Year 4

N1a Place Value - Integers

1) Put the following numbers in the place value table.

a) 2415
b) 607
c) 9380
d) 2004

1000 Thousands	100 Hundreds	10 Tens	1 Units

2) Write the following numbers in figures.

a) six hundred and sixty seven
b) two thousand one hundred and fifty six
c) nine hundred and fourteen
d) four thousand and seventy one

3) Write the following numbers in words.

a) 5432
b) 811
c) 3620
d) 9090

4) a) What is the value of the 2 in the number 1250?

b) What is the value of the 6 in the number 6924?

N1a Place Value - Integers

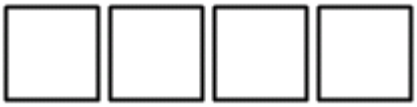
1) Match the words with the correct numbers.

twenty seven	2007
two hundred and seven	27
two thousand and seven	2070
two thousand and seventy	207

2) Here are four number cards.

a) What is the **biggest three digit** number you can make with these cards?

b) What is the **biggest even number** you can make with all four cards?



3) a) Write a whole number that is bigger than **one thousand** but smaller than **one thousand one hundred**.

b) Write the number **eleven thousand eleven hundred and eleven**.

N1b Place Value - Decimals

1) Put the following numbers in the place value table:
   a) 7.24
   b) 30.036
   c) 209.107
   d) 5034.005

Thousands	Hundreds	Tens	Units	.	Tenths	Hundredths	Thousandths

2) Write the following numbers in figures:
   a) Eight point two four
   b) Fifty point zero two five
   c) Three hundred and six point two
   d) Two thousand, five hundred and forty point zero seven

3) Write the following numbers in words:
   a) 7.5
   b) 80.26
   c) 930.074
   d) 1402.306

4) a) What is the value of the 4 in the number 72.46?
   b) What is the value of the 5 in the number 8.205?

N1c Place Value - Measures

m		cm	mm

1) Use the place value table to convert

   a) 2571 mm to cm

   b) 7 cm to mm

   c) 4 m to cm

   d) 324 mm to m

   e) 8 cm to m

L			mL

2) Use the place value table to convert

   a) 4052 ml to L

   b) 596 mL to L

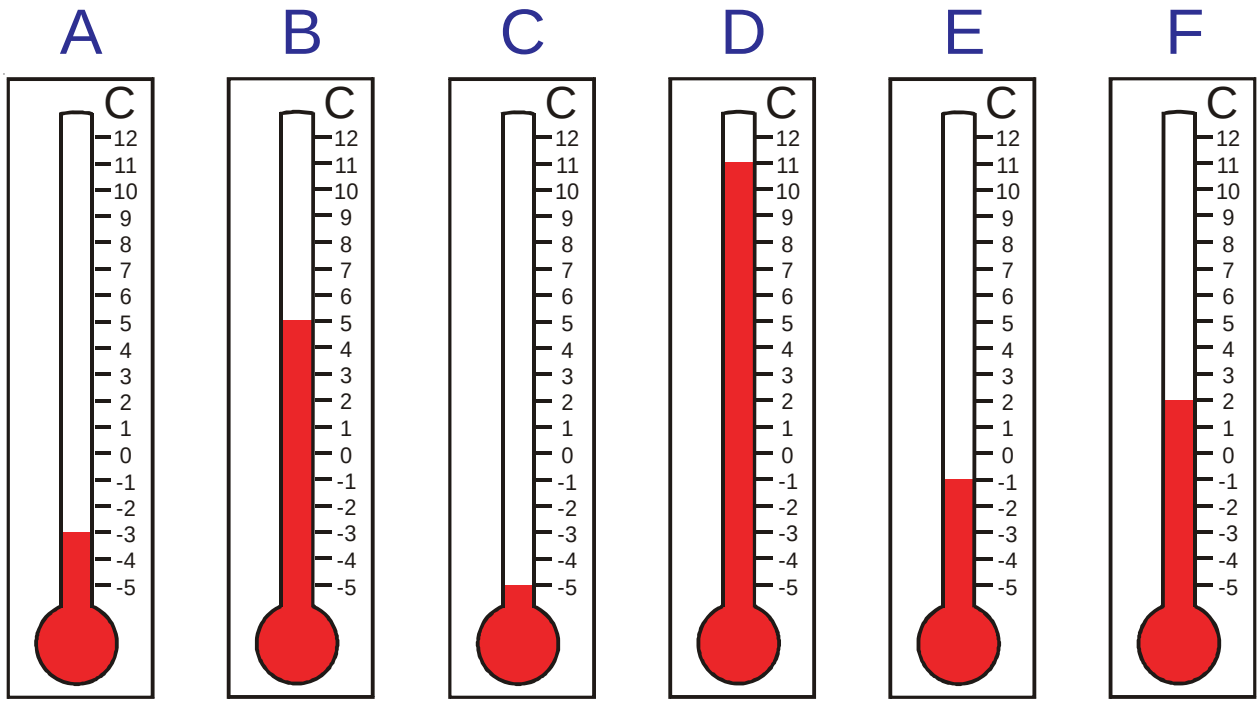
   c) 7 L to mL

   d) 8.4 L to mL

   e) 9.03 L to mL

N2a

Ordering Numbers - Integers



The thermometers A to F show the temperature at 3:00 A.M. in six different cities.
Use them to fill in the table below.
The first one has been done for you.

Thermometer	Temperature at 3.00 A.M	Temperature change over next five hours	Temperature at 8.00 A.M.
A	-3 °C	rises 8 °C	5 °C
B		falls 6 °C	
C		rises 3 °C	
D			-4 °C
E		rises 8.5 °C	
F			-4.5 °C

N2a Ordering Numbers - Integers

1) Place these numbers in order of size, smallest to largest.

a) 6, -1, 2, 5

b) 4, 7, -5, 3, -2

c) -1, -4, 0, 3, 9, -2

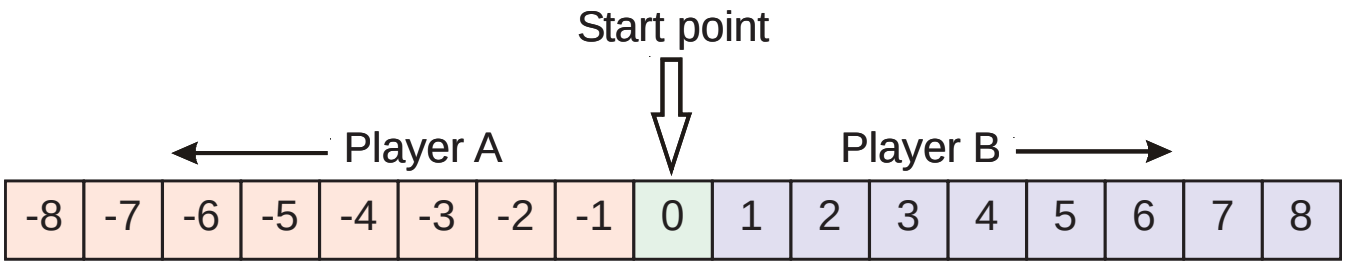
d) 1, -3, 4, -6, 8, -9, -4

e) -8, -4, -10, -6, -3, -7, -12

f) 6, 7.5, -3.5, -4, 8.5, -5.5, -2.5, -3

2) a) What is special about the temperature 100 °C?

b) What is special about the temperature 0 °C?



3) Place a counter on 0.

Player A and B take turns in rolling a dice.

Whatever scores player A gets, he/she always moves this many squares to the left.

Whatever scores player B gets, he/she always moves this many squares to the right.

Player A wins if he/she needs to move to a square which is less than -8.

Player B wins if he/she needs to move to a square which is more than 8.

N2b Ordering Numbers - Decimals

1) a) 0.47 b) 0.407 c) 7.04 d) 47.4

____ ____ ____ ____

From the following list, match the correct way of reading each of the above numbers.

A- seven point four
B- zero point forty seven
C- zero point four zero seven
D- four seven point four
E- seven point zero four
F- seven zero four
G- forty seven point four
H- four seven four
I- four seven point zero
J- zero point four seven

2) Arrange the numbers in order of size, starting with the smallest.

a) 1.8 0.8 8 8.1

___ ___ ___ ___

b) 0.08 1.16 0.12 1.09

___ ___ ___ ___

c) £4.04 £4.40 £4.14 £0.41

___ ___ ___ ___

d) 3.11 3.1 3 3.011 3.001

___ ___ ___ ___ ___

e) 0.2 0.022 0.202 0.222 0.22

___ ___ ___ ___ ___

f) 6.06 60.06 6.606 66.06 6.066

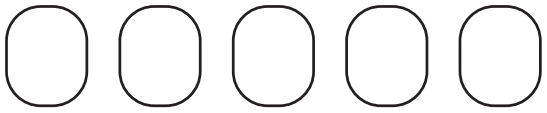
___ ___ ___ ___ ___

N2b Ordering Numbers - Decimals

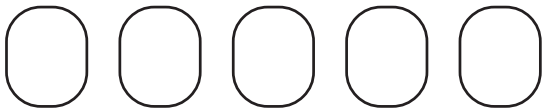
1) Here are some number cards.

Each card can be used once, all cards must be used,
the decimal point card cannot be at the end of a number.

a) What is the smallest number you can make?



b) What is the largest number you can make?



2) The times, in seconds, for the seven runners in a 100m race were:

9.96 10.03 9.92 10.26 10.37 9.99 10.00

What was the time of the winner? _____

3) I am a decimal number.
I have two figures before the decimal point and two figures after the decimal point.
I read the same forwards as backwards.
I have no zeros.
My first digit is bigger than my second digit.
The sum of my digits is 8.

What number am I? _____

N3a Adding Integers - Mentally

For each set of questions, time how long it takes to get the answers.
You must work out the answers in your head - *you can't do any working on paper.*

Set A

1) 23 + 35
2) 17 + 13
3) 45 + 46
4) 38 + 44
5) 71 + 54
6) 38 + 46
7) 27 + 68
8) 64 + 77
9) 64 + 99
10) 87 + 96

Set B

1) 42 + 56
2) 23 + 56
3) 37 + 25
4) 68 + 26
5) 83 + 65
6) 59 + 37
7) 42 + 39
8) 57 + 68
9) 99 + 48
10) 68 + 94

Set C

1) 62 + 24
2) 38 + 22
3) 17 + 34
4) 52 + 29
5) 82 + 63
6) 28 + 36
7) 88 + 17
8) 67 + 56
9) 42 + 98
10) 78 + 93

For any set of questions:

45 seconds or less:	Maths teacher standard
46 to 89 seconds:	Extremely fast
90 to 149 seconds:	Fast
150 to 209 seconds:	Reasonable
210 seconds or more:	A bit more practise needed

N3a Adding Integers - Mentally

This is a game for two people.

The player who goes first will say either 1 or 2, it is their choice.

The other player must now add on either 1 or 2 and say what the total is.

The first player now adds on 1 or 2 and says what the total is.

The game continues like this (always adding 1 or 2) until one of the players gets to 21.

The player who gets to 21 is the winner.

Here is a game between Ben and Sara as an example:

Ben goes first and says 2.
Sara adds 2 and says 4
Ben adds 1 and says 5
Sara adds 1 and says 6
Ben adds 2 and says 8
Sara adds 1 and says 9
Ben adds 2 and says 11
Sara adds 2 and says 13
Ben adds 2 and says 15
Sara adds 1 and says 16
Ben adds 2 and says 18
Sara adds 1 and says 19
Ben adds 2, **says 21 and wins**.

