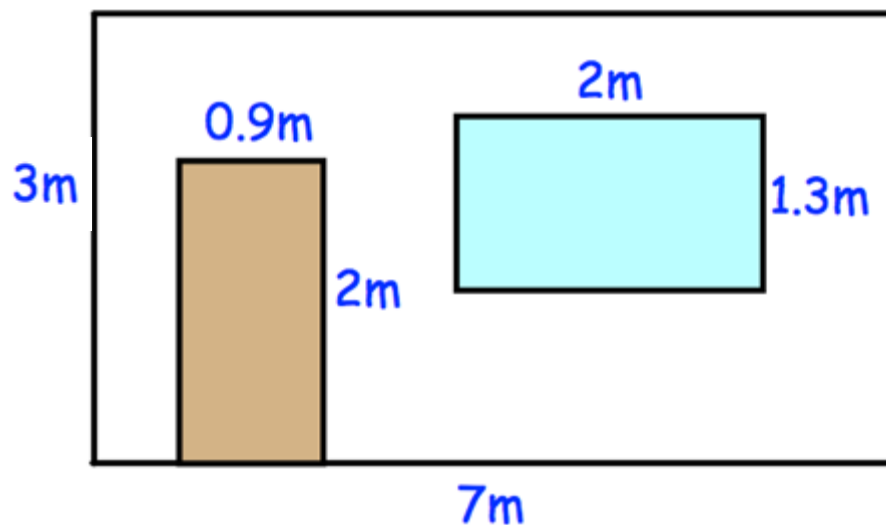
- Calculate the area of the whole garden.
- Calculate the area of the flower bed.
- Calculate the area of the grass



4. The diagram below shows the plan of a field. The farmer sells the field for £3 per square metre.
- Work out the area of the field
 - How much money will the farmer get for the field?



5. Connor is painting the front of his house. A tin of paint covers 16m^2 . Will he have enough paint? Please show all your working





S1 Homework 13

Mathematics



Department

Statistics MP1

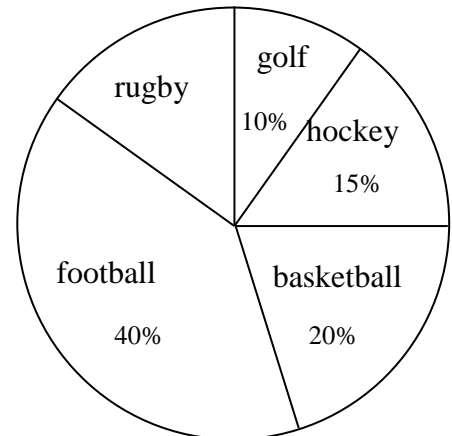
1. As part of a project on climate, Sarah kept a record of the temperature every two hours for two Saturdays in June. The table shows the results in degrees Celsius.

Time	8 am	10 am	12 pm	2 pm	4 pm	6 pm	8 pm	10 pm
Day 1	10	12	17	18	18	15	14	13
Day 2	11	15	18	20	19	16	14	12

- a) Choosing suitable axes draw a line graph showing both days.
b) Using the graph, estimate the temperature at 9:00 on each day.

2. 120 school children were asked to name their favourite sport. Copy and complete the table below.

Sport	Percentage	Number of pupils
Football		
Rugby		
Golf		
Hockey		



3. A group of children were asked to give the number of people in their families including themselves and their parents. The results are listed below.

4	5	3	4	6
3	4	7	3	4
4	7	3	2	4
5	4	4	3	5
4	2	3	4	6

Construct a frequency table for this data.

4. (a) Four bags of crisps weigh 100g, 98 g and 105. What is their mean weight?
(b) If I buy another bag the mean becomes 106g. How much does the fourth bag weigh?



