Ark Globe Academy

Mathematics booklet Y6

Summer Learning

Topics:

- Calculating with whole and decimal numbers
- 2D and 3D shapes.
- Place value – multiplying and dividing any number by 10, 100, 1000
- Factors and multiples
- Fractions

Week 1: Adding and subtracting using decimals.

Knowledge Quiz:

Section 1

Order these numbers from smallest to largest:
576 094, 567 094, 576 904, 567 904

Section 2

Round these numbers to the nearest 100 000:

367 562 →

453 378 →

Section 3

Use these signs < or > to show which number is greater than or less than.

48 701 ☐ 48 710

81 010 ☐ 80 999

Section 4

Convert these measurements in litres to millilitres:

12.43l =

6.8l =

Section 5

Draw lines to show which fractions, decimals and percentages match.

$\frac{7}{10}$	40%	0.01
$\frac{2}{5}$	1%	0.7
$\frac{1}{100}$	70%	0.4

Section 6

Complete these calculations:

6396 ÷ 3 =

1333 x 2 =

Section 7

A shop assistant sold £845 worth of perfume. This was £258 more than yesterday. How much did she sell yesterday?

Section 8

Write these Roman numerals as digits:

CCLXVI	
CCCLXXIV	

Revision of learning:

Use written addition to add decimals; use rounding to estimate totals.

Round each number to the nearest whole, then add to *estimate* the total.

2.68 + 6.25

3 + 6 = 9

Now let's find the *exact* total using the two methods for column addition, the 'expanded' method and the 'compact' method.

Remember to leave a blank row above the answer line.

Add the 0.01s, then the 0.1s, then the 1s.

```
  2   0.6   0.08
+ 6   0.2   0.05
      0.1
-------------------
  8   0.9   0.03
```

8.93

```
  2.6 8
+ 6.2 5
    1
-------
  8.9 3
```

Close to our estimate!

Use written addition to add decimals; use rounding to estimate totals.

Red ribbon: 2.23m
Green ribbon: 3.71m
Blue ribbon: 4.84m

Estimate the total length of the three ribbons by *rounding* each number to the nearest whole..

$$2 + 4 + 5 = 11$$

$$\begin{array}{rr} & 2.23\,\text{m} \\ & 3.71\,\text{m} \\ + & 4.84\,\text{m} \\ & 1 \\ \hline & 10.78\,\text{m} \end{array}$$

It's just like adding two numbers but we just have one more digit to add in each column...

Extra resources:

Learning Reminders

Here is a 'Place Value' chart. It shows us how changing the PLACE of a digit in a number affects its VALUE. Remind yourself about the value of each row in the chart before having a go at the few questions below.

hundredths	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
tenths	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
ones	1	2	3	4	5	6	7	8	9
tens	10	20	30	40	50	60	70	80	90
hundreds	100	200	300	400	500	600	700	800	900

So, the 4 in 0.4 is worth 4 tenths, the 9 in 0.09 is worth 9 hundredths and so on...

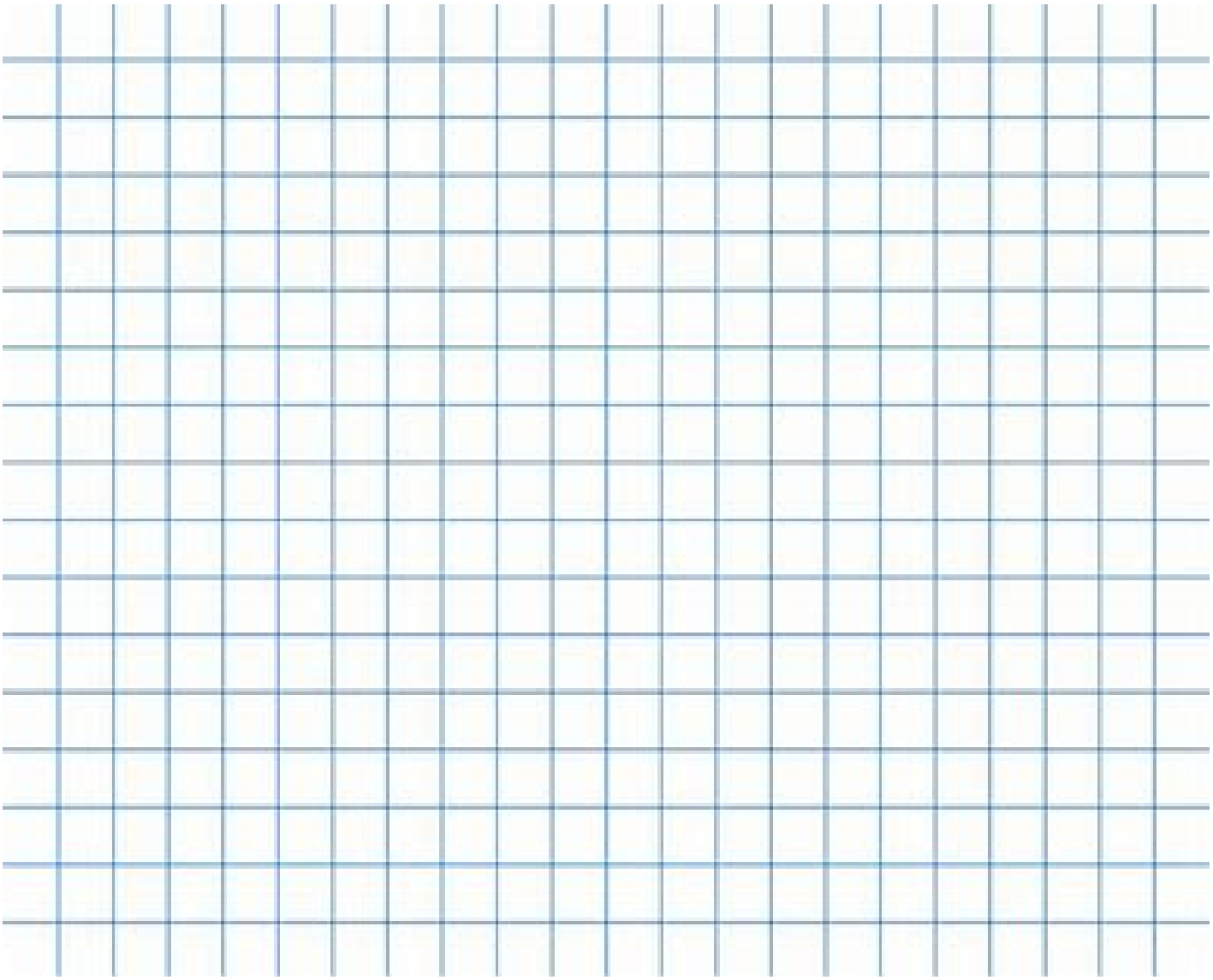
What values do the underlined digits have: **5̲00** **2̲.7** **10.0̲8** **0.6̲3** **4̲1.1**

Session 1: Solve the following additions and subtractions.

Practice Sheet Mild

Place value addition and subtraction

1. 4 + 0.53
2. 6.07 + 0.5
3. 5.78 – 0.08
4. 8.64 – 0.6
5. 8.23 + 0.1
6. 4.56 + 0.01
7. 8.47 – 0.01
8. 9.35 – 0.1
9. 6.21 + 0.2
10. 9.34 – 0.2
11. 8.25 + 0.03
12. 7.38 – 0.03



Session 2: Ribbon decimals – find the ribbon lengths!

Practice Sheet Mild

Ribbon decimals

Ribbon lengths:

Red	2.23m
Orange	2.3m
Yellow	1.72m
Green	3.71m
Blue	4.84m
Indigo	1.25m
Violet	3.02m

Estimate first!

1. Find the total length of the red and yellow ribbons.
2. Find the total length of the green and blue ribbons.
3. Find the total length of the indigo and violet ribbons.
4. Find the total length of the orange and indigo ribbons.
5. Find the total length of the indigo, red and yellow ribbons.
6. Find the total length of the green, blue and violet ribbons.

Challenge

Find the two ribbons whose total length is the closest to 5m.

Session 3: Challenge yourself to answer SATS style questions:

$2.7 + 3.014 =$

1 mark

$9 - 3.45 =$

1 mark

$37.8 - 14.671 =$

1 mark

Week 2: 2D and 3D shapes

Knowledge Quiz:

Section 1

In the number 576 213, which digit represents the number of ten thousands?

