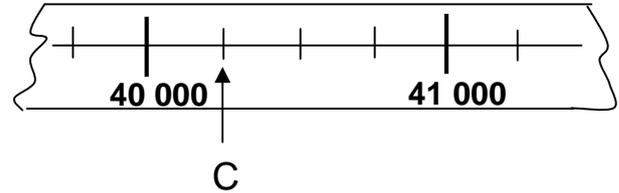
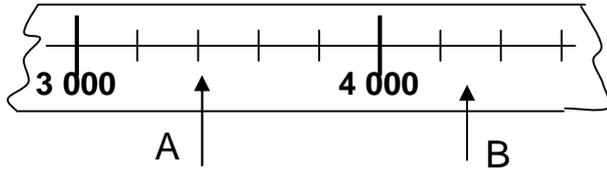


## Whole Numbers Homework 1

1. State the value of the 5 in each of the numbers below:

- a) 256      b) 37 500      c) 15 986 000      d) 258 123

2. State the number shown by each of the scales below:



3. Find the midpoint of:

- a) 30 and 40      b) 27 and 35      c) 310 and 450

5. Write these numbers in words:

- a) 34 072      b) 120 006      c) 375 400

- d) 1 500 000      e) 1 063 022      f) 1 000 000 000

6. Write these numbers in figures

- a) two thousand three hundred and seventeen  
b) thirty-five thousand and two  
c) one hundred and six thousand and twelve  
d) two million, four hundred and ninety-five

7. Copy and complete each example to show the missing digits:

$$\begin{array}{r} \text{a) } 2^* \\ + \text{ } ^*8 \\ \hline 125 \end{array}$$

$$\begin{array}{r} \text{b) } ^*61 \\ - 15^* \\ \hline 3^*3 \end{array}$$

8. Calculate:

- a)  $278 \times 6$       b)  $8205 \div 3$   
c)  $54 \times 300$       d)  $81400 \div 200$

9. A new iPhone costs £269 up front as well as 10 monthly payments of £32. How much does it cost in total?

## Whole Numbers

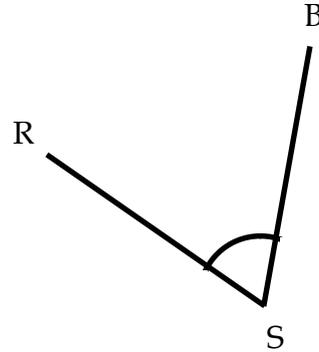
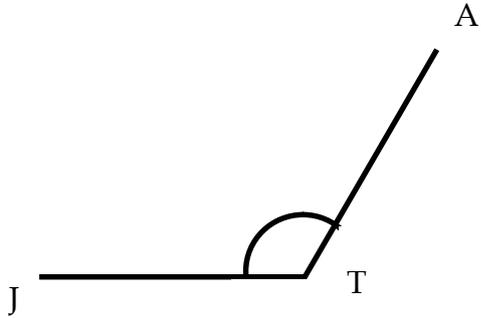
## Homework 2

1. a.  $12 + 34$       b.  $16 + 27$       c.  $387 + 256$       d.  $5279 + 3968$
2. a.  $25 - 13$       b.  $32 - 15$       c.  $245 - 83$       d.  $2483 - 564$
3. a.  $14 \times 3$       b.  $26 \times 7$       c.  $403 \times 6$       d.  $52 \times 16$
4. a.  $34 \times 10$       b.  $520 \div 10$       c.  $23 \times 100$       d.  $4300 \div 100$
5. a.  $234 \div 6$       b.  $165 \div 8$       c.  $2700 \div 30$       d.  $4160 \div 40$
6. Round these numbers to the nearest ten  
a) 57      b) 168      c) 244      d) 435
7. Round these numbers to the nearest hundred  
a) 367      b) 439      c) 755      d) 2 491
8. Round these numbers to the nearest thousand  
a) 4 444      b) 8 888      c) 17 455      d) 19 500
9. Find the midpoint of:  
a) 16 and 20      b) 240 and 380      c) 75 and 90
10. Use the correct order of operations to calculate:  
a)  $6 + 8 \times 5$       b)  $(8 + 10) \div 9$       c)  $2 \times 8 - 12 \div 3$   
d)  $2 \times 3^2$       e)  $\frac{20 + 4}{2 \times 3}$       f)  $(5 + 2 \times 3)^2$