Play the game a few times and see if you can find any way of making sure you win.

If you go second, with the right tactics you can always win.

If you go first and the other person doesn't know the trick you can usually win as well.

N3b Adding Integers - Written Method

1) 51 + 36 = _____

2) 41 + 27 = _____

3) 231 + 25 = _____

4) 446 + 38 = _____

5) 569 + 84 = _____

6) 316 + 262 = _____

7) 596 + 472 = _____

8) 657 + 847 = _____

9) 62 + 38 + 517 = _____

10) 216 + 32 + 518 + 74 = _____

N3b Adding Integers - Written Method

Work out what the * must be.

1)
$$\begin{array}{r} 23 \\ +\ 4* \\ \hline 68 \\ \hline \end{array}$$

2)
$$\begin{array}{r} 58 \\ +\ 2* \\ \hline 84 \\ \hline \end{array}$$

3)
$$\begin{array}{r} 79 \\ +\ 4* \\ \hline 127 \\ \hline \end{array}$$

4)
$$\begin{array}{r} *3 \\ +\ 8* \\ \hline 160 \\ \hline \end{array}$$

5)
$$\begin{array}{r} ** \\ +\ *8 \\ \hline 192 \\ \hline \end{array}$$

6)
$$\begin{array}{r} 2*6 \\ +\ 35* \\ \hline 618 \\ \hline \end{array}$$

7)
$$\begin{array}{r} 4** \\ +\ *64 \\ \hline 751 \\ \hline \end{array}$$

8)
$$\begin{array}{r} *6* \\ +\ 4*6 \\ \hline 1363 \\ \hline \end{array}$$

N4a Subtracting Integers - Mentally

For each set of questions, time how long it takes to get the answers.
You must work out the answers in your head - *you can't do any working on paper.*

Set A

1) 75 – 71
2) 98 – 93
3) 84 – 32
4) 68 – 24
5) 79 – 47
6) 38 – 29
7) 67 – 48
8) 54 – 39
9) 94 – 36
10) 72 – 25

Set B

1) 57 – 52
2) 78 – 71
3) 56 – 13
4) 78 – 27
5) 66 – 31
6) 84 – 38
7) 76 – 29
8) 43 – 17
9) 62 – 26
10) 51 – 24

Set C

1) 39 – 34
2) 67 – 62
3) 83 – 42
4) 88 – 34
5) 76 – 25
6) 63 – 39
7) 46 – 28
8) 54 – 48
9) 72 – 27
10) 72 – 38

For any set of questions:

45 seconds or less:	Maths teacher standard
46 to 89 seconds:	Extremely fast
90 to 149 seconds:	Fast
150 to 209 seconds:	Reasonable
210 seconds or more:	A bit more practise needed

N4a Subtracting Integers - Mentally

This is a good trick.
This page tells you how to do the trick.
The next page gives you the secrets.

Let your friend see you writing on a piece of paper. Don't let them see what you are writing, though.

Fold the piece of paper to hide what you have written and place it on the table.

Now ask your friend to write a number where the first digit is bigger than the third digit.

Let's say they write 723.

Ask them to write the number back-to-front underneath the first number they wrote. →

$$\begin{array}{r} 723 \\ 327 \end{array}$$

Ask them to subtract the bottom number from the top. →

$$\begin{array}{r} 723 \\ -327 \\ \hline 396 \end{array}$$

Now tell them to write their answer back-to-front underneath it. →

$$\begin{array}{r} 723 \\ -327 \\ \hline 396 \\ 693 \end{array}$$

Now ask them to add the two numbers together. →

$$\begin{array}{r} 723 \\ -327 \\ \hline 396 \\ +693 \\ \hline 1089 \end{array}$$

Tell them to unfold the paper on the desk.

They will find that you correctly predicted their final answer.

N4b Subtracting Integers - Written Method

1) 35 – 12 = _____

2) 58 – 27 = _____

3) 93 – 46 = _____

4) 258 – 37 = _____

5) 681 – 79 = _____

6) 420 – 68 = _____

7) 743 – 471 = _____

8) 361 – 278 = _____

9) 800 – 692 = _____

10) 1450 – 785 = _____

N4b Subtracting Integers - Written Method

Work out what the * must be.

1)
$$\begin{array}{r} 45 \\ -\ 2* \\ \hline *2 \\ \hline \end{array}$$

2)
$$\begin{array}{r} 79 \\ -\ *5 \\ \hline 3* \\ \hline \end{array}$$

3)
$$\begin{array}{r} 67 \\ -\ ** \\ \hline 41 \\ \hline \end{array}$$

4)
$$\begin{array}{r} ** \\ -\ 61 \\ \hline 25 \\ \hline \end{array}$$

5)
$$\begin{array}{r} 63 \\ -\ ** \\ \hline 16 \\ \hline \end{array}$$

6)
$$\begin{array}{r} 3*5 \\ -\ 26* \\ \hline 82 \\ \hline \end{array}$$

7)
$$\begin{array}{r} 9** \\ -\ *63 \\ \hline 565 \\ \hline \end{array}$$

8)
$$\begin{array}{r} *** \\ -\ 596 \\ \hline 187 \\ \hline \end{array}$$

N5 Multiplication by 2, 3, 4, 5, and 10

1) Fill in the missing numbers in the minitables below.

a)

×	10	4	5	3
3				
2		8		
1				3
5			25	

b)

×	5		4	2
2				
4		12		
				20
3				

2) Work out

a) 2 × 17 = ____ b) 24 × 5 = ____

c) 10 × 9 = ____ d) 4 × 62 = ____

e) 37 × 3 = ____ f) 2 × 81 = ____

g) 5 × 32 = ____ h) 3 × 19 = ____

i) 26 × 4 = ____ j) 11 × 10 = ____

N5 Multiplication by 2, 3, 4, 5, and 10

1) a) **Use the table** to fill in the gaps below.

21 × 14 = ____

12 × ____ = 228

____ × 15 = 315

286 ÷ 22 = ____

×	**11**	**12**	**13**	**14**	**15**
18	198	216	234	252	270
19	209	228	247	266	285
20	220	240	260	280	300
21	231	252	273	294	315
22	242	264	286	308	330

b) Give two **different** pairs of numbers.

____ × ____ = 252

____ × ____ = 252

2) Julia says:

"*Multiply any number by five.*
The answer must be an odd number."

Is she correct?
Circle **Yes** or **No**

Yes / No

Explain how you know.

_____

N6 Division by 2, 3, 4, 5, and 10

1) Work out

a) 16 ÷ 2 = ____ b) 30 ÷ 5 = ____

c) 21 ÷ 3 = ____ d) 40 ÷ 4 = ____

e) 35 ÷ ____ = 7 f) 24 ÷ ____ = 8

2) Work out

a) 46 ÷ 2 = ____ b) 39 ÷ 3 = ____

c) 65 ÷ 5 = ____ d) 62 ÷ 4 = ____

e) 47 ÷ 3 = ____ f) 11 ÷ 10 = ____

g) 92 ÷ 4 = ____ h) 57 ÷ 3 = ____

i) 90 ÷ 5 = ____ j) 83 ÷ 10 = ____

N6

Division by 2, 3, 4, 5, and 10

1) Here is part of the 45 times table.
Use the table to help you fill in the missing numbers.

a) 315 ÷ 7 = _____

b) 135 ÷ 45 = _____

c) 270 ÷ _____ = 45

d) _____ × 45 = 405

e) 495 ÷ 45 = _____

f) _____ × 45 = 900

g) 450 ÷ 30 = _____

1 × 45	=	45
2 × 45	=	90
3 × 45	=	135
4 × 45	=	180
5 × 45	=	225
6 × 45	=	270
7 × 45	=	315
8 × 45	=	360
9 × 45	=	405
10 × 45	=	450

2) Joe says:

"*Divide any number by three.*
The answer must be an even number."

Is he correct?
Circle **Yes** or **No**

Yes / No

Explain how you know.

_____

N7a Units
Length, Mass and Capacity

1) a) How many millimetres are in a centimetre?

b) How many centimetres are in a metre?

c) How many metres are in a kilometre?

d) Work out how many millimetres are in a metre.

2) How many grams are in three kilograms?

3) How many millilitres are in a five litres?

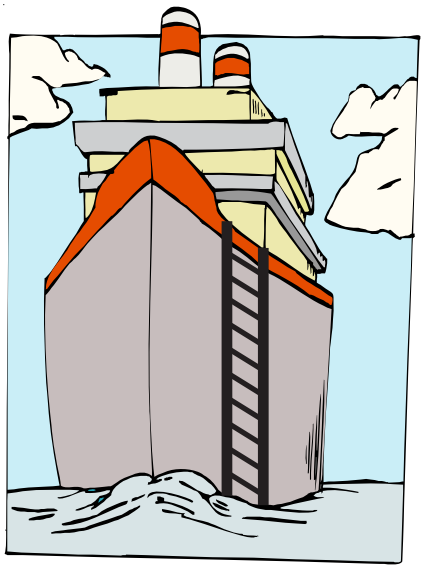
4) In the table, work out what each item should be measured in.
Your choices are mm, cm, m, km, g, kg, ml or l.

Amount of lemonade in a bottle	
Mass of a lemonade bottle	
Width of a lemonade bottle	
Distance to the moon	
Mass of a wasp	
Length of a wasp	
Amount of blood in a human body	

N7a Units
Length, Mass and Capacity

1) Try to match up A to F with U to Z

A	Mass of the Earth	U	1460 000 000 000 000 000 000 litres
B	Capacity of all water on Earth	V	2 400 km
C	Length of airways in the lungs laid end-to-end	W	3 041 409 000 000 000 kg
D	Average capacity of air breathed in a day	X	100 000 km
E	Mass of Mount Everest	Y	5 980 000 000 000 000 000 000 000 kg
F	Blood vessels in a human body laid end-to-end	Z	11 000 litres



2) The ship is in a harbour.

There are ten rungs visible on the ship's ladder and they are 30 cm apart.

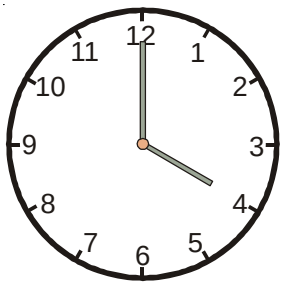
The tide is coming in and the water is rising at the rate of 20 cm per minute.

How many rungs will be visible after 9 minutes?

N7b Units - Time

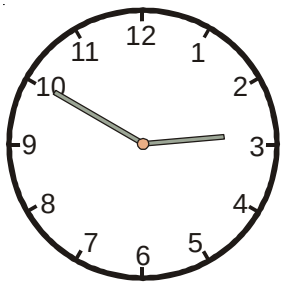
1) Write these times as 24 hour clock times

a)



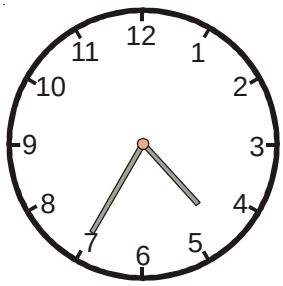
a.m.

b)



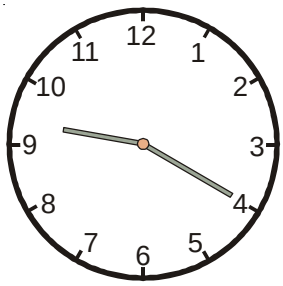
p.m.

c)



p.m.