In the number 923 648, what place value does the digit '3' represent?

Section 2

Calculate the following in your head:

56 + 67 =

48 + 36 =

72 – 26 =

91 – 67 =

Section 3

Calculate:

4.3 x 100 =

5.61 x 100 =

912 ÷ 100 =

6002 ÷ 100 =

Section 4

Use the < or > signs to compare these fractions:

$\frac{2}{3}$		$\frac{4}{6}$
$\frac{1}{4}$		$\frac{3}{16}$
$\frac{17}{20}$		$\frac{4}{5}$

Section 5

In order from smallest to largest, write the following numbers in digits:

four point seven two

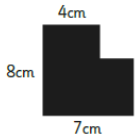
four point seven

forty point six nine

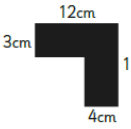
smallest largest

Section 6

Calculate the perimeter of these composite rectilinear shapes.



=



=

Section 7

Explain why this shape is regular.

.....

.....

Explain why this shape is irregular.

.....

.....

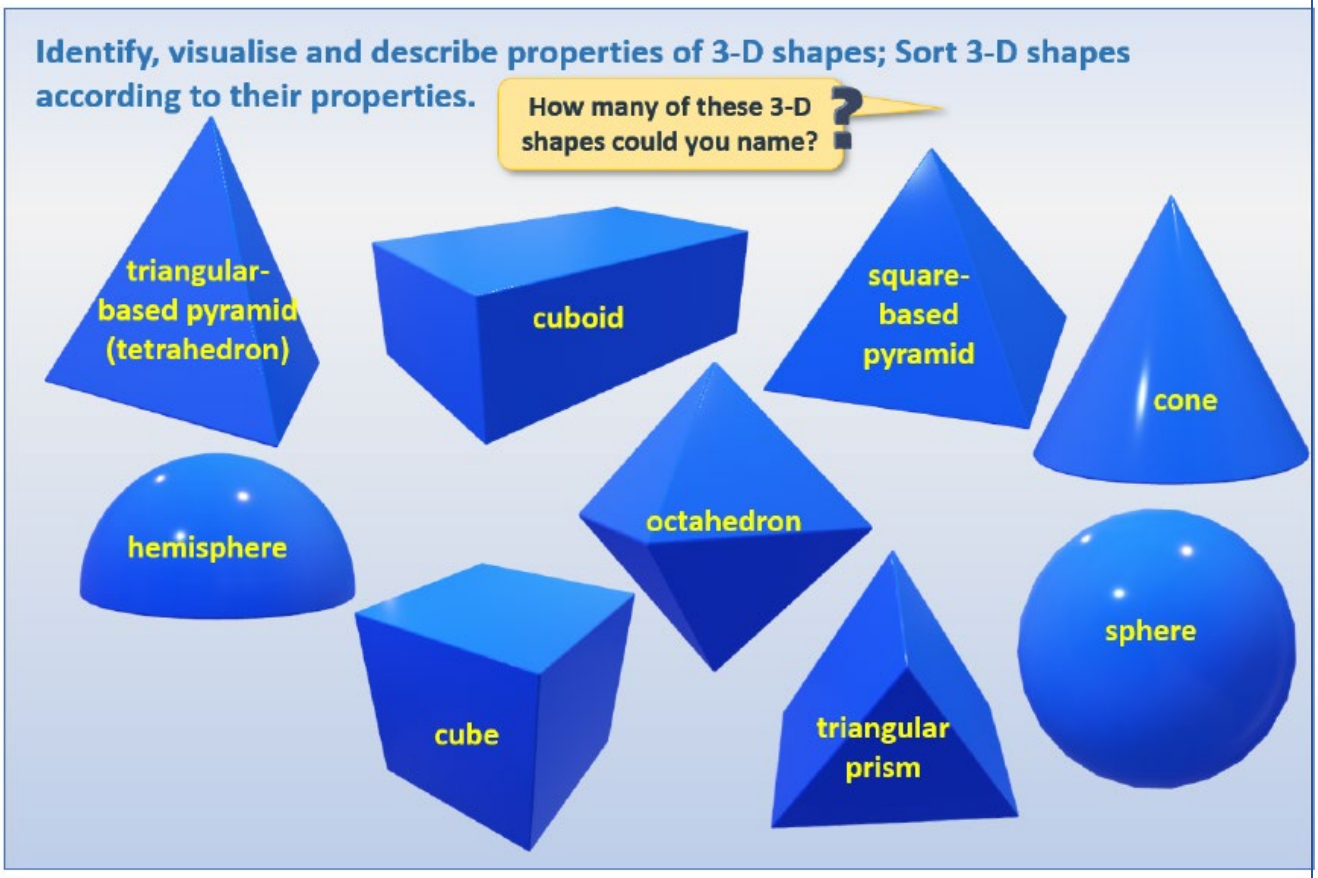
Section 8

Here is a table showing the number of boys and girls in each year group.

	Y3	Y4	Y5	Y6	Total
Boys			45		179
Girls	47	37		39	
Total		89	89	87	

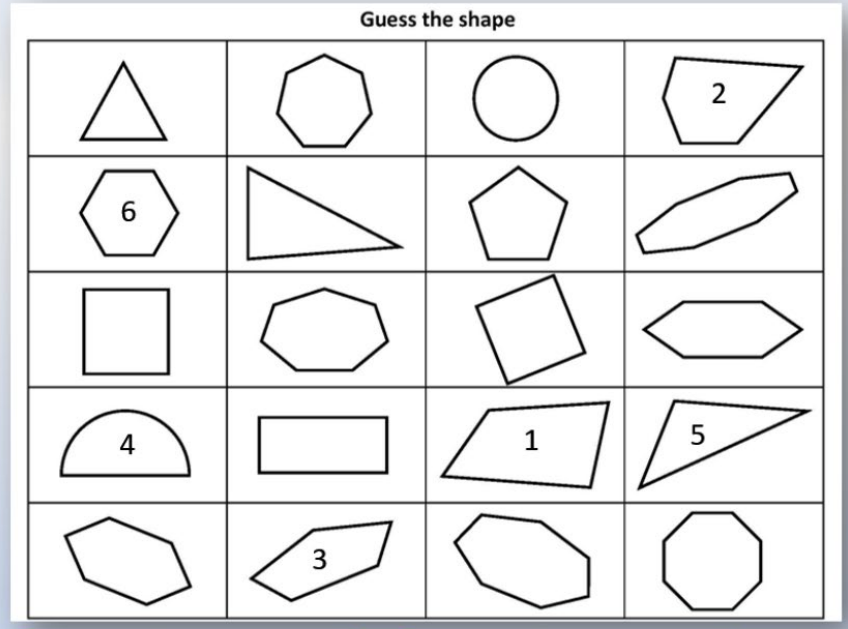
Complete the table.

Learning Reminders



Learning Reminders

Describe properties of 2-D shapes including polygons.



Shape properties – some examples. Can you name the shapes?

1. This has 4 sides and no lines of symmetry.

2 and 3. These shapes are irregular polygons with 5 sides.

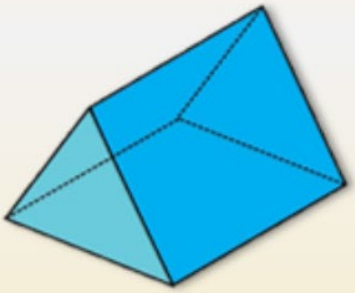
4. This shape is not a polygon and has one line of symmetry.

5. This shape has 3 vertices and 1 obtuse angle.

6. This shape has 6 vertices and all the sides are the same length.

Describe and name 3-D shapes and identify their properties.

Let's check some 3-D shape vocabulary...



Polyhedron – a shape with polygon faces

Polyhedra have **faces, edges and vertices**

Faces – the 2-D shapes that make up the outside of a 3-D shape.

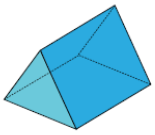
Edges – where the 2-D shapes meet along a joined side.

Vertices – the corners of the 3-D shape.

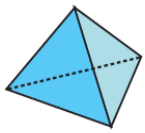
Session 1: Fill in the missing shape information.

Shape practice

Fill in the missing shape information.