S1 Homework 14

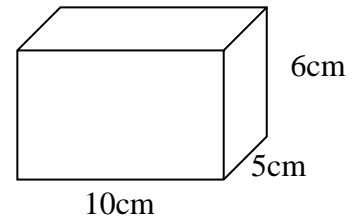
Mathematics



Department

3-D Shapes MP1

1. A cuboid has dimensions 5 cm by 3 cm by 2 cm. Draw the net of this cuboid on squared paper.
2. Jamie wants to make a skeleton model of this cuboid using wire.
 - a) Make a list of the pieces of wire Jamie would need.
 - b) Calculate the total length of wire needed for one cuboid.
 - c) Jamie has 2 m of wire.
 - i) How many of these cuboids can he make?
 - ii) How much wire is left over?



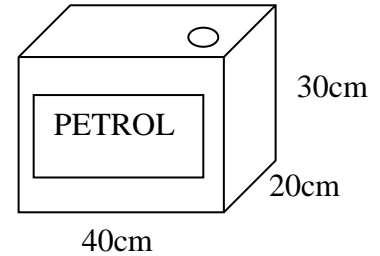
3. Petra wishes to paint a jewellery box. The box is in the shape of a cuboid with length 8 cm, breadth 7.4 cm and height 5 cm.



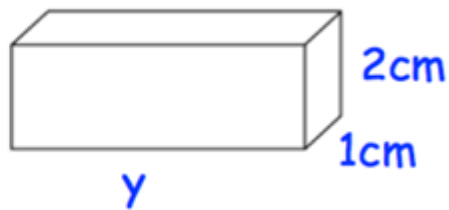
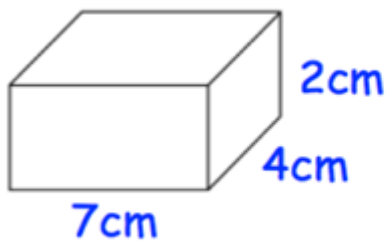
- a) Calculate the total amount of paint required to paint the box.
 - b) Calculate the amount of paint required if the box had no lid.
4. Change into millilitres:
 - a) 4 litres
 - b) 27 litres
 - c) $\frac{1}{4}$ litre
 - d) 4.6 litres
 - e) 7 litres 35ml
 5. Change to litres
 - a) 3000ml
 - b) 15 000ml
 - c) 750ml
 - d) 4500ml
 - e) 7400m

5. Jim's car runs out of petrol. He takes the petrol can, shown below, to the garage

- a) Calculate the volume of the can in cm^3
- b) How many litres does the can hold?
- c) If petrol costs 112.9 pence per litre, how much will it cost him to fill up the can?



6. Shown below are two cuboids
Both cuboids have the same SURFACE AREA
Find y .





S1 Homework 15

Mathematics



Department

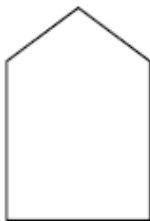
Letters, Numbers & Sequences

MP 1

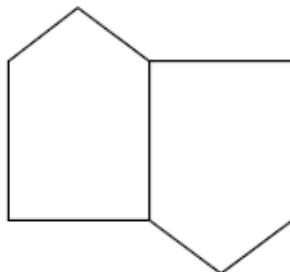
1. Write down the next two numbers in the sequence. Explain the rule.

- a) 3,5,7,.....,
- b) 4,8,16,32,.....,
- c) 17,12,7,2,.....,
- d) 2,3,5,8,.....,
- e) 1,4,9,16,.....,
- f) 1, 3, 6, 10, 15,.....,

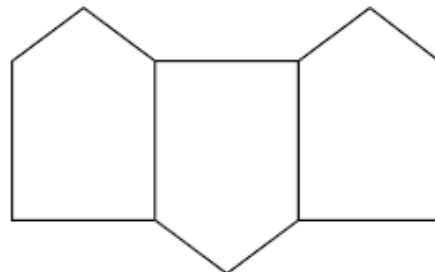
2. Sidra is working on the design for a bracelet. She is using matches to make each shape.