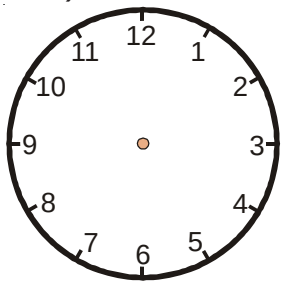
d)



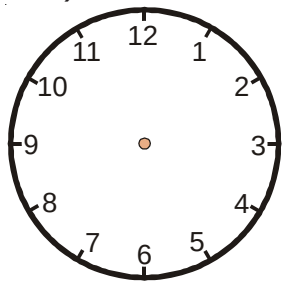
p.m.

2) Draw these times on the clock faces.
Underneath the clocks write whether the time is a.m. or p.m.

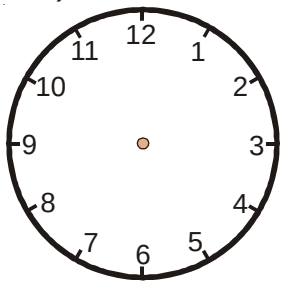
a) 09:40



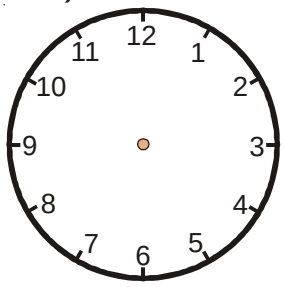
b) 18:10



c) 13:35



d) 23:55



3) Peter wants to watch a programme which begins at 8.00 p.m.
It is now 4.30 p.m.
How much time will Peter have to wait?

4) Susie is going to watch a programme which begins at 20:30 and lasts for one hour and forty five minutes.
What time will it finish?

N7b Units - Time

1) Here is a train timetable for trains going from London Euston to Crewe.

London Euston	09:38	12:49	15:46	16:49	17:17	17:48
Northampton	10:25	--------	--------	--------	--------	--------
Rugby	10:47	13:47	--------	--------	--------	--------
Nuneaton	11:00	14:01	--------	--------	--------	--------
Atherstone	--------	14:07	--------	--------	--------	--------
Polesworth	--------	14:12	--------	--------	--------	--------
Tamworth	11:15	14:17	15:53	--------	18:24	--------
Lichfield	11:22	14:23	--------	18:03	--------	19:00
Rugeley	--------	14:33	--------	--------	--------	--------
Stafford	--------	14:44	--------	--------	--------	--------
Crewe	12:00	15:09	17:31	18:41	19:07	19:34

a) How many trains stop at Tamworth?

b) If Tom gets to London Euston at 15:30 how long will he have to wait for a train to take him to Crewe?

c) How many minutes does the 09:38 London Euston train take to get to Northampton?

d) How many minutes does the 14:23 Lichfield train take to get to Crewe?

e) How long does the 17:48 London Euston train take to get to Crewe in hours and minutes?

2) You have two egg-timers.

One takes 11 minutes for the sand to run through and the other takes 7 minutes.

You want to boil an ostrich egg for 15 minutes.

How can you measure exactly 15 minutes with your two egg-timers?

11 minute timer

7 minute timer

N7c Units - Money

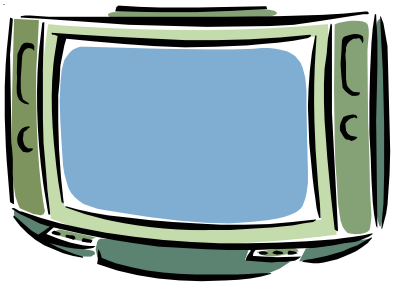
1) Write the following amounts of money using a £ sign and numbers.
   a) Three pounds and thirty seven pence.
   b) Twenty four pounds and fifty pence.
   c) Two hundred and five pounds.
   d) Nine pounds and sixty pence.
   e) Nine pounds and six pence.
   f) Forty eight pence.

2) Write the following amounts of money in words.
   a) £2.78
   b) £6.07
   c) £5.40
   d) £0.24

3) Work out the following on a calculator and write the answers correctly:
   a) £115.23 ÷ 23
   b) £100.80 ÷ 14
   c) 71p × 10
   d) £6.40 – £3.83 + £2.10
   e) £14.83 + £6.17

N7c Units - Money

Three men went into a second-hand shop to buy a television.



It was priced in the window at £30.

Each of them handed over £10 to the shop assistant.

As the assistant opened the till, the manager had a quiet word with him, “that TV is in the sale and is only £25 now, you will have to give them £5 back.”

The assistant was very lazy and couldn’t be bothered to count out the right change for each man.

Instead, he took 5 £1 coins out of the till.

He put two of them in his own pocket and gave each man £1 back.

Here’s the problem:

The men have now paid £9 each for the TV.

The assistant has kept £2 for himself.

3 × £9 = £27.

£27 + £2 = £29.

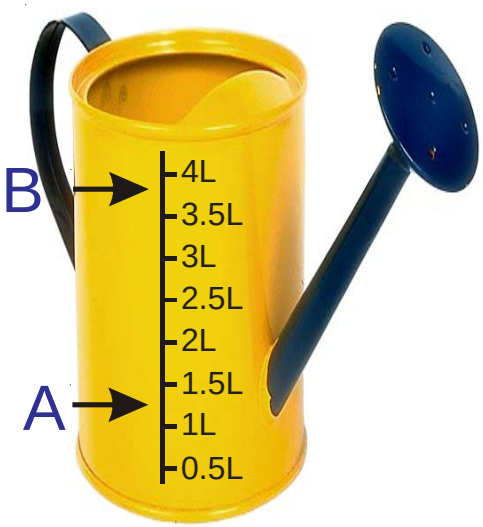
But £30 was handed over in the first place.

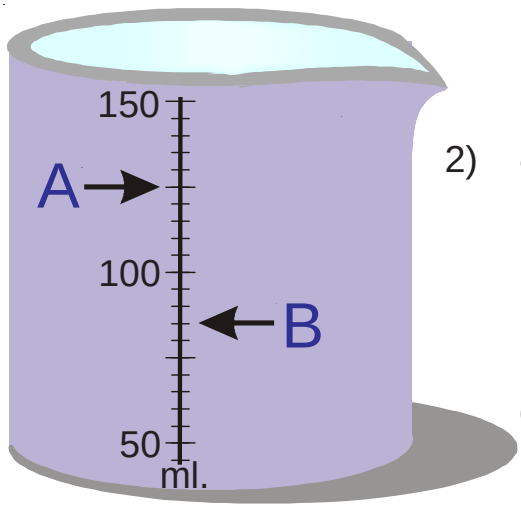
WHERE IS THE MISSING £1?

N8 Reading Scales

1) a) If water comes up to arrow A, how much will there be in the container?

b) About how much water will there be if it comes up to arrow B?

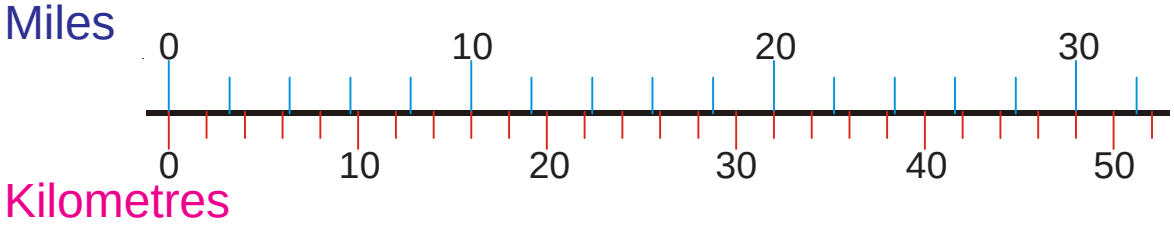




2) a) If milk comes up to arrow A, how much milk will there be in the container?

b) How much milk will there be if it comes up to arrow B?

c) Draw arrow C to show 140ml of liquid.



3) Use the scale to convert

a) 10 miles to km.

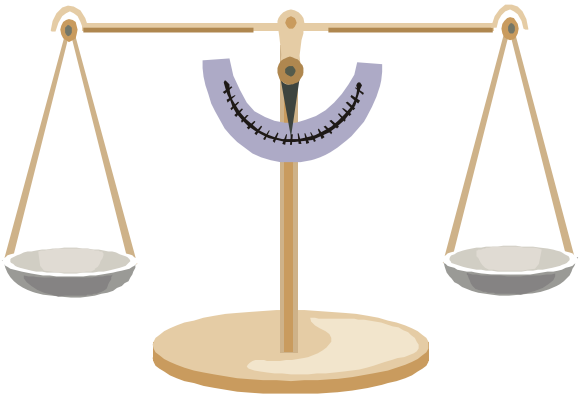
b) 40 km to miles.

c) 16 miles to km.

d) 8 km to miles.

N8 Reading Scales

1) You have eight genuine gold coins and one fake gold coin.
Each genuine coin weighs one ounce.
The fake coin weighs slightly less but not enough to detect by hand.
You are allowed to use the balance pans just twice to detect the false coin.
How do you find the fake?



2) You have a 3 pint jug and a 5 pint jug and as much water from a tap as you like.
How can you use the two jugs to measure out **exactly** 4 pints of water?

5 Pints

3 Pints

N9 Mathematical Symbols

1) State the meaning of each of the following symbols

a) =

b) ≠

c) <

d) >

e) ≤

f) ≥

2) Insert the correct symbol to make these sentences true

a) 4 + 5 6 + 2

b) 10 – 3 9 + 1

c) 6 + 2 2 × 4

3) State whether each statement is TRUE or FALSE

a) 7 < 4

b) 68p = £0.68

c) 11 > 3

4) You need to be 1.4 m or taller to ride on a rollercoaster. Write a mathematical statement about the heights of people (*h* metres) allowed on the rollercoaster.

N10 Factors

1) Write down all the factors of:

a) 6

b) 8

c) 10

d) 12

e) 20

f) 21

2) 100 has nine factors.

What are they?

3) The numbers 2, 3, 5 and 7 all have exactly two factors.

Find the next four numbers with only two factors.

---

4) The numbers 1, 4, 9 and 16 all have an odd number of factors.

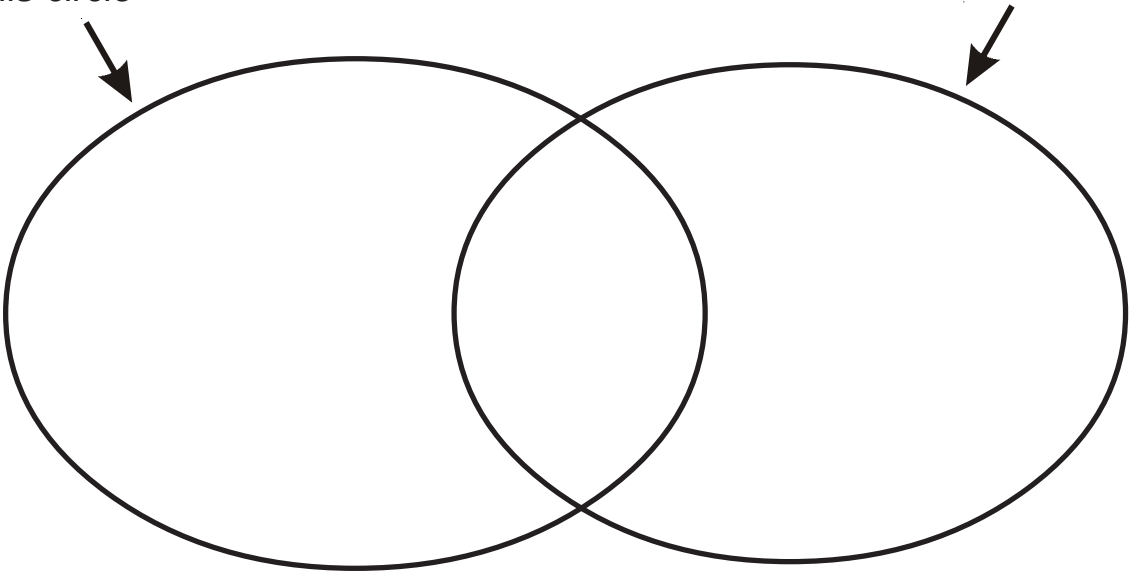
Find the next three numbers which have an odd number of factors.