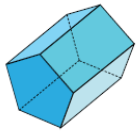


Name: triangular prism
Number of faces: _____
Number of edges: _____
Number of vertices: 6
Shape of faces: _____

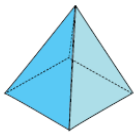


Name: _____
Number of faces: 4
Number of edges: 6
Number of vertices: _____
Shape of faces: _____

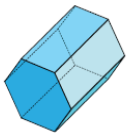
Name: _____
Number of faces: _____
Number of edges: 1
Number of vertices: _____
Shape of faces: _____



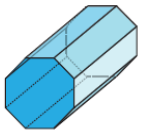
Name: pentagonal prism
Number of faces: 7
Number of edges: _____
Number of vertices: _____
Shape of faces: _____



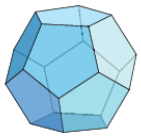
Name: _____
Number of faces: _____
Number of edges: _____
Number of vertices: 5
Shape of faces: _____



Name: _____
Number of faces: _____
Number of edges: _____
Number of vertices: _____
Shape of faces: 2 hexagons, 6 rectangles



Name: octagonal prism
Number of faces: _____
Number of edges: _____
Number of vertices: _____
Shape of faces: _____

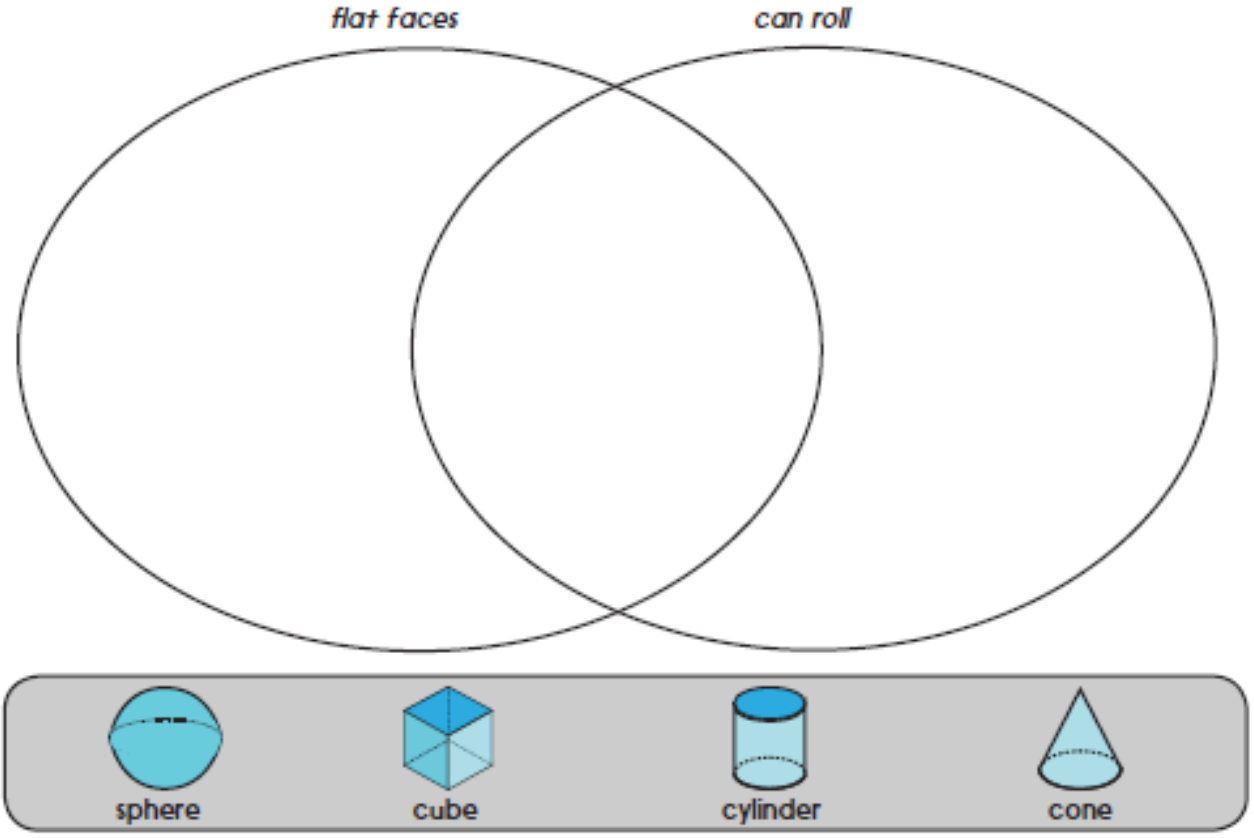


Name: dodecahedron
Number of faces: _____
Number of edges: _____
Number of vertices: _____
Shape of faces: _____

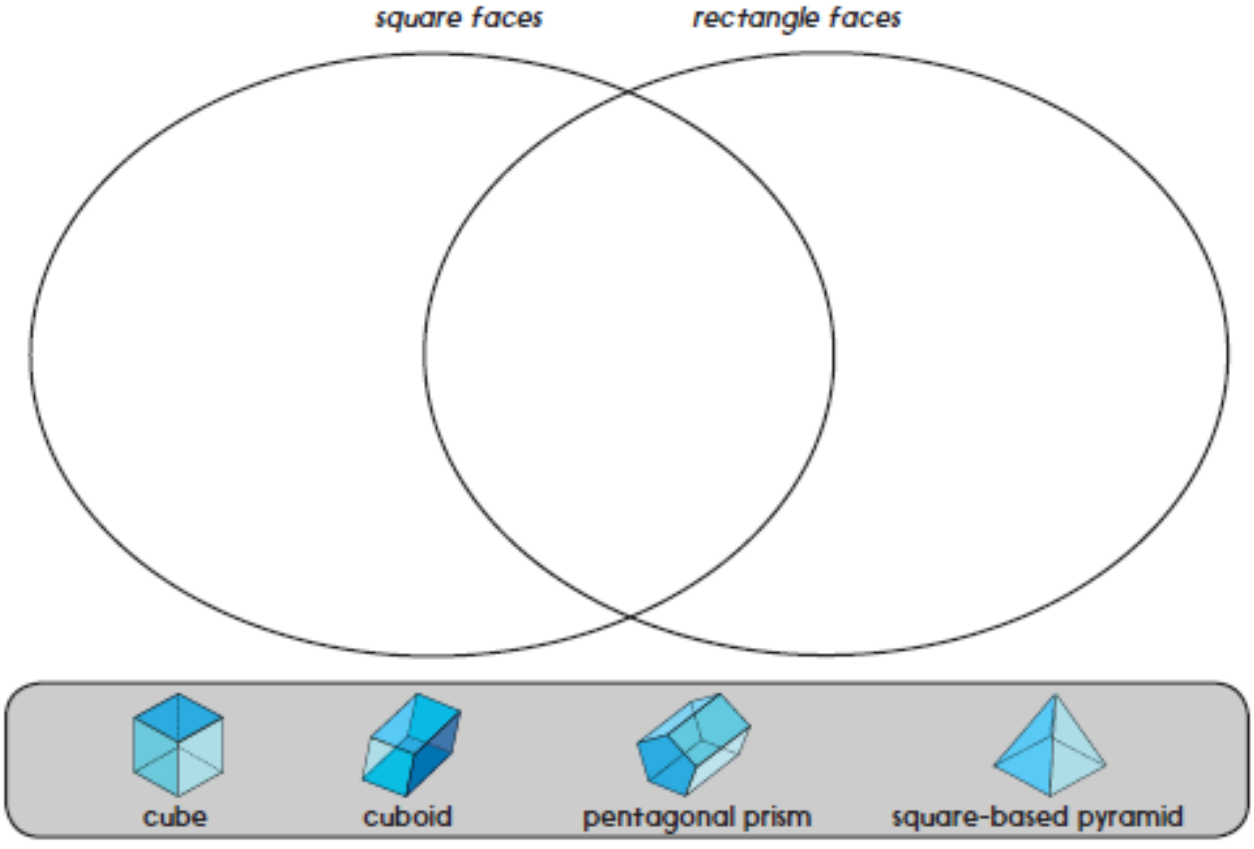
Session 2:

Write the shape names in the right place in each Venn diagram.