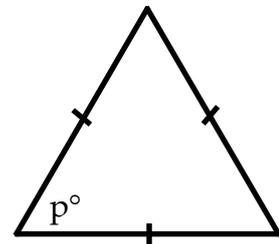
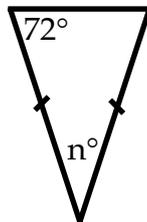
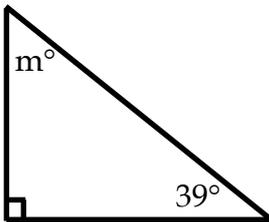
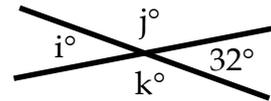
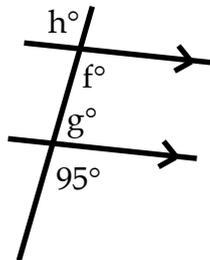
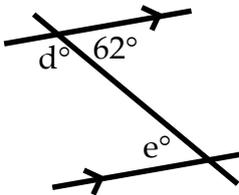
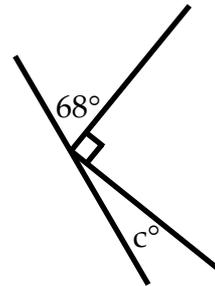
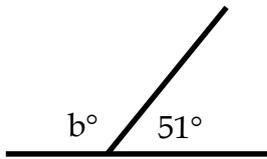
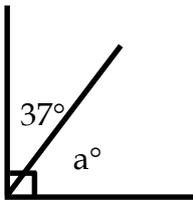
# Angles

## Homework 3

1. (a) **Name** each of these angles
- (b) State the **type** of angle
- (c) Use a protractor to **measure** the angle



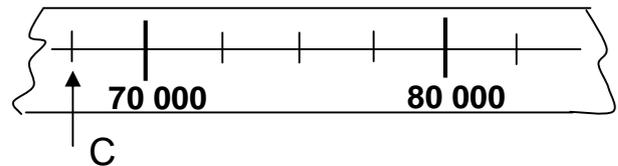
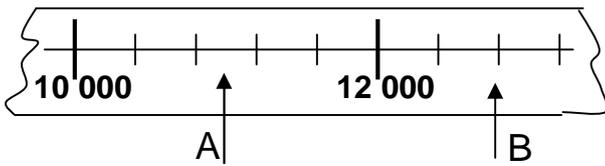
2. Calculate all unknown angles



## Angles and Whole Numbers

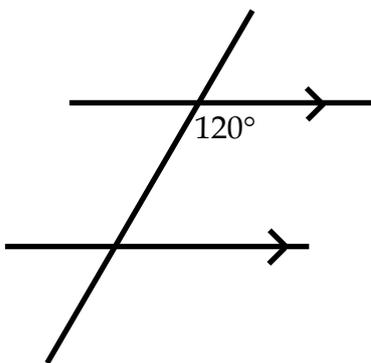
## Homework 4

1. State the values shown on the scales below:

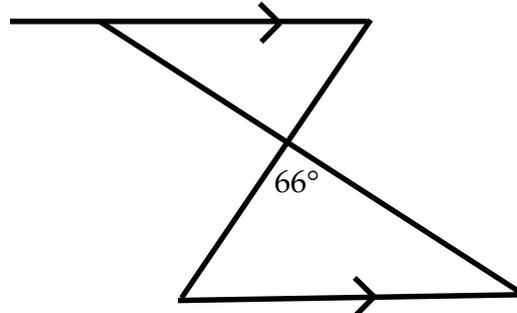


2. I exchange £350 into Japanese yen. For every £1 I receive 200 Yen. How many Yen will I get in total?
3. What number is:
- a) 40 more than three thousand two hundred and ninety?
  - b) 300 more than ten thousand seven hundred and eight?
  - c) 5 less than nine hundred thousand?
4. A triangle has one angle of  $56^\circ$ . If the triangle is isosceles, give **two** possible values for the other two angles. Explain your answer clearly.
5. Copy and complete to show all missing angles:

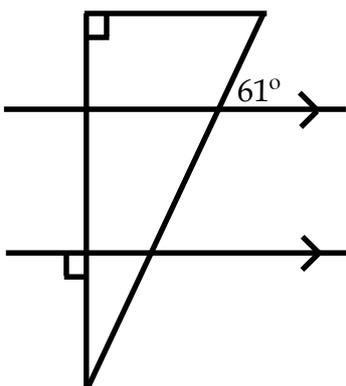
a)



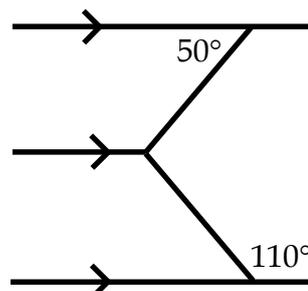
b)



c)



d)



## Fractions

## Homework 5

1. Copy and complete these equivalent fractions:

a)  $\frac{3}{4} = \frac{\quad}{12}$       b)  $\frac{7}{9} = \frac{\quad}{45}$       c)  $\frac{4}{11} = \frac{\quad}{66}$       d)  $\frac{3}{7} = \frac{\quad}{56}$

2. Give each fraction in its **simplest** form:

a)  $\frac{12}{18}$       b)  $\frac{21}{49}$       c)  $\frac{175}{200}$       d)  $\frac{64}{80}$

3. Find the value of:

a)  $\frac{1}{2}$  of £32      b)  $\frac{1}{4}$  of £116      c)  $\frac{3}{4}$  of £64      d)  $\frac{2}{5}$  of £135