---

5) Put the correct numbers in the circles.
Be careful of the overlaps.

Factors of 24 in this circle

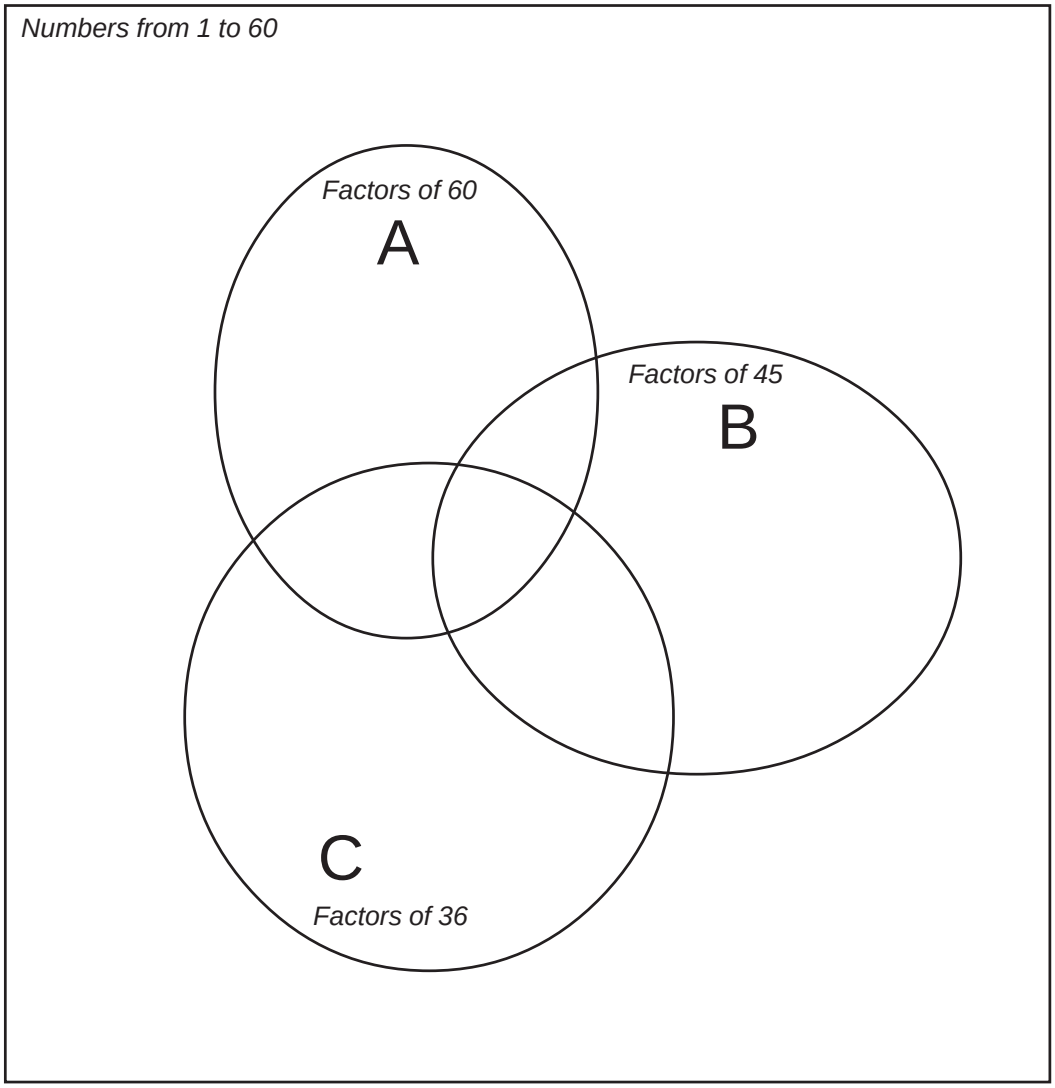
Factors of 40 in this circle



N10 Factors

Place all the whole numbers from 1 to 60 in the diagram below.
However, you must stick to these four rules:

1) In the rectangle you must have every whole number from 1 to 60
2) In circle A you must have all the factors of 60
3) In circle B you must have all the factors of 45
4) In circle C you must have all the factors of 36



N11 Multiples

1) a) Write down the first five multiples of 3.

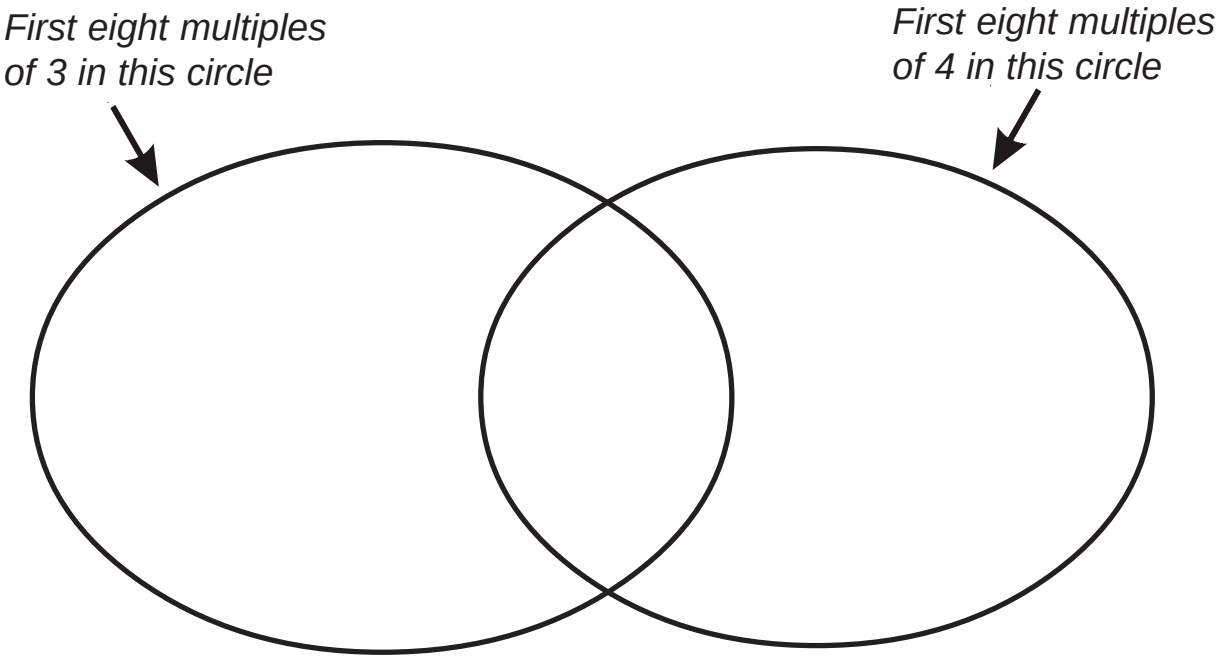
b) Write down the first five multiples of 7.

c) Write down the first five multiples of 4.

2) 6, 12, 18, 24, 30 are the first five multiples of which number?

3) What are the eighth, ninth and tenth multiples of 11?

4) Put the correct numbers in these circles.
Be careful of the overlaps.



N11 Multiples

The sieve of Eratosthenes

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Just follow these steps:

a) Cross out 1.

b) Shade in the square with 2 in it.
Now cross out all other multiples of 2.

c) Shade in the 3 square.
Cross out all other multiples of 3
(some will already be crossed out).

d) Shade in the 5 square.
Cross out all other multiples of 5.

e) Shade in the 7 square.
There should be just three
other multiples of 7 which
haven't already been crossed out.
Cross them out.

f) Shade in every square that hasn't
been crossed out.

g) Write out the numbers in every
shaded square.

h) The numbers you have written down
have a special name. **What is it**?

N12 Number Patterns

Example

3, 5, 7, 9, 11, 13, ?, ?, ?

a) Describe the number pattern. *It goes up in 2s*

b) What are the next three terms? *15, 17, 19*

1) For each number pattern:

   a) Describe the pattern

   b) Work out what the next three terms are

      (i) 2, 4, 6, 8, 10, 12, ?, ?, ?

      (ii) 1, 4, 7, 10, 13, 16, ?, ?, ?

      (iii) 5, 12, 19, 26, 33, 40, ?, ?, ?

      (iv) -2, 3, 8, 13, 18, 23, ?, ?, ?

      (v) 36, 33, 30, 27, 24, 21, ?, ?, ?

      (vi) -12, -8, -4, 0, 4, 8, ?, ?, ?

      (vii) 100, 91, 82, 73, 64, 55, ?, ?, ?

      (viii) 7, 8.5, 10, 11.5, 13, 14.5, ?, ?, ?

2) For both of the following number patterns:

   a) Describe the pattern

   b) Work out what the next three terms are

      (i) 1, 4, 9, 16, 25, 36, ?, ?, ?

      (ii) 1, 3, 6, 10, 15, 21, ?, ?, ?

N12 Number Patterns

1) Work out the next two terms for each of the following number patterns:

a) 3, 8, 15, 24, 35, ?, ?

b) 4, 14, 36, 76, 140, ?, ?

2) Work out the next two terms for each of the following number patterns:

a) 1, 2, 4, 8, 16, 32, ?, ?

b) 2, 7, 22, 67, 202, ?, ?

3) Work out the next two terms for each of the following number patterns:

a) 1, 1, 2, 3, 5, 8, 13, 21, ?, ?

b) 1, 2, 3, 6, 11, 20, 37, 68, ?, ?

4) Work out the next two terms for each of the following :

a) O, T, T, F, F, S, S, ?, ?

b) J, F, M, A, M, J, J, ?, ?

5) Choose any number between 1 and 20.

If your number is even, halve it and write down the answer.
If your number is odd, multiply it by three and add one. Write down the answer.

Look at your answer and follow the same rules:
If it is even you halve it and write down the answer.
If it is odd you multiply by three and add one and write down the answer.

Only stop when you get to one.

Try more starting numbers (of any size).

Do they all go to one?

What about if you use 27 as the number to start with?

---

6) This number pattern begins with a 1.
After that, every row can be worked out from the row above it.
Can you work out the rule and find out what the question marks should be in the last row?

This is a very difficult question and not many succeed.

1
1 1
2 1
1 2 1 1
1 1 1 2 2 1
3 1 2 2 1 1
1 3 1 1 2 2 2 1
1 1 1 3 2 1 3 2 1 1
3 1 1 3 1 2 1 1 1 3 1 2 2 1
? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ?