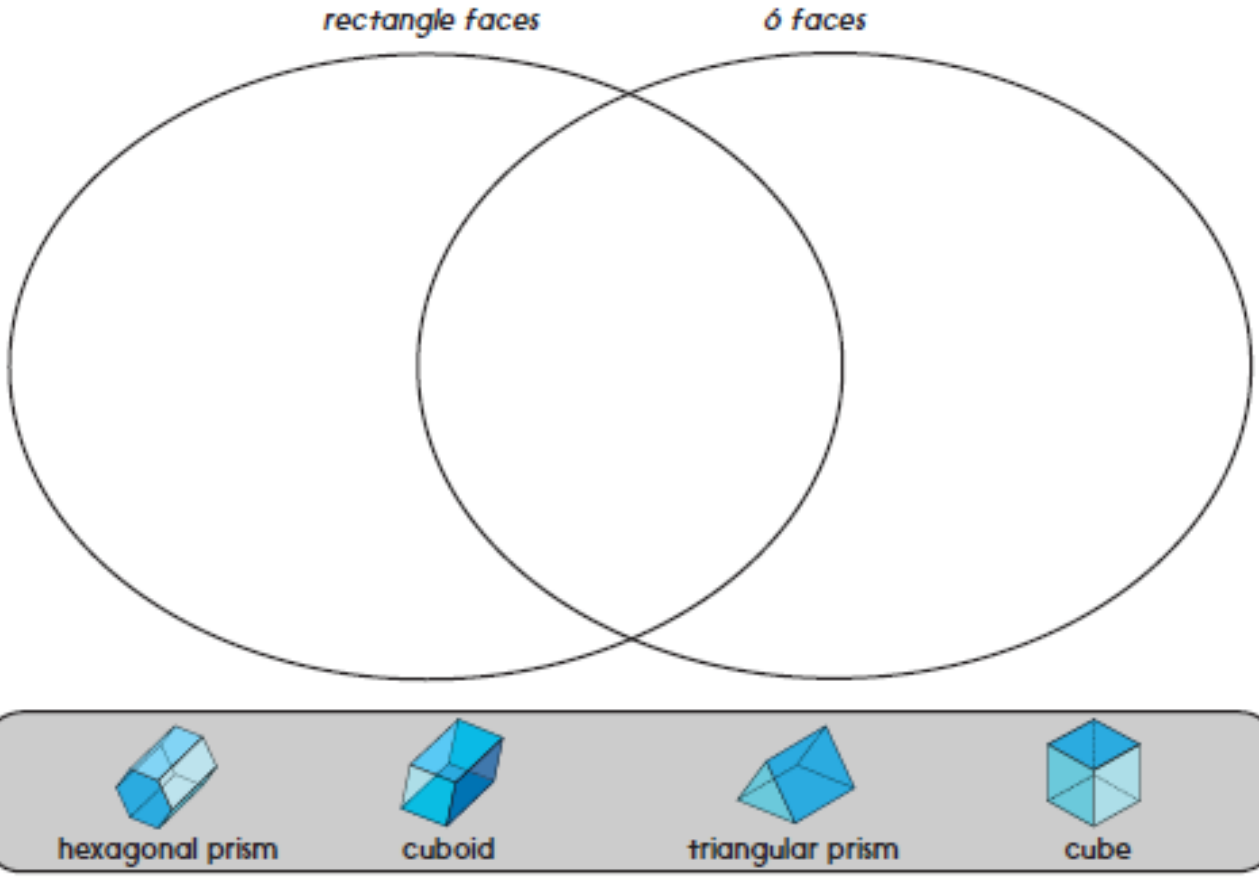
1.



2.



3.



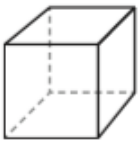
Challenge

Create your own Venn diagram to sort these shapes: cone, cylinder, sphere, hemisphere.

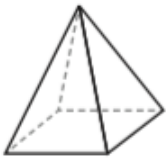
Session 3: Challenge yourself to answer this SATS style question!

Here are diagrams of some 3-D shapes.

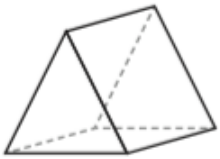
Tick each shape that has the same number of faces as vertices.



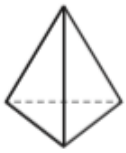
Cube ☐



Square-based pyramid ☐



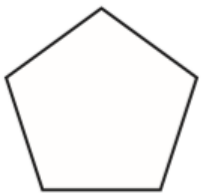
Triangular prism ☐

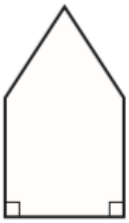


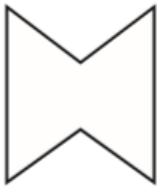
Triangular-based pyramid ☐

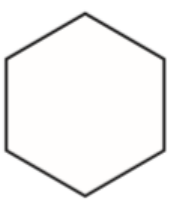
2 marks

Circle the **pentagon** with exactly **four acute angles**.









1 mark

Week 3: Place Value – multiplying and dividing any number by 10, 100, 1000.

Knowledge Quiz:

Section 1

Complete these linear sequences:

4562	5562			
41 786	40 786			
77 309	87 309			
622 792	612 792			

Section 2

Put the numbers from 1 to 20 on this Carroll Diagram:

	Prime Number	Not a Prime Number
Even number		
Odd number		

Section 3

Calculate:

40 x 6 = ☐

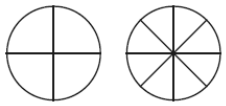
7 x 50 = ☐

80 x 30 = ☐

1200 x 11 = ☐

Section 4

Shade the following circles so the same fraction is shaded in both and write the fraction that they represent:



....

Section 5

Round the following numbers to the nearest whole number and nearest tenth:

Number	Nearest whole	Nearest tenth
16.45		
1.06		
2.98		
67.59		

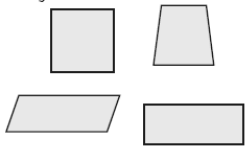
Section 6

A bus journey starts at 16:13 and finishes at 18:05. How long is the journey?

☐

Section 7

For each of the following shapes, explain why they are or are not a rectangle.



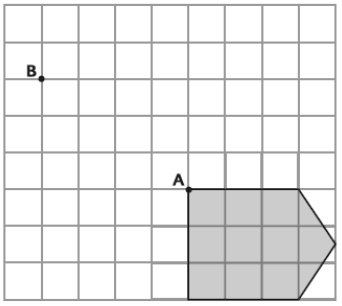
.....

.....

.....

Section 8

Translate this shape from point A to point B:



New Learning:

<u>multiply by 10</u>

23 x 10 = 230

Th H T O

2 3

2 3 0

multiply = move to the left

<u>multiply by 100</u>

68 x 100 = 6800

Th H T O

6 8

6 8 0 0

multiply = move to the left

<u>Divide by 10</u>

680 ÷ 10 = 68

Th H T O . t h

6 8 0

6 8 . 0 0

divide = digits move to the right

<u>Divide by 100</u>

9700 ÷ 100 = 97

Th H T O . t h

9 7 0 0

9 7 . 0 0

divide = digits move to the right

Session 1: Complete the decimals multiplication challenge!

2.3 × 10 =	0.3 × 100 =	1.7 × 1000 =	4.4 × 10 =	0.1 × 100 =	0.9 × 1000 =
5.5 × 10 =	5.18 × 100 =	3.56 × 1000 =	0.05 × 10 =	0.5 × 100 =	1.0 × 1000 =
2.88 × 10 =	1.0 × 100 =	2.05 × 1000 =	0.04 × 10 =	7.19 × 100 =	0.008 × 1000 =
22.1 × 10 =	4.7 × 100 =	11.90 × 1000 =	222.02 × 10 =	47.9 × 100 =	99.3 × 1000 =
0.03 × 10 =	234.9 × 100 =	3.06 × 1000 =	87.5 × 10 =	630.2 × 100 =	0.4 × 1000 =
100 × 547.9 =	1000 × 0.06 =	10 × 0.3 =	100 × 1.8 =	1000 × 10.0 =	10 × 63.09 =
100 × 1.65 =	1000 × 3.33 =	10 × 0.022 =	100 × 2.22 =	1000 × 0.12 =	10 × 1.04 =
100 × 0.003 =	1000 × 0.8 =	10 × 1.86 =	100 × 0.35 =	1000 × 4.41 =	10 × 1.8 =
100 × 0.44 =	1000 × 22.5 =	10 × 5.55 =	100 × 47.11 =	1000 × 122.1 =	10 × 777.05 =
100 × 0.78 =	1000 × 192.6 =	10 × 8.0 =	100 × 120.4 =	1000 × 10.9 =	10 × 357.6 =
0.03 × 1000 =	10 × 63.5 =	100 × 17.9 =	64.5 × 10=	100 × 2.79 =	1000 × 20.0 =
1.7 × 1000 =	10 × 4.04 =	100 × 16.5 =	0.07 × 10=	100 × 3.55 =	1000 × 0.102 =
0.08 × 1000 =	10 × 1.59 =	100 × 0.08 =	0.01 × 10=	100 × 0.009 =	1000 × 7.51 =
90.3 × 1000 =	10 × 707.7 =	100 × 0.04 =	44.02 × 10=	100 × 0.34 =	1000 × 102.1 =
0.14 × 1000 =	10 × 857.3 =	100 × 0.78 =	37.8 × 10=	100 × 0.58 =	1000 × 11.9 =