4. Convert the following improper fractions into mixed numbers

a)  $\frac{19}{10}$       b)  $\frac{13}{4}$       c)  $\frac{17}{5}$       d)  $\frac{26}{6}$

5. Convert the following mixed numbers into improper fractions

a)  $1\frac{2}{3}$       b)  $2\frac{4}{5}$       c)  $3\frac{1}{10}$       d)  $7\frac{5}{8}$

6. Put these fractions in ascending order  $\frac{3}{4}$ ,  $\frac{3}{5}$ ,  $\frac{7}{10}$ ,  $\frac{1}{2}$ .

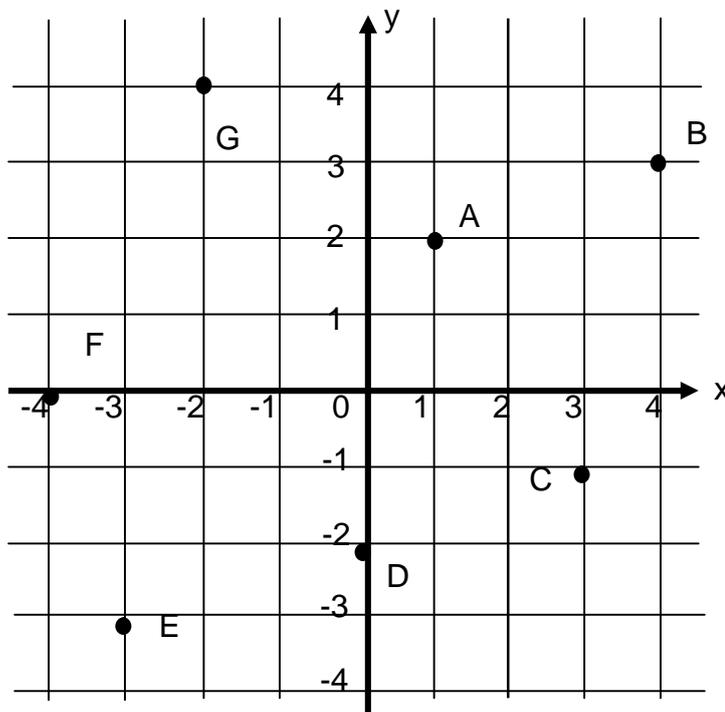
7. Complete the calculations giving your answer as a mixed number where appropriate;

a)  $\frac{1}{4} + \frac{1}{2}$       b)  $\frac{7}{8} - \frac{1}{6}$       c)  $4\frac{2}{9} + 3\frac{1}{6}$       d)  $6\frac{5}{6} + 3\frac{9}{10}$

## Negative Numbers

## Homework 6

- Put these numbers in ascending order: 6 -7 1 0 -8 -1 3 5 2
- Insert  $<$  and  $>$  between the following pairs of numbers:
  - 4 -1
  - 2 1
  - 6 -9
  - 23 56
  - 234 -612
- Calculate the following:
  - $4 + (-12)$
  - $-8 + (-6)$
  - $-25 + 18$
  - $-11 + 18$
  - $17 - 23$
  - $18 - 36$
  - $-60 - 80$
  - $-60 + 34$
- Name each of the coordinates shown below:



- Draw a grid like this in your jotter.  
On it plot the points A(4, 1), B(3, 3) and C(-3, 1).  
Now plot a fourth point D to create a rectangle ABCD. State the coordinates of D.

## Mixed Homework

## Homework 7

1. I bought a DVD for £15 and later sold it in for £9. How much did I lose on this? Give your answer as a fraction of the cost in its simplest form.

2. Write these numbers in figures:

a) Ten thousand and forty.

b) Four million, six hundred thousand and eight.

c) Seventeen million, forty thousand and sixty.

3. Calculate the value of:

a)  $4 - 3 \times 5$

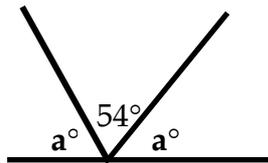
b)  $16 - 20 \div 2$

c)  $3 \times 6^2$

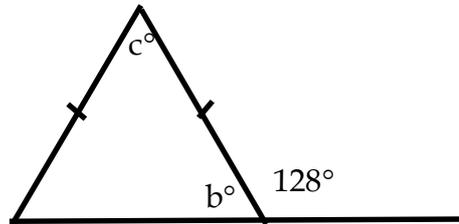
d)  $\frac{6+9}{10-7}$

4. Calculate the missing angles:

a)



b)



5. Write each in its simplest form:

a)  $4 \times a$

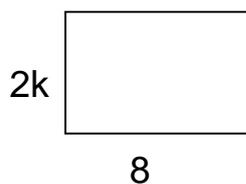
b)  $g + g + g + g$

c)  $3f + 12f - 9f$

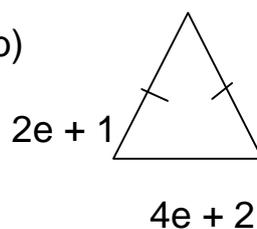
d)  $a \div 8$

6. Give an expression for the perimeter of each shape below:

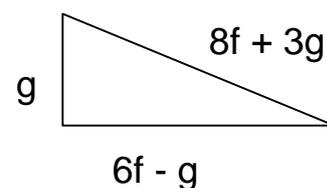
a)



b)



c)