shape 1



shape 2



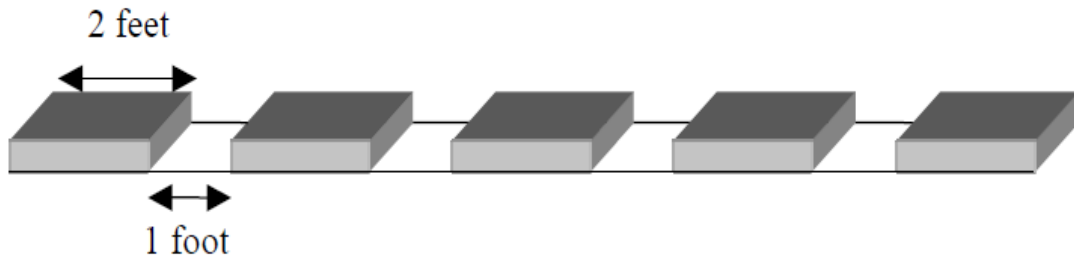
shape3

a) Copy and complete the following table.

Shape number (s)	1	2	3	4	5	13
No. of matches (m)	5	9				

- b) Find a formula for calculating the number of matches, (m), when you know the shape number, (s)
- c) Siddra wants to make 100 bracelets how many matches would she use?

6. A garden path is made from concrete slabs each 2 foot long.



A gap of one foot is left between each slab to give a stepping stone effect.

a) Copy and complete the table below.

No. of slabs (S)	1	2	3	4	5	20
Length of path (L)	2	5				

b) Write down a formula for calculating the length of path (L) when you know the number of slabs (S).

7. For each of the tables below construct a formula

G	1	2	3	4	5	6
B	-2	1	4	7	10	13

X	1	2	3	4	5	6
Y	14	12	10	8	6	4



S1 Homework 16

Mathematics



Department

Time
MP1

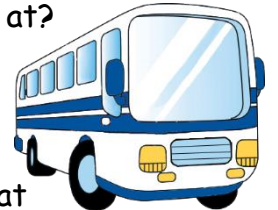
1. Write the following times in 24 hour clock notation.

a) 11.30am b) 7.40am c) 2.15pm d) 10.50pm e) quarter to six in the evening.

2. Write the following times in 12 hour clock notation.

a) 0830hrs b) 1115hrs c) 1330hrs d) 1845hrs e) 2210hrs

3. a) On Tuesday I am travelling from Glasgow to Perth which takes 1 hour 40 minutes on a bus. If the bus leaves at 0817 hrs, what time will I arrive at?



b) I decide to spend the morning and early afternoon in Perth, I leave at 2.24pm to get my bus back home to Glasgow. How many hours and minutes have I spent in Perth altogether?

4. Convert the following times to a decimal fraction of an hour

- a) 30 minutes
- b) 15 minutes
- c) 45 minutes
- d) 20 minutes

5. Jack is going to the theatre this Friday.
 The show is on Shaftesbury Avenue.
 He lives in Romford and will get the train to Liverpool Street.
 It will take him 30 minutes to get to Shaftesbury Avenue from Liverpool Street Station.
 The show begins at 7.30pm.

Romford.....	1754	1758	1814	1818	1824	1828	1828	1834	1838
Chadwell Heath		1802		1822		1832			1842
■ Goodmayes		1804		1824		1834			1844
Seven Kings		1806		1826		1836			1846
Ilford.....	1802	1809	1822	1829	1832	1839		1842	1849
Manor Park.....	1805		1825		1835			1845	1852
Forest Gate	1807		1827		1837			1847	1854
Maryland.....	1809		1829		1839			1849	1856
Stratford DLR ⚡	1812	1815	1832	1835	1842	1845	1836	1852	1859
London Liverpool St. ⚡	1820	1823	1840	1843	1850	1853	1845	1900	1907

It takes him 15 minutes to get to Romford station.
 In your jotter, plan a schedule by copying and completing the table below

	Time
Leave home.	
Train departs Romford.	
Train arrives Liverpool St.	
Arrive at Shaftesbury Ave.	