Session 2:

5 x 10 = _____

6 x 100 = _____

7 ÷ 10 = _____

4 x 10 = _____

70 ÷ 100 = _____

6 x 10 = _____

2 x 100 = _____

28 ÷ 10 = _____

5 ÷ 10 = _____

8 ÷ 10 = _____

7 x 100 = _____

8 x 10 = _____

3 x 100 = _____

2 ÷ 10 = _____

80 ÷ 100 = _____

9 x 10 = _____

Fill in the missing numbers:

7 x _____ = 700

30 ÷ _____ = 0.3

64 ÷ _____ = 6.4

3 x _____ = 30

Fill in the space with either x or ÷ so that the calculation is correct:

62 ____ 10 = 6.2

5 ____ 100 = 500

4 ____ 10 = 40

40 ____ 100 = 0.4

True (**T**) or False (**F**):

7 x 100 = 70 ☐

30 ÷ 100 = 0.3 ☐

79 ÷ 10 = 790 ☐

1 x 10 = 10 ☐

Session 3:

$0.04 \div 10 =$

1 mark

$2{,}345 \times 1{,}000 =$

1 mark

$0.9 \times 200 =$

1 mark

Week 4:

Knowledge Quiz:

Section 1

The temperature is 4°C at 9pm. By 6am the following morning, the temperature has fallen by 9°C. What is the temperature now?

Section 2

The new Wembley Stadium has 90 000 seats. When the stadium is 75% full, what is the attendance to the nearest 1000.

Section 3

Complete these calculations:

4	□	2	
+	□	6	9
8	5	□	

7	□	5	
-	3	7	□
	□	5	8

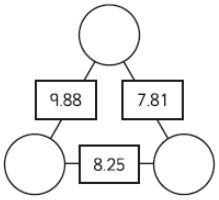
Section 4

Order the following fractions from smallest to largest:

$\frac{3}{4}$ $\frac{11}{12}$ $\frac{7}{8}$ $\frac{13}{16}$

Section 5

Place three of the following numbers in the circles so the number in the square is the total of the numbers in the adjacent circles: 6.23, 4.72, 3.09, 7.26, 5.16, 2.69



Section 6

1 inch = 2.54 cm

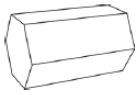
1 foot = 12 inches

How many centimetres in 1 foot?

Section 7

Write the name of these shapes:

.....



.....

Section 8

Children measure the temperature in the playground on each hour.

Time	Temperature
9am	-1
10am	2
11am	5
12pm	7
1pm	8

When is the highest temperature?

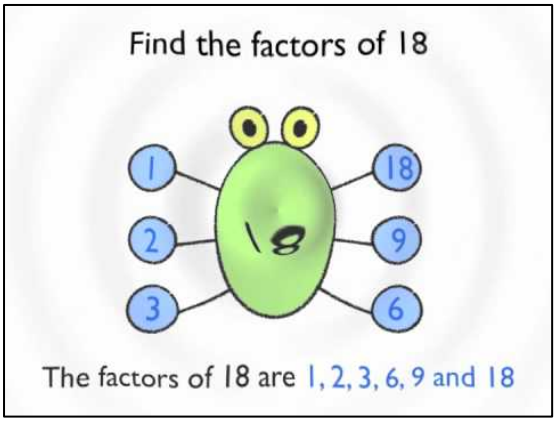
How much does the temperature rise between 9am and 12pm?

Session 1: Factors and multiples

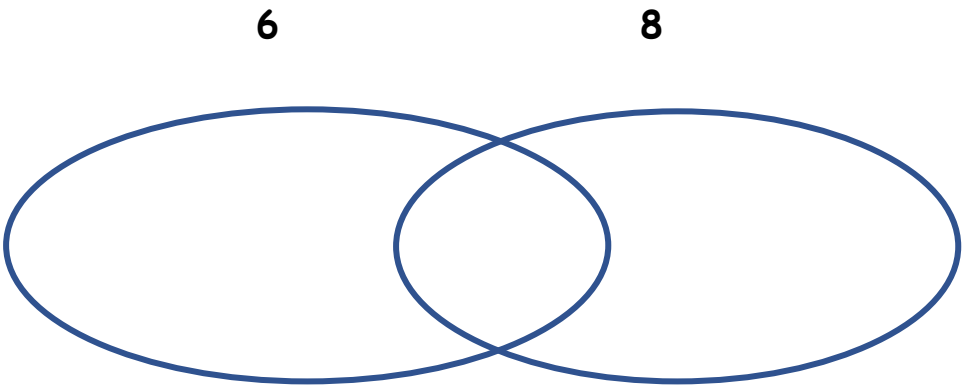
Create a factor bug for the following numbers:

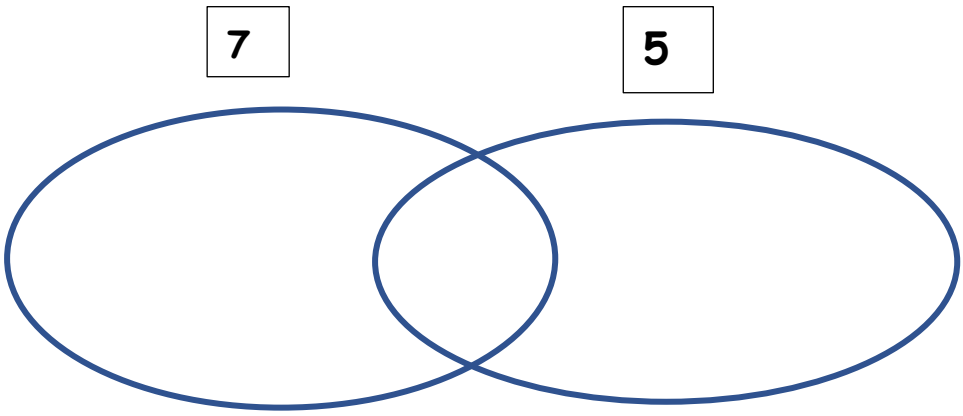
24 **42** **36** **56** **33**

Example:



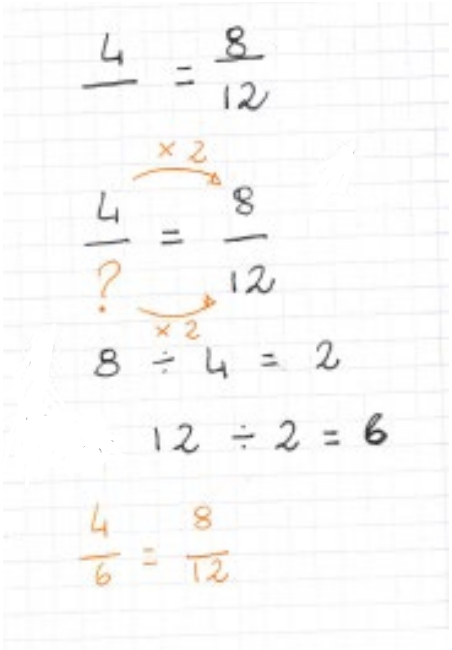
Now, insert in the Venn Diagram all the multiples and the common multiples of the following numbers:





Session 2: Workout these equivalent fractions.

Example:



1. $\frac{2}{3} = \frac{\square}{6}$

2. $\frac{4}{\square} = \frac{2}{4}$

3. $\frac{1}{5} = \frac{4}{\square}$

4. $\frac{1}{4} = \frac{\square}{12}$

5. $\frac{4}{\square} = \frac{8}{12}$

6. $\frac{2}{\square} = \frac{1}{6}$

Challenge:

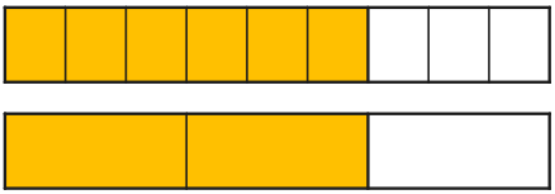
Sam says that $\frac{2}{3}$ is equivalent to $\frac{3}{9}$. Is he correct? Explain your answer.