7. Solve the equations below:

a)  $5x + 9 = 44$

b)  $10x - 2 = 3$

## Algebra

## Homework 8

- Given that  $a = 2$  and  $b = 5$  find the value of
  - $a + 3$
  - $b - 4$
  - $4b$
  - $3a + 5$
- Given that  $x = 4$ ,  $y = 6$  and  $z = 2$  find the value
  - $3x + 2y$
  - $5y - x$
  - $3xy$
  - $y^2$
  - $6y + 4z$
  - $5yz$
  - $y - xz$
  - $2xy - 15z$
- Simplify these expressions:
  - $3d + 2d$
  - $4e + 5e + 2e + e$
  - $5a + 2a - 4a$
  - $2x + 4 + x + 3$
  - $4m + 5n + 6m + n$
  - $5d + 3e + 2d - 3e$
  - $6c + 1 + c - 6$
  - $3x^2 + 5x - 3x + x^2$
- Solve these equations **algebraically**
  - $x + 3 = 15$
  - $b - 5 = 11$
  - $5a - 3 = 32$
  - $3e + 7 = 25$
- I think of a number. Five more than three times this number is equal to 23. Form an equation and solve it to find the number.
- The sum of three numbers is 66. The second number is twice as big as the first and the third is 6 bigger than the second. Form an equation and solve it to find the numbers.
- Create an inequality to match each statement:
  - The speed limit,  $s$ , is no more than 60mph.
  - To get on to the ride my height,  $h$ , has to be at least 150 cm.
- Solve these inequalities:
  - $x + 9 > 17$
  - $2x \geq 36$
  - $5t - 3 < 18$

## Special Numbers

## Homework 9

1. Explain the mathematical term 'factor'
2. Find all the factors of:
  - a) 9
  - b) 15
  - c) 18
  - d) 24
3. Find all the factor pairs of 36.
4. Find the highest common factor of :
  - a) 8 and 12
  - b) 18 and 27
  - c) 36 and 48
5. Explain the mathematical term 'multiple'
6. Write down all the multiples of 7 between 20 and 80.
7. State the multiples of 9 in the list below  
27 43 63 81 82 90 56 72 108 99 73 60
8. Find the lowest common multiple of:
  - a) 3 and 4
  - b) 2 and 8
  - c) 6 and 9
9. Explain the mathematical term 'prime number'
10. Write down the first 10 prime numbers.
11. Find all the prime factors of 80
12. Express the following as a product of prime numbers:
  - a) 30
  - b) 28
  - c) 32
  - d) 105
13. Evaluate:
  - a)  $6^2$
  - b)  $11^2$
  - c)  $20^2$
14. The 20<sup>th</sup> triangular number is 210. State the next triangular number.

## Decimals Homework 10

1. State the value of the 9 in each of the following numbers:

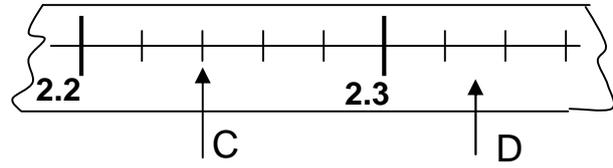
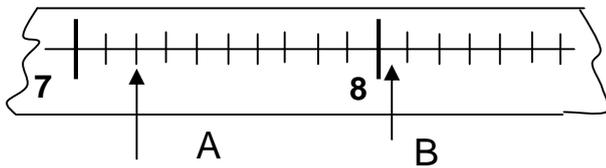
a) 4.09

b) 9.321

c) 0.009

d) 9123

2. State the values shown on these scales:



3. Calculate:

a.  $1.2 + 3.9$

b.  $1.6 + 2.75$

c.  $52.79 + 39.68$

4. Calculate;

a.  $2.5 - 1.8$

b.  $3.2 - 1.58$

c.  $54.03 - 26.451$

5. Complete these calculations:

a) up  $\frac{3}{10}$  from 8.6      b) down  $\frac{9}{100}$  from 8.75

c) up  $\frac{7}{10}$  from 92.13      d) up  $\frac{23}{1000}$  from 4.12

6. a.  $1.4 \times 3$

b.  $52.37 \times 8$

c.  $3.4 \times 10$

d.  $23.5 \times 200$

7. a.  $6.3 \div 3$

b.  $23.4 \div 6$

c.  $43.27 \div 100$

d.  $27 \div 30$

8. Put these numbers in ascending order

0.76,      0.7,      0.077,      0.707,      0.07,      7.1

9. Round each number off to the given number of decimal places:

a) 4.65 (1dp)

b) 2.33333 (2 dp)

c) 2.891 (1dp)

1. Write each of the following as a decimal and as a fraction in its simplest form.
  - a) 50%
  - b) 75%
  - c) 45%
  - d) 84%
  
2. Find the value of:
  - a) 10% of £42
  - b) 25% of £60
  - c)  $33\frac{1}{3}\%$  of £87
  - d) 30% of £120
  - e) 5% of £90
  - f) 15% of £64
  
3. Convert the following scores to a percentage:
  - a. 10 out of 50
  - b. 9 out of 10
  - c. 6 out of 20
  - d. 21 out of 24
  
4. Teri used to earn £10.20 an hour. She got a 5% pay rise. How much does she now earn?
  
5. Everything in a shop is reduced by 20%. An MP3 player originally cost £84. What is its sale price?
  
6. The purchase price of a car was £5 000. It was sold two years later for £3 500. What was the loss as a percentage of the original price?