N13a Addition - Integers

1) 1524 + 4273 = _____

2) 7452 + 216 = _____

3) 24578 + 1215 = _____

4) 591 + 372 + 85 = _____

5) 9876 + 55 + 1039 = _____

N13a Addition - Integers

In the sum on the right

a) replace three of the digits with zeros so that the answer is 1411

b) replace three of the digits with zeros so that the answer is 1513

c) replace three of the digits with zeros so that the answer is 1626

d) replace three of the digits with zeros so that the answer is 1583

1	1	1	
2	2	2	
3	3	3	
4	4	4	
5	5	5	+

N13b Addition - Decimals

1) 59.1 + 37.2 = ____

2) 24.75 + 9.98 = _____

3) 94.78 + 104.9 = _____

4) 309 + 12.5 + 631.4 = _____

5) 105 + 7.32 + 51.8 + 2804 = _____

N13b Addition - Decimals

Choose a number from a box and a number from a loop to make the totals in a) and b).

3.61	2.975	2.35	1.3	6.72
3.2	7.65	1.006	3.58	2.25

a) ☐ + ◯ = 4.6

b) ☐ + ◯ = 11.26

N14a Subtraction - Integers

1) 14562 – 1251 = _____

2) 6652 – 716 = _____

3) 42160 – 39215 = _____

4) 2300 – 934 = _____

5) 50000 – 2166 = _____

N14b Subtraction - Decimals

1) 68.1 – 27.3 = _____

2) 24.75 – 0.098 = _____

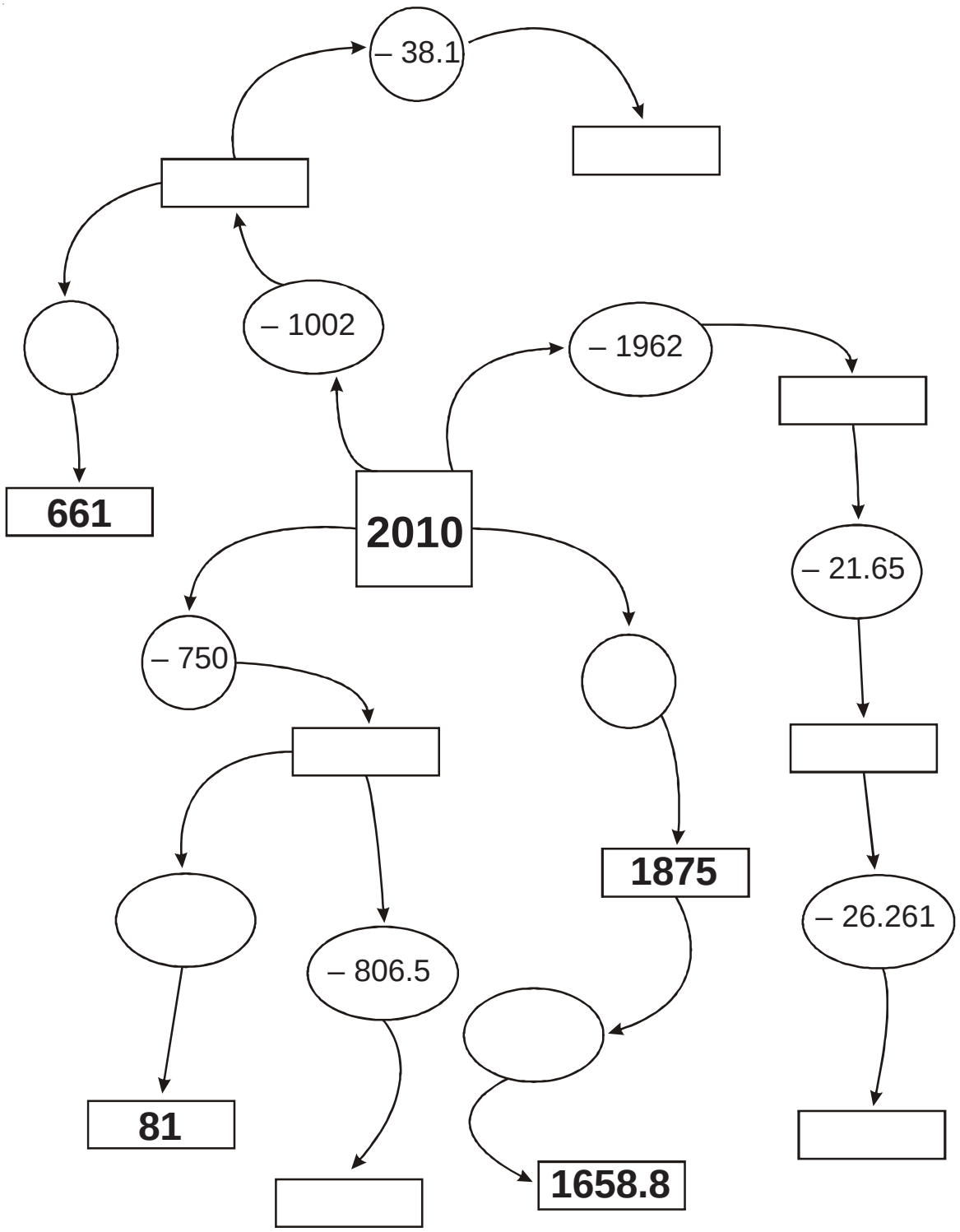
3) 94.78 – 36 = _____

4) 3564 – 1971.6 = _____

5) 800 – 237.62 = _____

N14b Subtraction - Decimals

Complete the boxes and the circles:



N15a Short Multiplication Integers

1) $3 \times 13 =$ _____

2) $55 \times 4 =$ _____

3) $9 \times 64 =$ _____

4) $92 \times 5 =$ _____

5) $7 \times 87 =$ _____

6) $342 \times 8 =$ _____

7) $6 \times 208 =$ _____

8) $745 \times 4 =$ _____

9) $289 \times 7 =$ _____

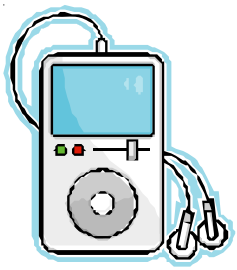
10) $113 \times 9 =$ _____

N15a Short Multiplication Integers

Here are some items available from a local shop:

Jacket: £17

Trainers: £56



MP3 player: £32

Television: £499

Work out the cost of:

a) 5 jackets _____

b) 6 MP3 players _____

c) 4 pairs of trainers _____

d) 7 televisons _____

N15b Short Multiplication Decimals

1) $4 \times 1.2 =$ _____

2) $6.5 \times 3 =$ _____

3) $9 \times 18.7 =$ _____

4) $3.6 \times 5 =$ _____

5) $7 \times 8.2 =$ _____

6) $6 \times 1.39 =$ _____

7) $9.2 \times 8 =$ _____

8) $8.35 \times 4 =$ _____

9) $3.62 \times 7 =$ _____

10) $25.3 \times 9 =$ _____

N15b Short Multiplication Decimals

1) Here are some items available from a local shop:

Milk: £1.20

Bread: £0.65

Lollies: £0.30

Chocolates: £3.99

Work out the cost of:

a) 7 lollies, _____

b) 3 bottles of milk, _____

c) 2 loaves of bread, _____

d) 5 boxes of chocolates. _____

2) Rulers cost £0.25 each.
Pens cost £0.45 each.
Kelly buys 3 rulers and 5 pens.

Work out how much she pays.

_____

N16 Short Division of Integers

1) 786 ÷ 2 = _____

2) 465 ÷ 5 = _____

3) 448 ÷ 8 = _____

4) 552 ÷ 6 = _____

5) 801 ÷ 9 = _____

6) 5976 ÷ 8 = _____

7) 9080 ÷ 5 = _____

8) 17801 ÷ 7 = _____

9) 18054 ÷ 6 = _____

10) 374877 ÷ 9 = _____

N16 Short Division of Integers

1) Here are some items available from a local shop:




Watch: £ ____ Camera: £ ____ Camcorder: £ ____ Laptop: £ _____

Work out the unit price of each item knowing that:

7 watches cost £336,

5 cameras cost £380,

4 camcorders cost £1260,

6 laptops cost £7794.

2) a) If 3 chairs cost £17.40,
how much would one of them cost?

£_____

b) If 7 shirts cost £34.93,
how much would one of them cost?

£_____

N17a Multiplying and Dividing by powers of 10 - Integers

1) $75 \times 100 =$ _____

2) $102 \times 10 =$ _____

3) $9 \times 1000 =$ _____

4) $450 \div 10 =$ _____

5) $3800 \div 10 =$ _____

6) $9700 \div 100 =$ _____

7) $60 \times 1000 =$ _____

8) $7000 \div 100 =$ _____

9) $210 \times 1000 =$ _____

10) $1050000 \div 1000 =$ _____

N17a Multiplying and Dividing by powers of 10 - Integers

The table shows the approximate populations of five different places.

Place	Approximate population
London	7 000 000
Glasgow	700 000
Barnsley	70 000
Penkbridge	7 000
High Bickington	700

Complete these sentences:

The population of **Barnsley** is about **10 times** bigger than the population of .....

The population of ..... is about **100 times** bigger than the population of **Barnsley**.

The population of Glasgow is about ..... **times** bigger than the population of **Penkbridge**.

The population of **Barnsley** is about **10 times** smaller than the population of .....

The population of ..... is about **100 times** smaller than the population of **Barnsley**.

The population of High Bickington is about ..... **times** smaller than the population of **Penkbridge**.

N17b Multiplying and Dividing by powers of 10 - Decimals

1) $3.6 \times 10 =$ _____

2) $82.9 \times 100 =$ _____

3) $0.5 \times 1000 =$ _____

4) $47 \div 10 =$ _____

5) $106.4 \div 10 =$ _____

6) $9.9 \div 100 =$ _____

7) $6.2 \times 1000 =$ _____

8) $70 \div 1000 =$ _____

9) $0.035 \times 10000 =$ _____

10) $0.01 \div 100 =$ _____

N17b Multiplying and Dividing by powers of 10 - Decimals

1) Fill in the missing box in each case.

a) 12 → ×100 → ☐

b) 7.5 → ÷10 → ☐

c) 83.1 → ☐ → 8310

d) 0.9 → ☐ → 900

e) 662 → ☐ → 66.2

f) 540 → ☐ → 5.4

g) 0.6 → ☐ → 0.006

h) ☐ → ÷100 → 73.7

i) ☐ → ×10 → 0.18

j) ☐ → ×1000 → 104

2) Using the fact below:

$$365 \times 17 = 6205$$

Work out the following

a) $36.5 \times 17 =$ ____

b) $36.5 \times 1.7 =$ ____

c) $365 \times 170 =$ ____

d) $3650 \times 1.7 =$ ____

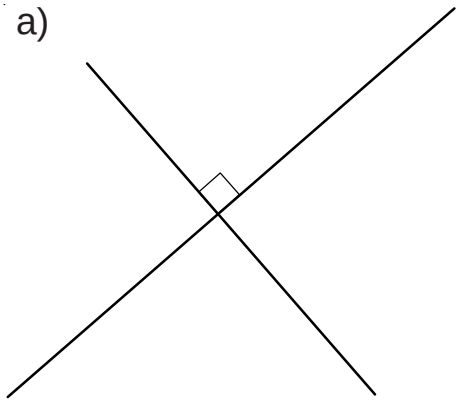
e) $62.05 \div 17 =$ ____

f) $6.205 \div 36.5 =$ ____

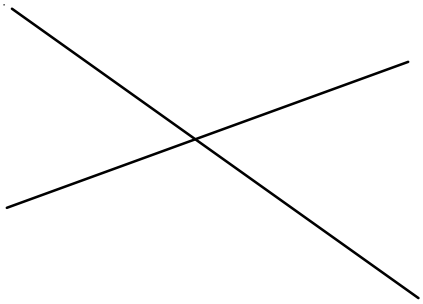
G1 Basic Geometric Definitions

1) Which of these diagrams show perpendicular lines?