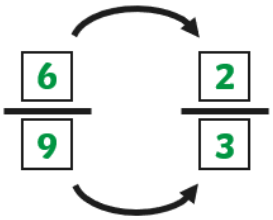
Session 3: Simplify these fractions by finding the highest common factor.

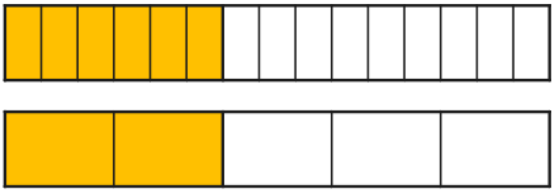
$\frac{6}{12} \xrightarrow{\div 6} \frac{1}{2}$

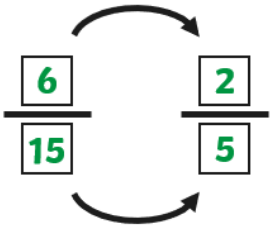
Highest common factor (HCP) = 6

Therefore, I am going to divide both the numerator and the denominator by 6.









Practise simplifying these and then complete the worksheet:

1. $\frac{3}{9} =$

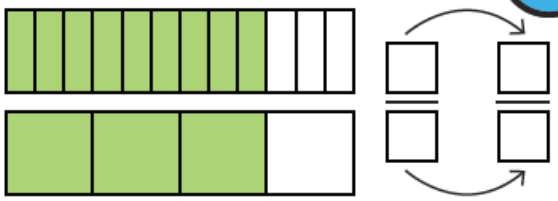
2. $\frac{8}{16} =$

3. $\frac{2}{10} =$

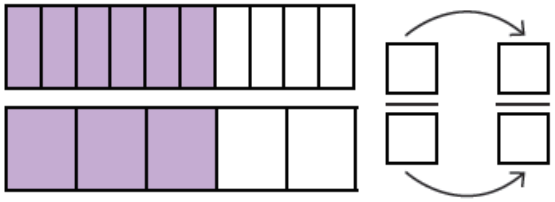
4. $\frac{12}{36} =$

1) Use the bar models to help you simplify the fractions.

a)



b)



2) Join pairs of equivalent fractions.

$\frac{4}{5}$	$\frac{2}{3}$	$\frac{1}{6}$	$\frac{3}{7}$

$\frac{20}{25}$	$\frac{4}{24}$	$\frac{27}{63}$	$\frac{10}{15}$

$\frac{30}{36}$ in its simplest form is $\frac{10}{12}$

1) Is this statement correct? Explain your answer.

2) Marlon is blowing bubbles in the park.

- 8 bubbles landed on the grass.
- 10 bubbles floated away.
- 6 bubbles popped straight away.

Is Marlon correct? Explain your answer.

Week 5:

Knowledge Quiz:

Section 1

Write these Roman Numerals as numbers:

CCIX → ☐

DCLXXVII → ☐

Section 2

Write all the square numbers from 1 x 1 to 12 x 12.

Section 3

Use a formal written method to work out these calculations:

216 x 14 954 ÷ 6

Section 4

Calculate:

$\frac{2}{3} + \frac{1}{6} =$

$\frac{7}{10} - \frac{3}{5} =$

Section 5

Draw lines to match the following:

$\frac{53}{100}$	13%
$\frac{13}{100}$	53%
$\frac{79}{100}$	79%

Section 6

A plastic box weighs 25g and six cricket balls weigh 300g. How much do three plastic boxes, each with six cricket balls, weigh in kilograms?

☐

Section 7

Write acute, obtuse or reflex underneath each angle:

....

Section 8

Here is a bus timetable:

Jordanthorpe	07:19	07:31	07:43
Nether Edge	07:48	08:00	08:12
Sheffield	08:06	08:18	08:30
Pitsmoor	08:20	08:32	08:44
Shiregreen	08:40	08:52	09:04

Do all the buses take the same time for each journey from Jordanthorpe to Shiregreen?

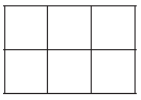
☐

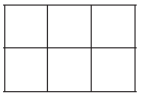
Jan needs to arrive in Sheffield by quarter past eight. Which bus should he catch from Nether Edge?

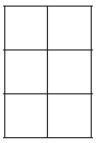
☐

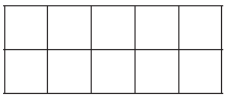
Session 1: Solve the following additions and subtractions. Use the grid to help you as shown in the example.

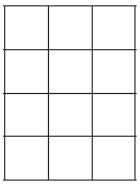
Example: $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$ 

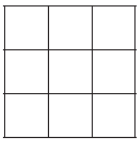
1. $\frac{1}{3} + \frac{1}{6} =$ 

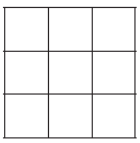
2. $\frac{2}{3} + \frac{1}{6} =$ 

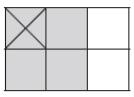
3. $\frac{1}{2} + \frac{1}{6} =$ 

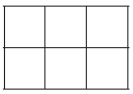
4. $\frac{4}{5} + \frac{1}{10} =$ 

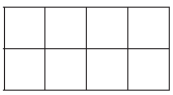
5. $\frac{2}{3} + \frac{1}{12} =$ 

6. $\frac{1}{3} + \frac{2}{9} =$ 

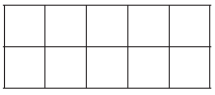
7. $\frac{2}{3} + \frac{1}{9} =$ 

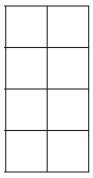
Example: $\frac{2}{3} - \frac{1}{6} = \frac{3}{6}$ 

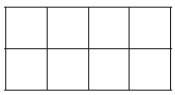
1. $\frac{1}{3} - \frac{1}{6} =$ 

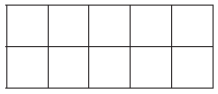
2. $\frac{1}{4} - \frac{1}{8} =$ 

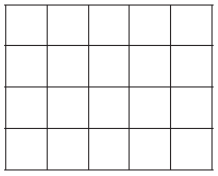
3. $\frac{3}{4} - \frac{5}{8} =$ 

4. $\frac{3}{5} - \frac{3}{10} =$ 

5. $\frac{7}{8} - \frac{1}{2} =$ 

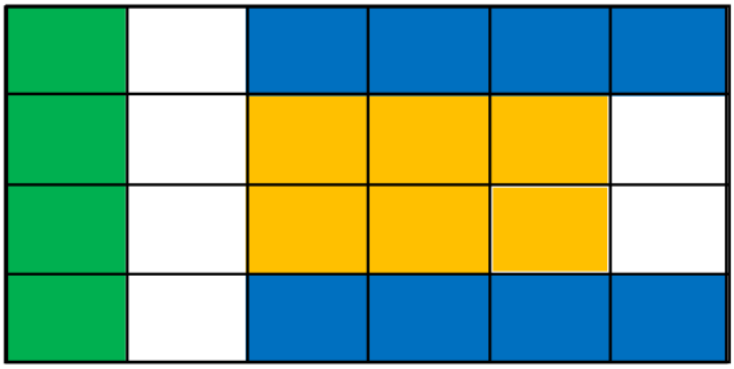
6. $\frac{5}{8} - \frac{1}{4} =$ 

7. $\frac{7}{10} - \frac{1}{5} =$ 

8. $\frac{13}{20} - \frac{2}{5} =$ 

Session 2:

What fraction of the flag is green and blue?