## Data Handling

## Homework 12

1. The ages of the children living on a certain street are listed below.

6    5    7    4    10    11    3    6    4    8  
5    7    3    5    8    1    8    5    4    7  
3    5    4    7    10    10    1

- a. Create a frequency table for this data
- b. Draw a bar chart to illustrate this data. Label your axes clearly.
2. Draw a scatter plot to display the information shown below:

Hours of study	10	15	20	30	35	20	5	25	40
No. standard grades	3	3	4	6	6	5	2	4	8

Does this scatter plot show any connection between the hours spent studying and the number of standard grades obtained?

3. A dice is rolled. What is the probability that the number will be:
- 5
  - odd
  - greater than 4
  - less than or equal to 3
4. A card is drawn at random from a **normal pack of 52 cards**. What is the probability that the card will be:
- The nine of clubs
  - A diamond
  - A red card
  - A king
  - A joker
  - The Queen of hearts
  - Not a queen?
5. A box of sweets contains 3 toffees, 3 mints 5 bonbons 7 éclairs, 3 wine gums and 9 sherbet lemons. One sweet is chosen at random. What is the probability that it will be:
- A toffee
  - An éclair
  - A wine gum
  - Not an éclair
  - An éclair or a mint
  - Not a sherbet lemon
6. A normal dice is rolled 300 times. How many of the following would you **expect** to get?
- 5
  - even numbers
  - numbers less than 3

## Mixed Homework

## Homework 13

1. Complete these calculations:

a)  $\frac{4}{9} + \frac{1}{3}$

b)  $\frac{11}{12} - \frac{3}{4}$

c)  $4\frac{2}{5} + 3\frac{3}{8}$

d)  $5\frac{1}{8} - 2\frac{5}{12}$

2. A muffin costs £1.48 and a cappuccino costs £1.85 in a coffee shop. Some friends went for lunch and bought 4 muffins and 6 cappuccinos.

a) How much would this cost in total?

b) How much change would they get from £20?

3. If  $a = 5$ ,  $b = 6$  and  $c = (-2)$ , evaluate:

a)  $(a + b)^2$

b)  $c - ab$

c)  $\frac{2a + c}{b + 2}$

d)  $3(c + b)^2$

4. A car cost £6800 when it was bought. Since then it has depreciated (lost value) by 30%. What is it worth now?

5. Jane is  $x$  years old.

Her sister is twice as old.

Her brother is 3 years younger.

Altogether their ages add up to 25. What is the age of each child?

Create an **equation** and solve it to complete this problem.

6. A letter is chosen at random from the word **PROBABILITY**. Work out the probability that it will be:

a. R

b. Y

c. B

d. I or A

e. B or I

f. K?

## Patterns and Sequences

## Homework 14

- A model train has  $n$  carriages each of length  $m$ .
  - Create a formula for  $T$ , the total length of the train.
  - If the train also has an engine section of length  $p$ , find an expression for the total length of the train now.
- Find the next two numbers in each of the sequences below. In each case state the rule that you have used.
  - 4, 9, 14, 19, 24, .....
  - 3, 6, 12, 24, .....
  - 23000, 2300, 230, 23, .....
  - 5, 6, 8, 11, 15, .....
  - 1, 3, 4, 7, 11, 18, .....
  - 1, 4, 9, 16, 25, .....
  - 2, 5, 11, 23, 47, .....
  - 1, 3, 6, 10, 15, .....
- For each Fibonacci sequence below, find the missing terms:
  - 1, ....., ....., 5, 8,
  - 2, ....., ....., ....., 25

- This table shows the cost of hiring a carpet cleaner for a few days:

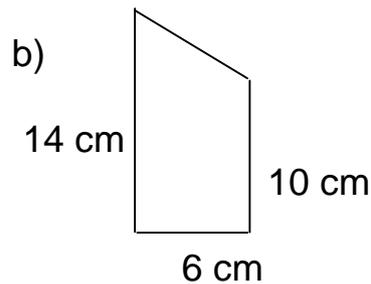
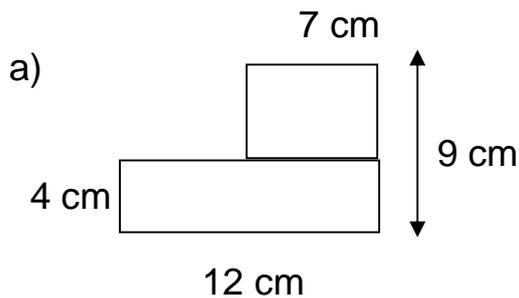
No of days hired (D)	1	2	3	4	5	6
Cost in pounds (C)	5	8	11	14	?	?