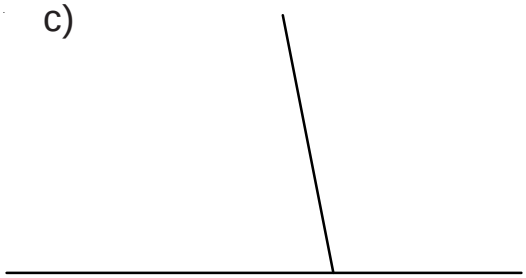
a)



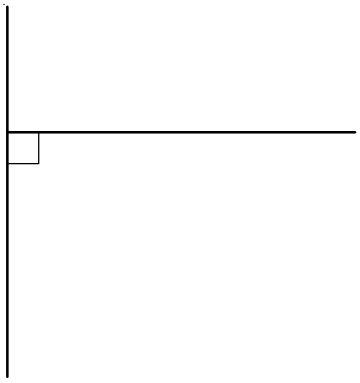
b)



c)



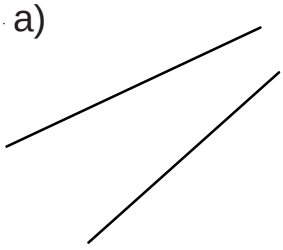
d)



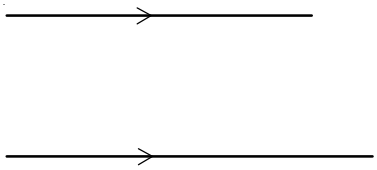
2) Perpendicular lines meet at what angle?

3) Which of these diagrams show parallel lines?

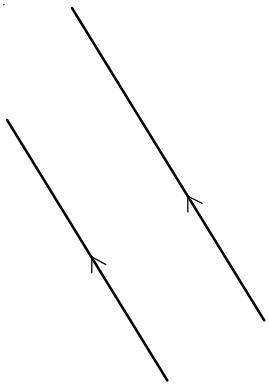
a)



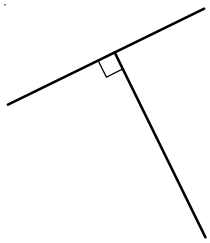
b)



c)



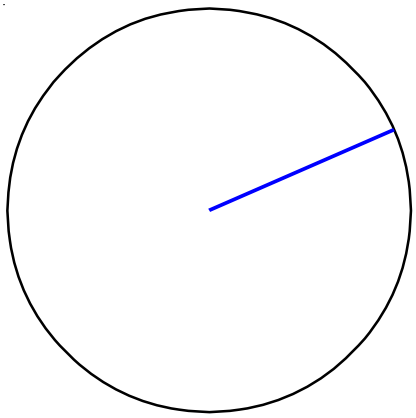
d)



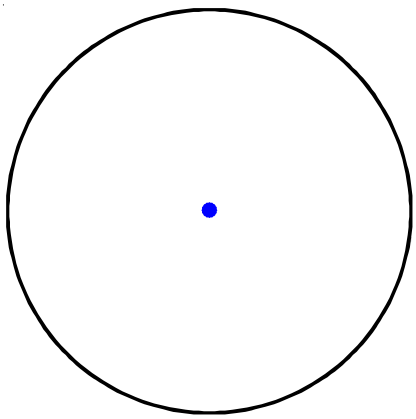
G2 Properties of Circles

1) Name the part of the circle shown on each diagram.

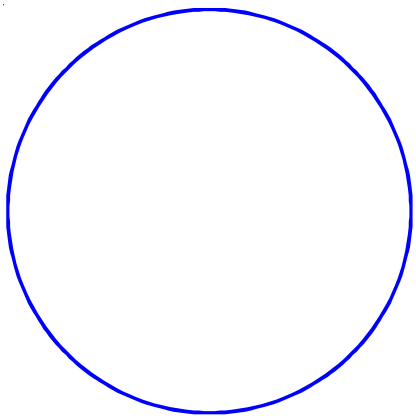
a)



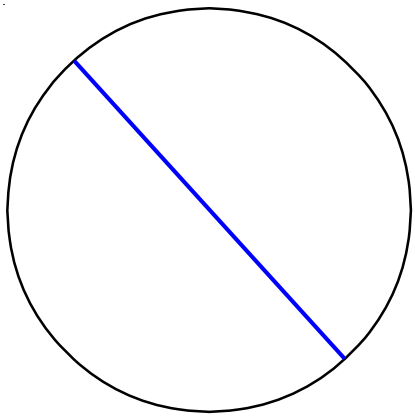
b)



c)

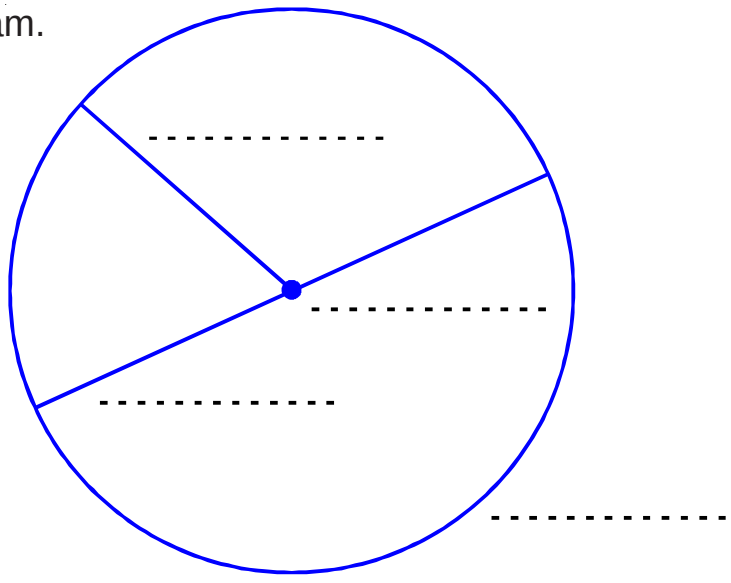


d)



2) What is the relationship between the radius and the diameter of a circle?

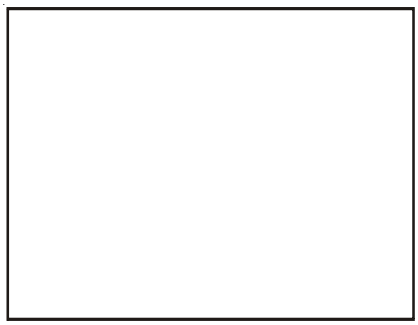
3) Label this diagram.



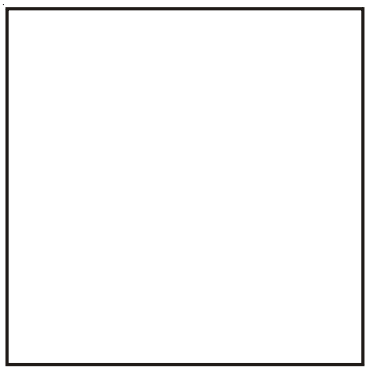
G3 Line Symmetry

Look at each shape, read the description and then draw in all the lines of symmetry.

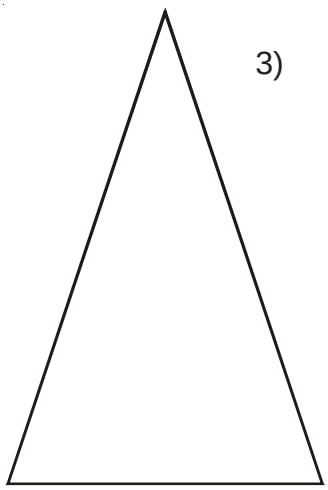
1) **Rectangle**
Two lines of symmetry



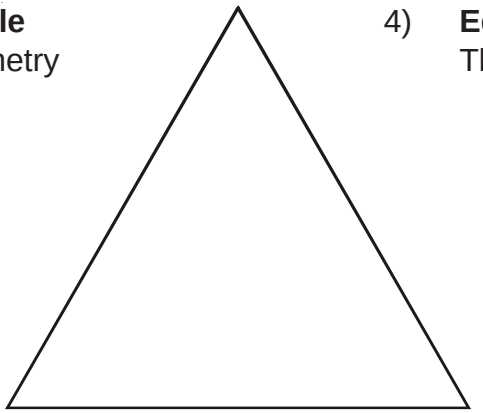
2) **Square**
Four lines of symmetry



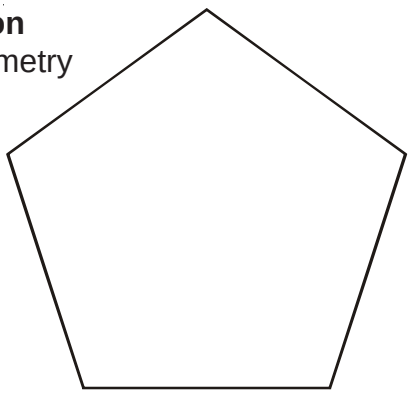
3) **Isosceles triangle**
One line of symmetry



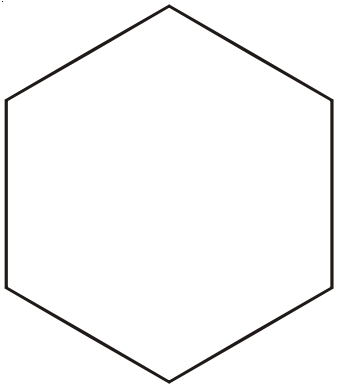
4) **Equilateral triangle**
Three lines of symmetry



5) **Regular pentagon**
Five lines of symmetry

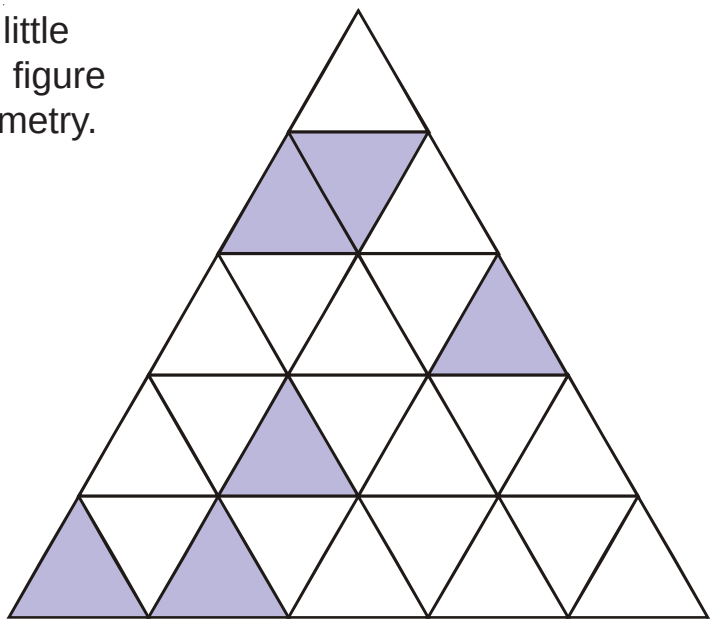


6) **Regular hexagon**
Six lines of symmetry

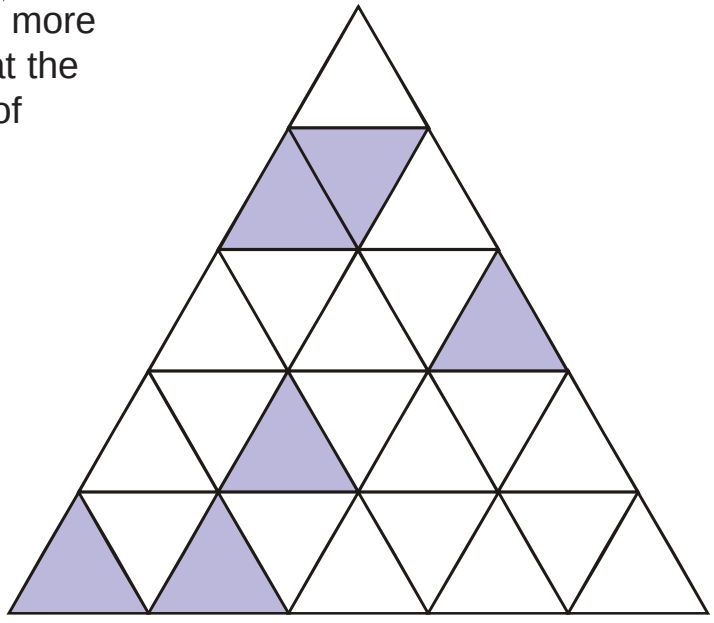


G3 Line Symmetry

1) Shade in **five** more little triangles so that the figure has one line of symmetry.