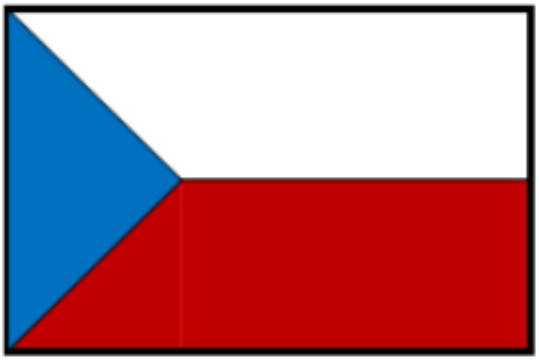


$\frac{1}{6}$ of the flag is green

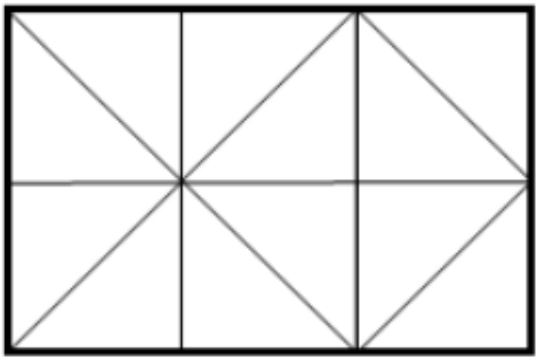
$\frac{1}{3}$ of the flag is blue

What fraction of the flag is not blue?

1a) What fraction of the flag is blue?



Why does this image help?

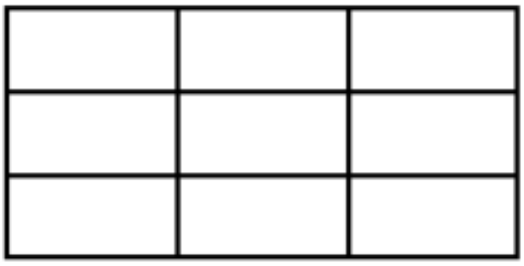


1b) What fraction of the flag is blue and red?

2a) What fraction of the flag is red?

2b) What fraction of the flag is black?

Why does this image help?



2c) What fraction of the flag is red and green?

Session 3:

$\frac{4}{6} + \frac{3}{6} =$

1 mark

$\frac{62}{100} - \frac{38}{100} =$

1 mark

$\frac{3}{4} - \frac{3}{8} =$

1 mark

$2\frac{1}{3} + \frac{5}{6} =$

1 mark

$\frac{2}{6} - \frac{1}{8} =$

1 mark

Week 1

Session 2:

Place value addition and subtraction (mild)

1. 4 + 0.53 = 4.53
2. 6.07 + 0.5 = 6.57
3. 5.78 - 0.08 = 5.7
4. 8.64 - 0.6 = 8.04
5. 8.23 + 0.1 = 8.33
6. 4.56 + 0.01 = 4.57
7. 8.47 - 0.01 = 8.46
8. 9.35 - 0.1 = 9.25
9. 6.21 + 0.2 = 6.41
10. 9.34 - 0.2 = 9.14
11. 8.25 + 0.03 = 8.28
12. 7.38 - 0.03 = 7.35

Session 2:

Ribbon decimal: (mild)

1. 3.95m
2. 8.55m
3. 4.27m
4. 3.55m
5. 5.2m
6. 11.57m

Challenge

Green + Indigo = 3.71m + 1.25m = 4.96m Can you go closer?!

Session 3:

1. 5.714
2. 5.55
3. 23.129

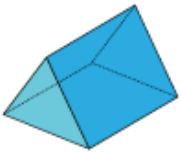
Week 2:

Year 6 Summer Learning
Maths Answer Booklet

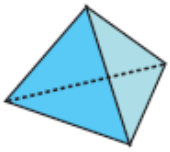
Ark Globe Academy

Session 1:

Shape practice (Hot)

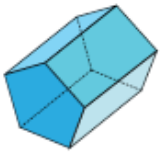


Name: triangular prism
Number of faces: 5
Number of edges: 9
Number of vertices: 6
Shape of faces: 2 triangles, 3 rectangles



Name: pyramid
Number of faces: 4
Number of edges: 6
Number of vertices: 4
Shape of faces: 4 triangles

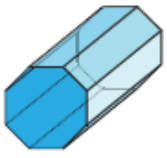
Name: cone
Number of faces: 2
Number of edges: 1
Number of vertices: 1
Shape of faces: 1 circle, 1 curved



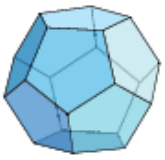
Name: pentagonal prism
Number of faces: 7
Number of edges: 15
Number of vertices: 10
Shape of faces: 2 pentagons, 5 rectangles

Name: square-based pyramid
Number of faces: 5
Number of edges: 8
Number of vertices: 5
Shape of faces: 1 square, 4 triangles

Name: hexagonal prism
Number of faces: 8
Number of edges: 18
Number of vertices: 12
Shape of faces: 2 hexagons, 6 rectangles



Name: octagonal prism
Number of faces: 10
Number of edges: 24
Number of vertices: 16
Shape of faces: 2 octagons, 8 rectangles

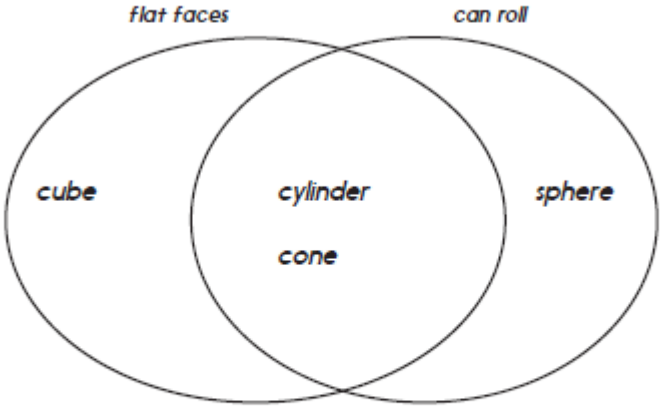


Name: dodecahedron
Number of faces: 12
Number of edges: 30
Number of vertices: 20
Shape of faces: 12 pentagons

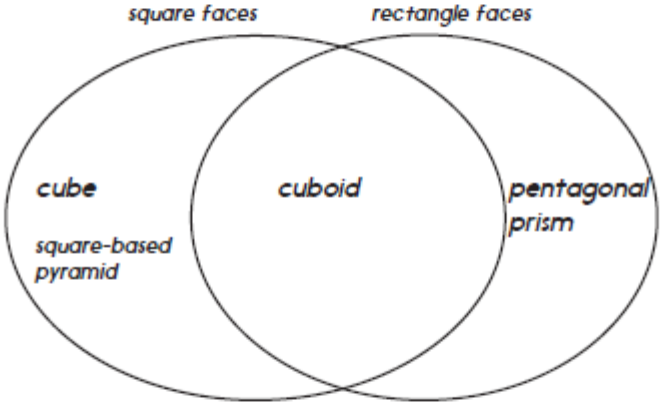
Session 2:

Shape practice (Mild)

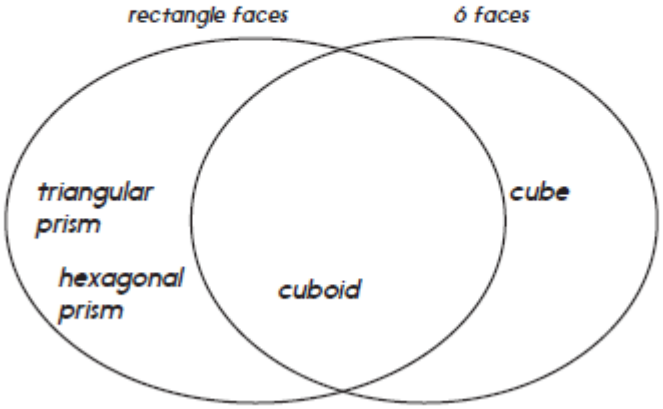
1.



2.



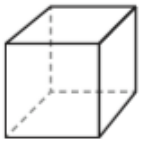
3.



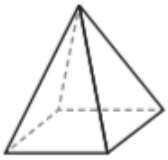
Session 3:

Here are diagrams of some 3-D shapes.

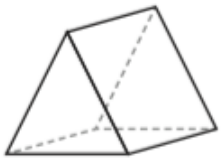
Tick each shape that has the same number of faces as vertices.



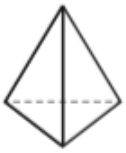
Cube ☐



Square-based pyramid ☒



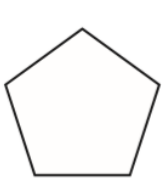
Triangular prism ☐

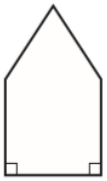


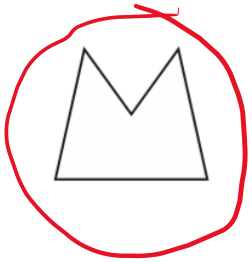
Triangular-based pyramid ☒

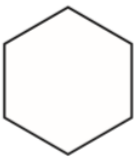
2 marks

Circle the **pentagon** with exactly **four acute angles**.