- How much will it cost to hire the cleaner for:
  - 5 days?
  - 6 days
- How much would it cost to hire the cleaner for 15 days?
- Write down the formula for finding the cost of hiring the carpet cleaner.

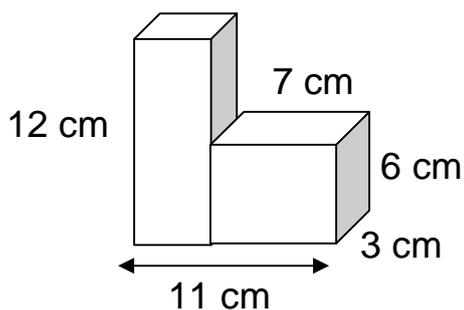
Hint:  $C = ? \times D + ?$

- If the cost of hiring the carpet cleaner was £74, for how many days was it hired for?

1. The perimeter of a rectangle is 36 cm. If it has a length of 11 cm, calculate its width.
2. Calculate the area of a rectangle, with a length of 5 cm and a breadth of 8 cm.
3. Calculate the area of a rectangle, with a length of 0.7 m and a breadth of 40 cm.
4. The area of a rectangle is  $525 \text{ cm}^2$ . Its breadth is 5 cm. Find its length.
5. The area of a rectangle is  $2000 \text{ cm}^2$ . Its length is 0.5 m. Find its breadth.
6. Calculate the area of a triangle, with a base of length 10 cm and a vertical height of 6 cm.
7. Calculate the area of these shapes:



8. Calculate the volume of a cuboid, with a length of 5 cm, a breadth of 8 cm and a height of 2 cm.
9. A carton of juice measures 20cm by 5 cm by 30 cm.
  - a) How much liquid could this carton contain if completely full?
  - b) A glass holds 125 ml of juice. How many glasses could be filled from one carton?
10. Find the total volume of the shape below:



## Mixed Homework Homework 16

1. A roast chicken takes 1 hour and 40 minutes to cook. If it should be ready for dinner at 6:15pm, when should it go into the oven?
2. A ferry sails from Hull to Zeebrugge. If it leaves Hull at 18:30 and arrives in Zeebrugge at 08:45 the next morning, how long was the journey?
3. A square has an area of  $49 \text{ cm}^2$ . What is the length of each side?
4. The table below shows the number of chairs that can be seated given an arrangement of tables.

No. of Tables, $T$	1	2	3	4	5
No. of Chairs, $C$	5	7	9	11	13

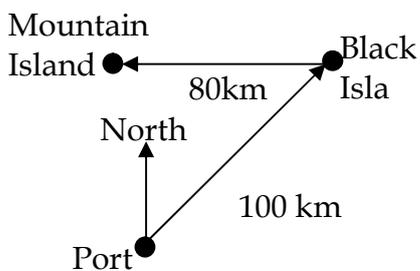
- a) How many chairs could be seated round an arrangement of 10 tables?
  - b) Find a formula connecting the number of tables to the number of chairs.
  - c) If there were 33 chairs, how many tables would there be?
5. Solve:  $5x - 9 = 26$
  6. I scored 18 out of 25 in my recent maths test. Write this score as a percentage.
  7. Use a factor tree to write 60 as a product of its prime factors.
  8. Calculate  $15.34 \times 4000$

## Journeys

## Homework 17

- Write in 12 hour time:–
  - 01 10
  - 17 15
  - 23 10
  - 00 01
- Write in 24 hour time:–
  - 9.20 am
  - 4.50 pm
  - 11.05 pm
  - 6.15 pm
- How long are the following journeys?
  - 9.30 am – 11.45 am
  - 1105 – 1750
  - 0643 – 20.27
- Change the following times to decimal hours
  - 30 mins
  - 45 mins
  - 15 mins
- Change the following times to hours and minutes
  - 3.5 hrs
  - 4.75 hrs
  - 6.25 hrs
- Sarah drove 360 kilometres at 60 km/hr. How long did it take?
- Chris cycled 90 km in 6 hours. What was his average speed?
- Joe runs for 30 mins at a speed of 8 km/hr. How far did he run?
- Julie left home and cycled 30 km to work. She left home at 7 am and arrived at work at 8.30 am. How fast did she cycle?

11. This sketch shows the voyage of a boat which sailed North East from Port to Black Island, then West to Mountain Island.

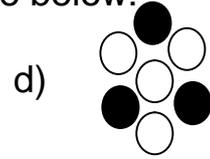
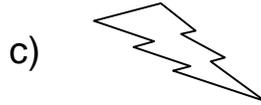


- Make a scale drawing of the voyage using a scale of 1 cm = 10 km
- How far away is the boat from its starting point in kilometres?
- What bearing would the boat have to take from Mountain Island to return to Port?