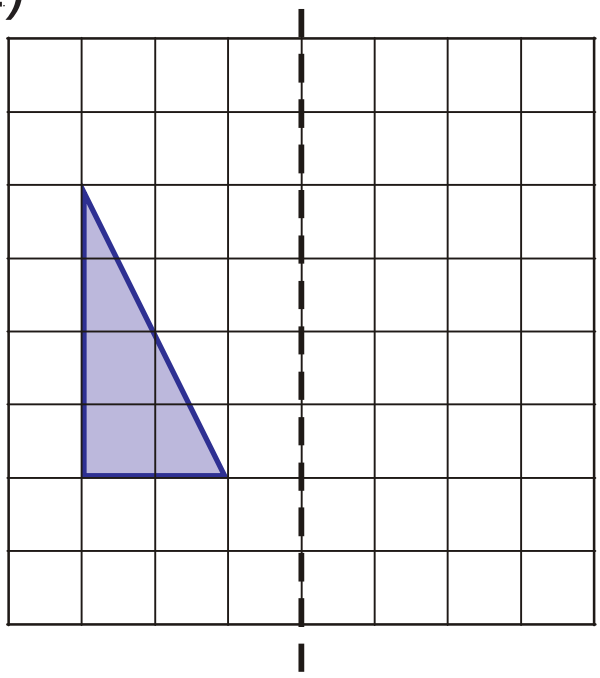
2) Shade in **just three** more little triangles so that the figure has one line of symmetry.



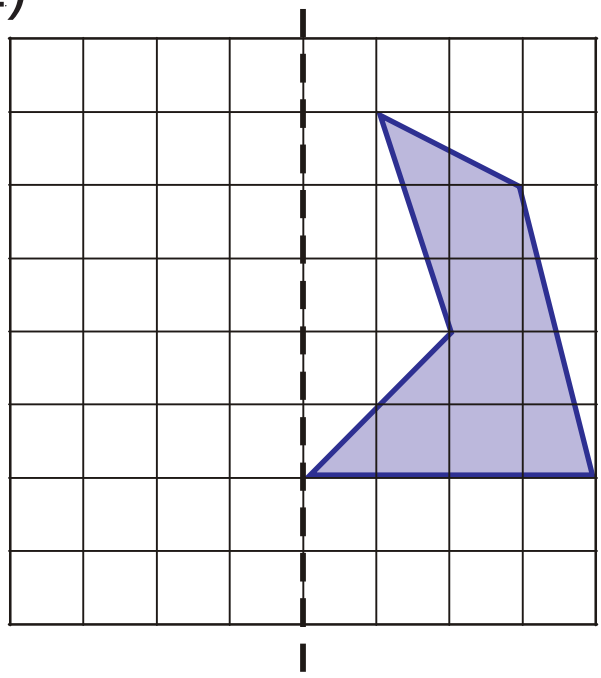
G4a Reflection
Horizontal and Vertical Mirror Lines

In all four questions, reflect the shaded shape in the dotted mirror line.

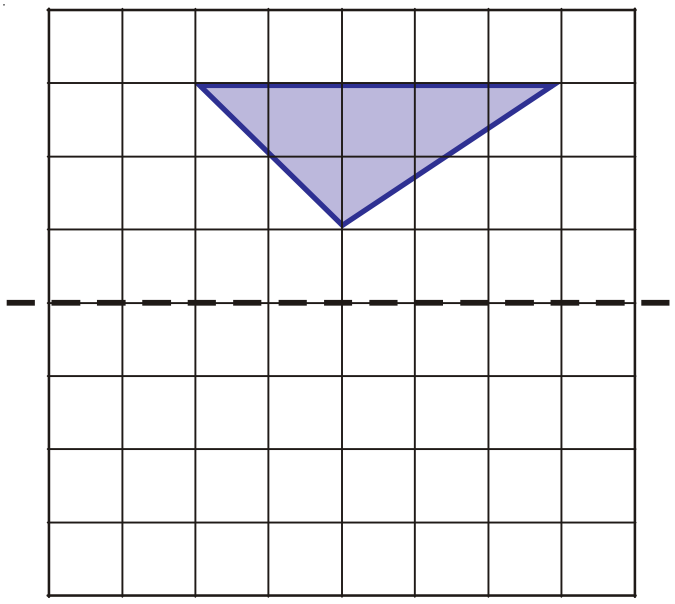
1)



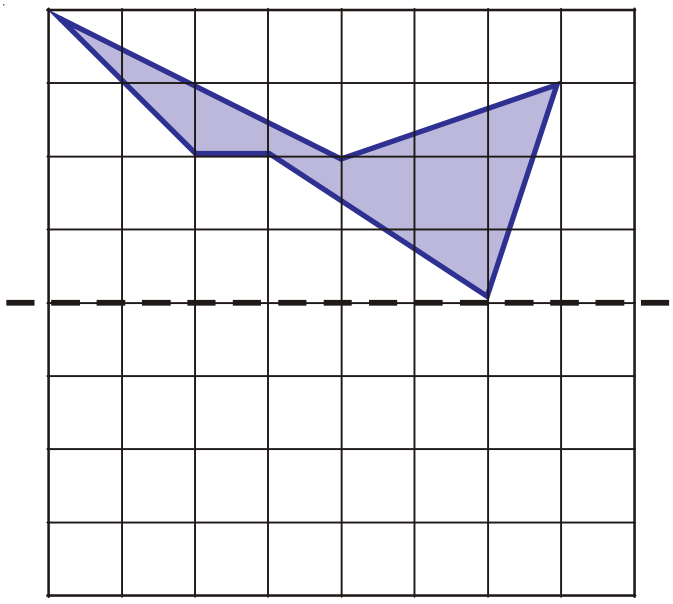
2)



3)

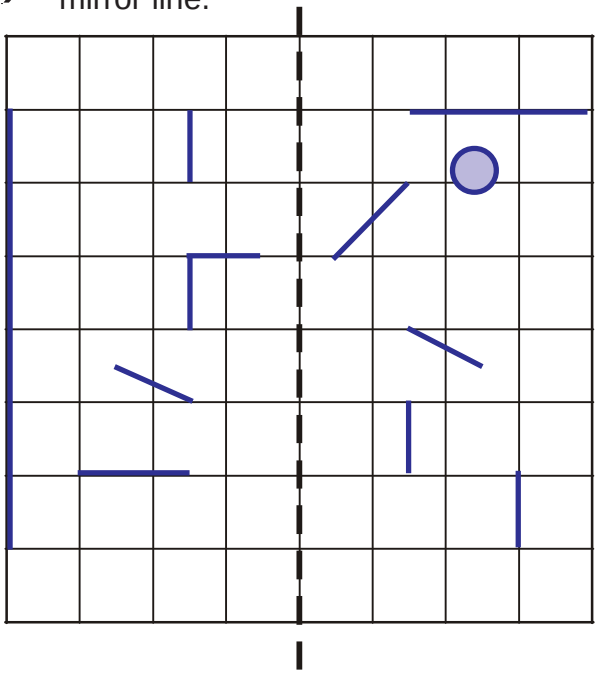


4)

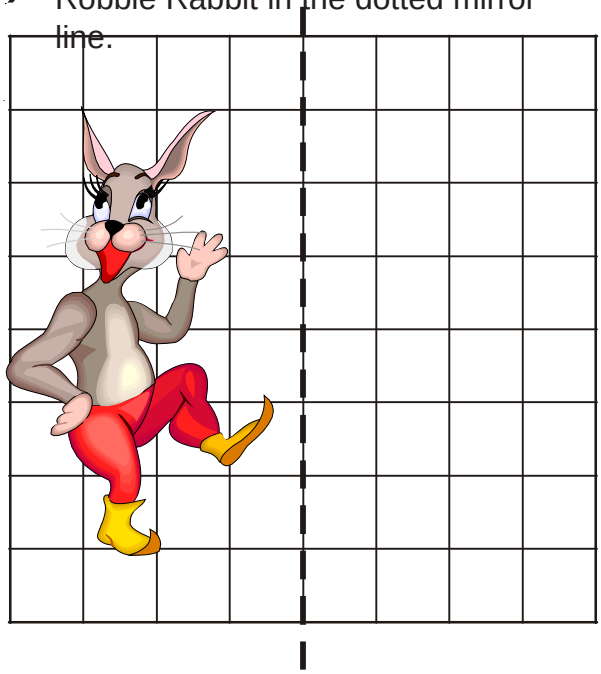


G4a Reflection
Horizontal and Vertical Mirror Lines

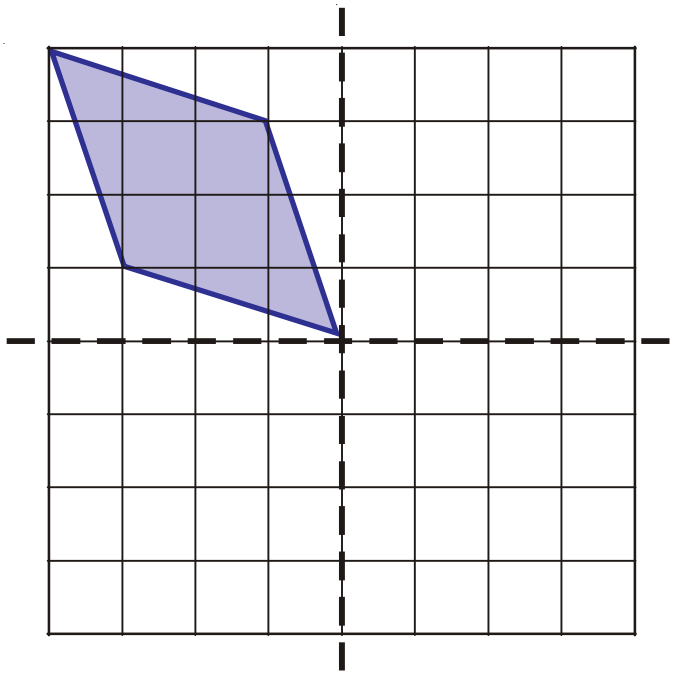
1) Reflect every line in the dotted mirror line.