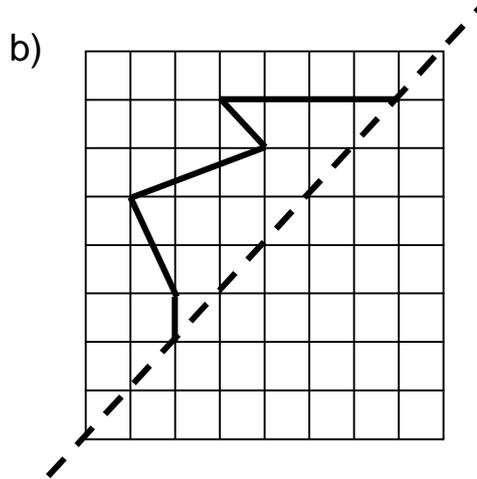
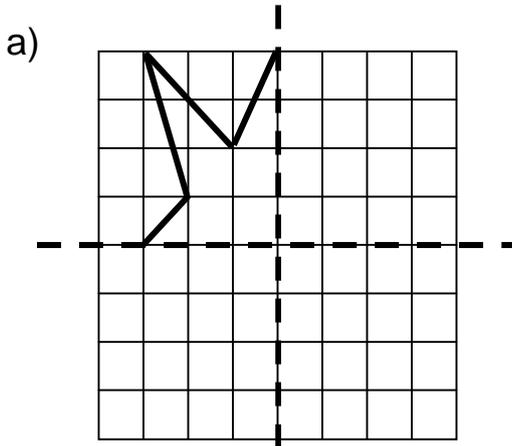
# Symmetry

# Homework 18

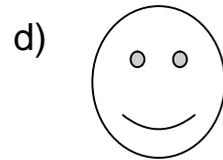
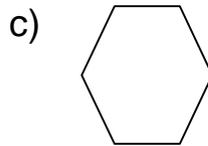
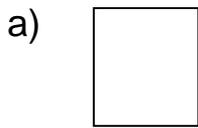
1. State the number of lines of symmetry in each shape below:



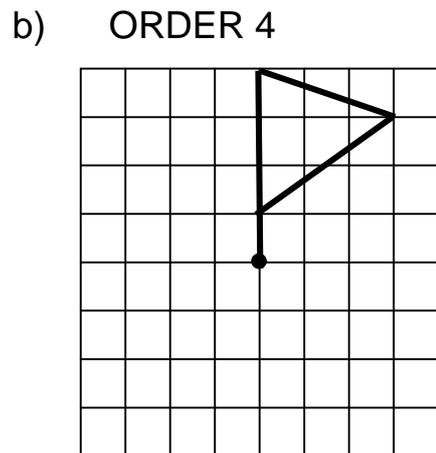
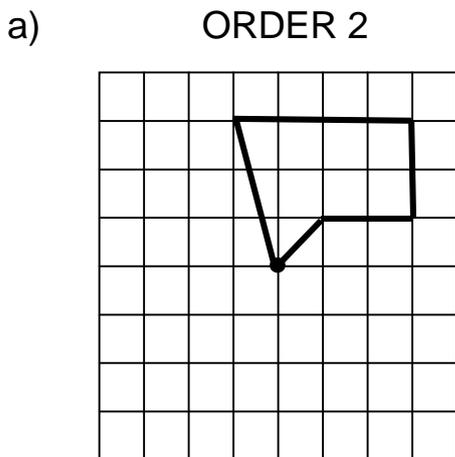
2. Copy and complete each diagram to show a symmetrical shape:



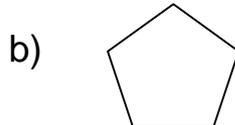
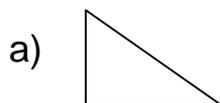
3. State the order of rotational symmetry of each shape below:



4. Copy and complete each diagram to give a shape which has the given order of symmetry about the point marked:



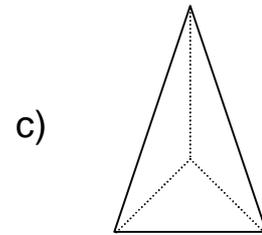
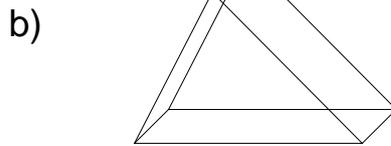
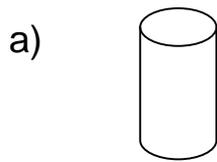
5. State which of the shapes below will tessellate. Show how this works.