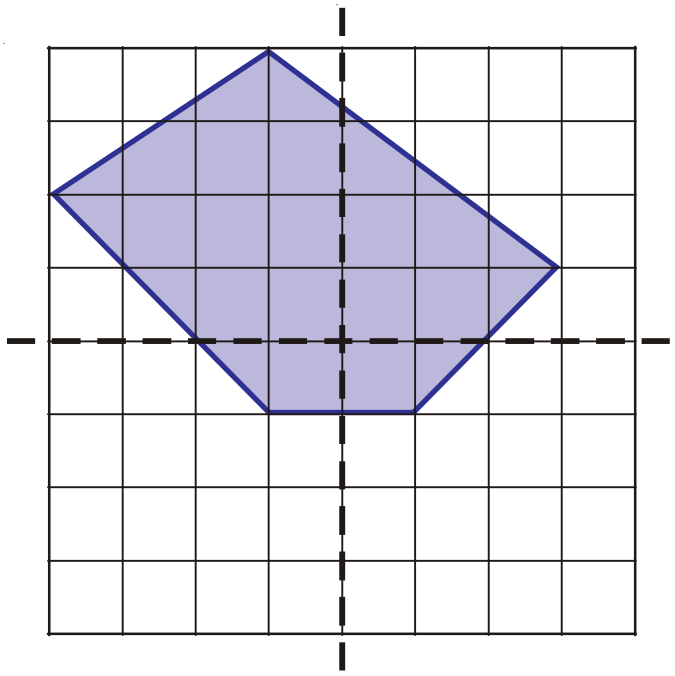
2) Use the grid to help you reflect Robbie Rabbit in the dotted mirror line.



3) Reflect the shape in the vertical mirror line.
Then, reflect both shapes in the horizontal mirror line.



4) Reflect the shape in the vertical mirror line.
Then, reflect both shapes in the horizontal mirror line.

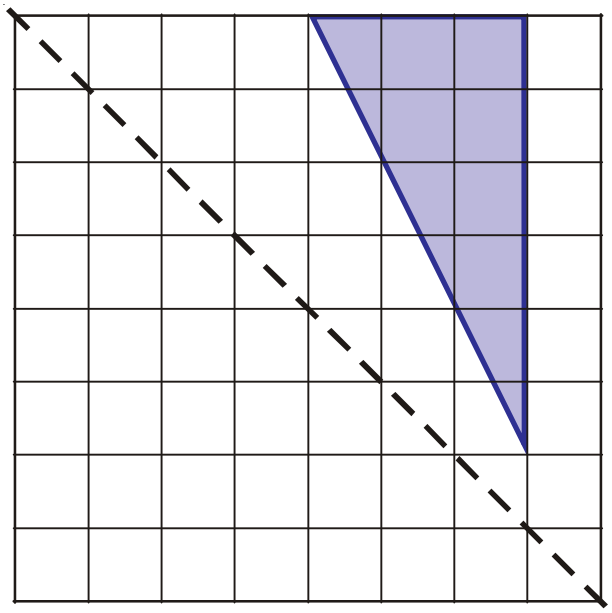


G4b

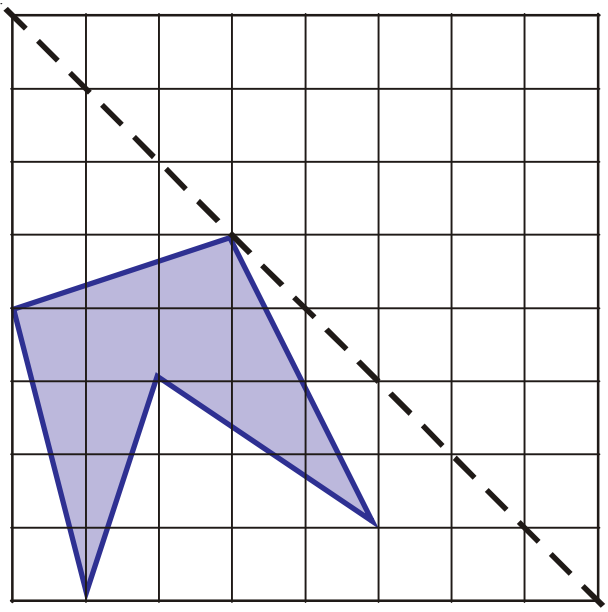
Reflection
Diagonal Mirror Lines

In all four questions, reflect the shaded shape in the dotted mirror line.

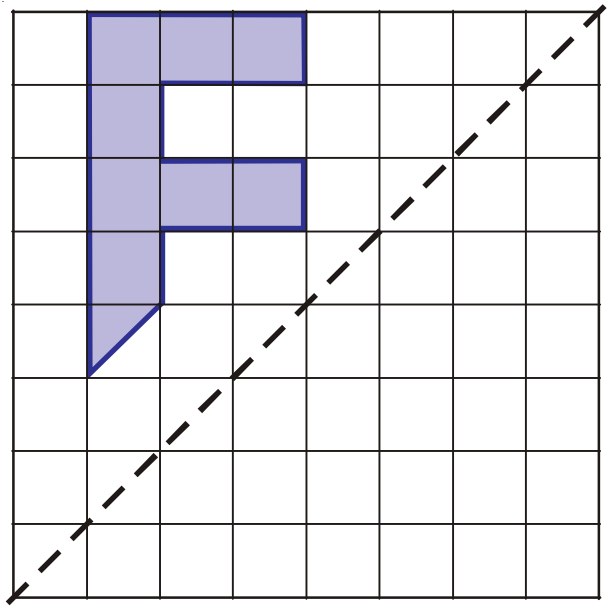
1)



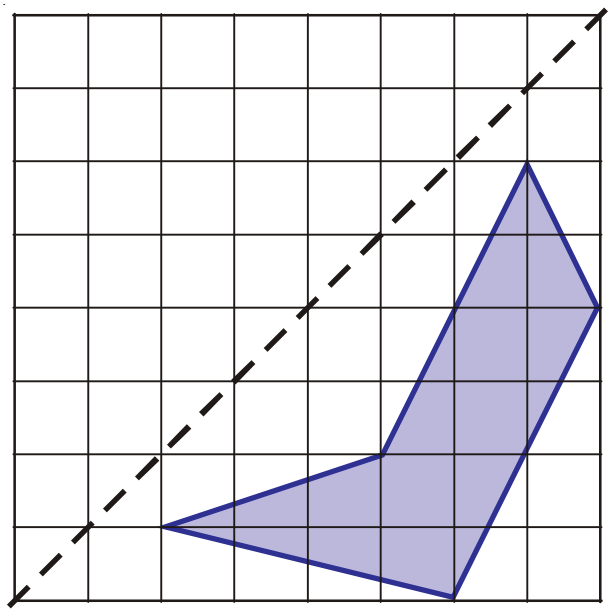
2)



3)



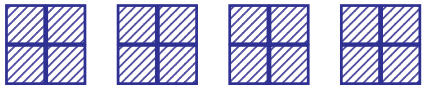
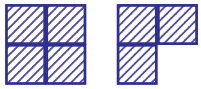
4)



S1a Pictograms - Interpreting

An art gallery uses a pictogram to show the number of paintings sold over a 5 week period.

Key:  = 4 paintings

Week 1	
Week 2	
Week 3	
Week 4	
Week 5	

a) How many paintings were sold in week 1?

b) In which week was the least number of paintings sold?

c) How many paintings were sold in week 3?

d) How many paintings were sold in week 4?

e) How many more paintings were sold in week 2 compared with week 5?

f) How many paintings were sold altogether in the five weeks?

S1b Pictograms - Drawing

All year 6 pupils in a school were each given a new pencil case as a leaving present.

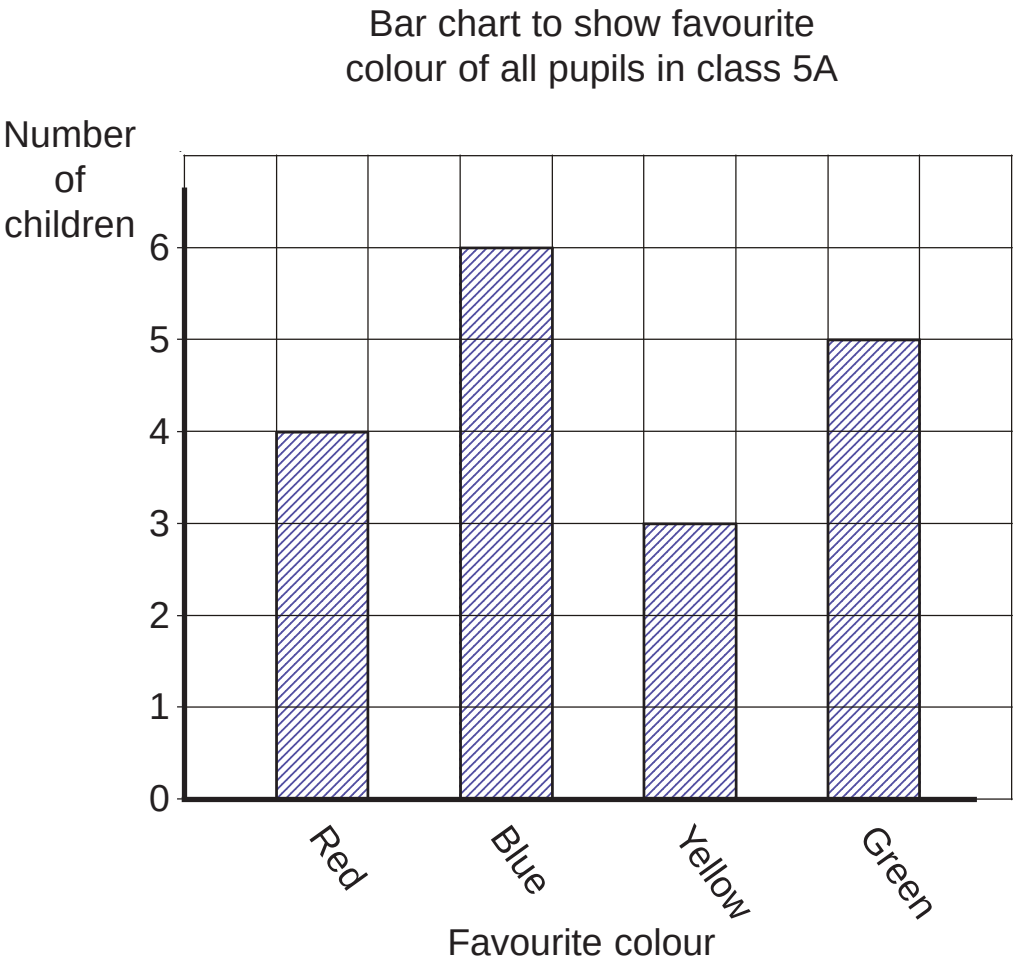
The pupils chose which colour they would like and this is shown in the table below.

Colour of pencil case	Frequency
Red	17
Green	4
Black	10
Yellow	15
Blue	8

Draw a pictogram to show this information.

Let  represent 4 pencil cases.

S2a Bar Charts - Interpreting



a) How many children chose green as their favourite colour?

b) Which was the least favourite colour in the class?

c) How many more children chose blue than red?

d) How many children are in class 5A?

S2b Bar Charts - Drawing

The beginners class in a Judo club has 24 members and each of them has either a white, yellow, orange, green or blue belt.

The table below shows how many of each belt there are.

Colour of belt	Frequency
White	3
Yellow	5
Orange	7
Green	3
Blue	6

On the squared paper, draw a bar chart to show this information.