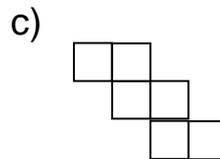
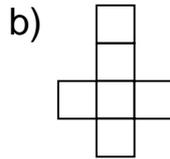
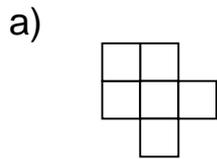
### 3D Shape

### Homework 19

1. Name these shapes:



2. Which of these are correct nets for a cube?



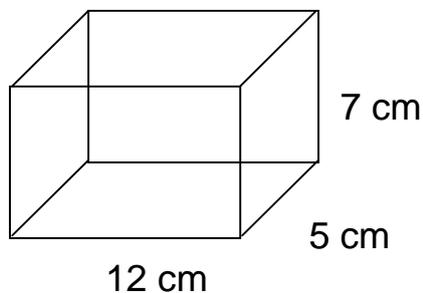
3. State the number of i) faces ii) edges iii) vertices on each of these shapes:

a) cuboid

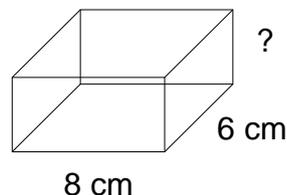
b) triangular prism

c) triangular pyramid (tetrahedron)

4. Find the total edge length of the cuboid below:



5. The total edge length of this shape is 68 cm. Find the height of the cuboid.



6. Draw accurately a net of a cuboid measuring 3 cm by 4 cm by 2 cm. Calculate the total surface area of this cuboid.

7. Sketch a net for:

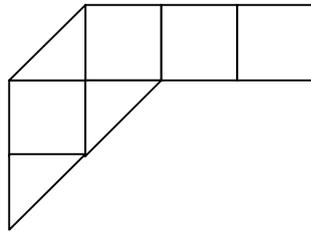
a) a triangular prism

b) a square based pyramid.

## Ratio and Proportion

## Homework 20

1. Simplify these ratios to their simplest form:  
a) 2:6                      b) 15:35                      c) 49:56                      d) 1 ½ hours: ¼ hour
2. The ratio of boys to girls in a class is 2:3. If there are 12 boys in the class, how many girls are there?
3. The ratio of pop songs to rock songs on an IPOD is 7:4. If there are 124 rock songs, how many pop songs are there?
4. Split £210 in a ratio of 3:4
5. If each square in the shape below is 1 cm long, draw an enlargement of this shape using a scale factor of 3.

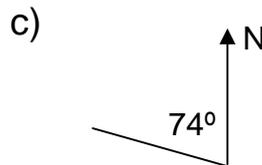
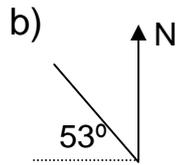
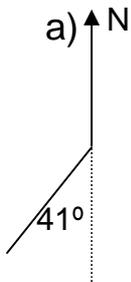


6. Copy and complete the following:  
a) 5 cakes      300 g  
   1 cake       $300 \div 5 = \dots\dots\dots$   
   12 cakes      $\dots\dots\dots$   
b) 30 metres    £2.70cm  
   1 metre  
   8 metres
7. A typist can type 400 words in 8 minutes. How many words can she type in 15 minutes?
8. I can exchange £1 for 1.23 euros. How many euros will I get for £600?
9. I can get 200 Yen for £1. How many pounds will I get if I exchange 2100 Yen?

## Mixed Homework

## Homework 21

1. I can buy 7 apples for £3.15. how much will it cost for 12 apples?
2. Jane is 6 years old and her brother Brian is 9. Their birthday money is split in the ratio of their ages. If they get a total of £105 spent on them, how much does each one receive?
3. What is the bearing shown in each diagram below?

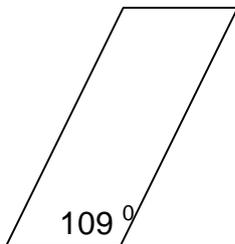


4. Which capital letters in the alphabet have both line and rotational symmetry?
5. Continue the sequences:  
a) 5, 15, 45, ....., ....., .....      b) 2, 5, 7, 12, ....., ....., .....
6. Write each percentage as a decimal and then as a fraction in its simplest form:  
a) 23%      b) 15%      c) 84%
7. Evaluate:  
a)  $230.4 \times 6$       b)  $2160 \div 30$   
c)  $6.8 + 3.12 - 5.751$       d)  $\frac{3}{8}$  of 512
8. Find:  
a) The lowest common multiple of 16 and 12.  
b) The highest common factor of 60 and 72.  
c) The prime numbers between 30 and 60.

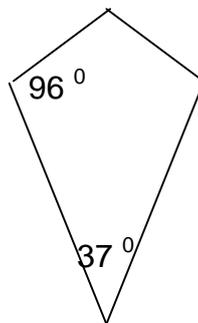
## Triangles and Quadrilaterals Homework 22

1. What do the 3 angles in a triangle add up to?
2. What do the 4 angles in a quadrilateral add up to?
3. How many lines of symmetry does a Kite have?
4. How many lines of symmetry does a Square have?
5. Name a shape with exactly 2 lines of symmetry.
6. Which quadrilaterals have no rotational symmetry?
7. Name a quadrilateral which has order 2 rotational symmetry and whose diagonals meet at right angles.
8. What properties do the parallelogram and rectangle have in common? Name a minimum of 3.
9. What shape has exactly one pair of parallel lines?
9. Copy the diagrams and fill in all of the missing angles in the shapes below:

a)



b)



c)