1 mark

Week 3:

Year 6 Summer Learning
Maths Answer Booklet

Ark Globe Academy

Session 1:

2.3 × 10 = **23**	0.3 × 100 = **30**	1.7 × 1000 = **1700**	4.4 × 10 = **44**	0.1 × 100 = **10**	0.9 × 1000 = **900**
5.5 × 10 = **55**	5.18 × 100 = **518**	3.56 × 1000 = **3560**	0.05 × 10 = **0.5**	0.5 × 100 = **50**	1.0 × 1000 = **1000**
2.88 × 10 = **28.8**	1.0 × 100 = **100**	2.05 × 1000 = **2050**	0.04 × 10 = **0.4**	7.19 × 100 = **719**	0.008 × 1000 = **8**
22.1 × 10 = **221**	4.7 × 100 = **470**	11.90 × 1000 = **11 900**	222.02 × 10 = **2220.2**	47.9 × 100 = **4790**	99.3 × 1000 = **99 300**
0.03 × 10 = **0.3**	234.9 × 100 = **23 490**	3.06 × 1000 = **3060**	87.5 × 10 = **875**	630.2 × 100 = **63 020**	0.4 × 1000 = **400**
100 × 547.9 = **54 790**	1000 × 0.06 = **60**	10 × 0.3 = **3**	100 × 1.8 = **180**	1000 × 10.0 = **10 000**	10 × 63.09 = **630.9**
100 × 1.65 = **165**	1000 × 3.33 = **3330**	10 × 0.022 = **0.22**	100 × 2.22 = **222**	1000 × 0.12 = **120**	10 × 1.04 = **10.4**
100 × 0.003 = **0.3**	1000 × 0.8 = **800**	10 × 1.86 = **18.6**	100 × 0.35 = **35**	1000 × 4.41 = **4410**	10 × 1.8 = **18**
100 × 0.44 = **44**	1000 × 22.5 = **22 500**	10 × 5.55 = **55.5**	100 × 47.11 = **4711**	1000 × 122.1 = **122 100**	10 × 777.05 = **7770.5**
100 × 0.78 = **78**	1000 × 192.6 = **192 600**	10 × 8.0 = **80**	100 × 120.4 = **12 040**	1000 × 10.9 = **10 900**	10 × 357.6 = **3576**
0.03 × 1000 = **30**	10 × 63.5 = **635**	100 × 17.9 = **1790**	64.5 × 10= **645**	100 × 2.79 = **279**	1000 × 20.0 = **20 000**
1.7 × 1000 = **1700**	10 × 4.04 = **40.4**	100 × 16.5 = **1650**	0.07 × 10= **0.7**	100 × 3.55 = **355**	1000 × 0.102 = **102**
0.08 × 1000 = **80**	10 × 1.59 = **15.9**	100 × 0.08 = **8**	0.01 × 10= **0.1**	100 × 0.009 = **0.9**	1000 × 7.51 = **7510**
90.3 × 1000 = **90 300**	10 × 707.7 = **7077**	100 × 0.04 = **4**	44.02 × 10= **440.2**	100 × 0.34 = **34**	1000 × 102.1 = **102 100**
0.14 × 1000 = **140**	10 × 857.3 = **8573**	100 × 0.78 = **78**	37.8 × 10= **378**	100 × 0.58 = **58**	1000 × 11.9 = **11 900**

Session 2:

5 x 10 = **50**

6 x 100 = **600**

7 ÷ 10 = **0.7**

4 x 10 = **40**

70 ÷ 100 = **0.7**

6 x 10 = **60**

2 x 100 = **200**

28 ÷ 10 = **2.8**

5 ÷ 10 = **0.5**

8 ÷ 10 = **0.8**

7 x 100 = **700**

8 x 10 = **80**

3 x 100 = **300**

2 ÷ 10 = **0.2**

80 ÷ 100 = **0.8**

9 x 10 = **90**

Fill in the missing numbers:

7 x **100** = 700

30 ÷ **100** = 0.3

64 ÷ **10** = 6.4

3 x **10** = 30

Fill in the space with either x or ÷ so that the calculation is correct:

62 **÷** 10 = 6.2

5 **x** 100 = 500

4 **x** 10 = 40

40 **÷** 100 = 0.4

True (**T**) or False (**F**):

7 x 100 = 70 [F]

30 ÷ 100 = 0.3 [T]

79 ÷ 10 = 790 [F]

1 x 10 = 10 [T]

Session 3:

Ark Globe Academy

$0.04 \div 10 =$

0.004

1 mark

$2{,}345 \times 1{,}000 =$

2345000

1 mark

$0.9 \times 200 =$

0.9 × 100 = 90

90 × 2 = 180

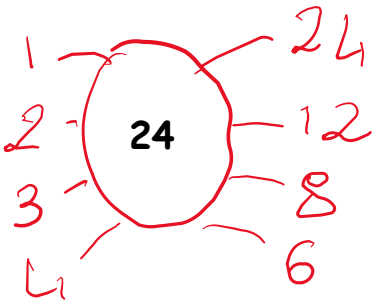
1 mark

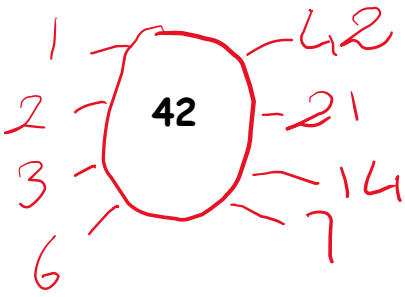
Week 4:

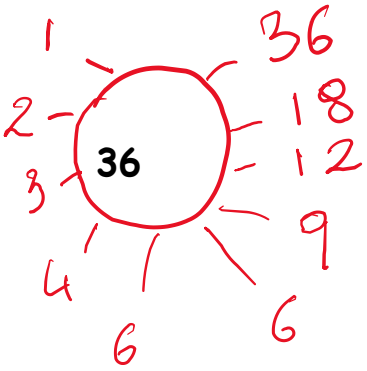
Year 6 Summer Learning
Maths Answer Booklet

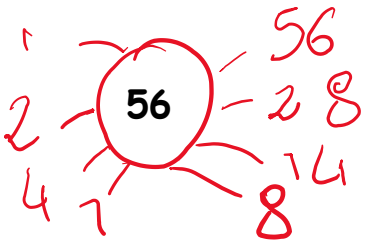
Session 1:

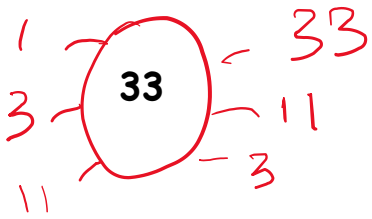
Create a factor bug for the following numbers:

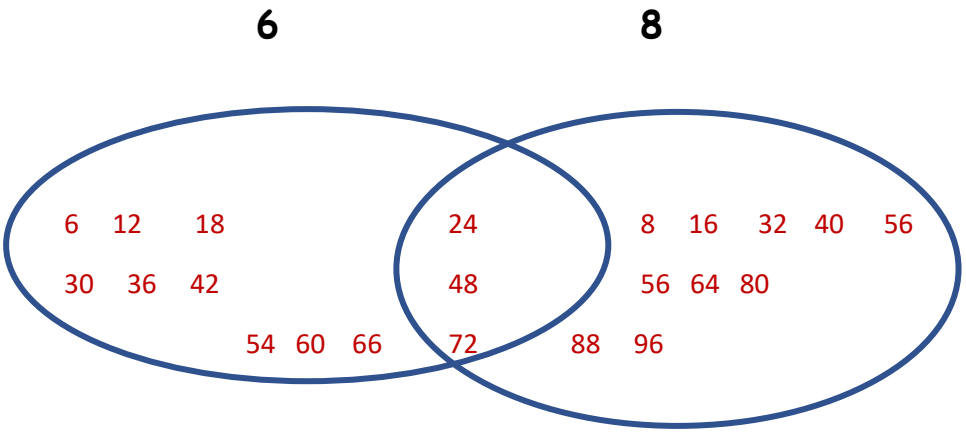


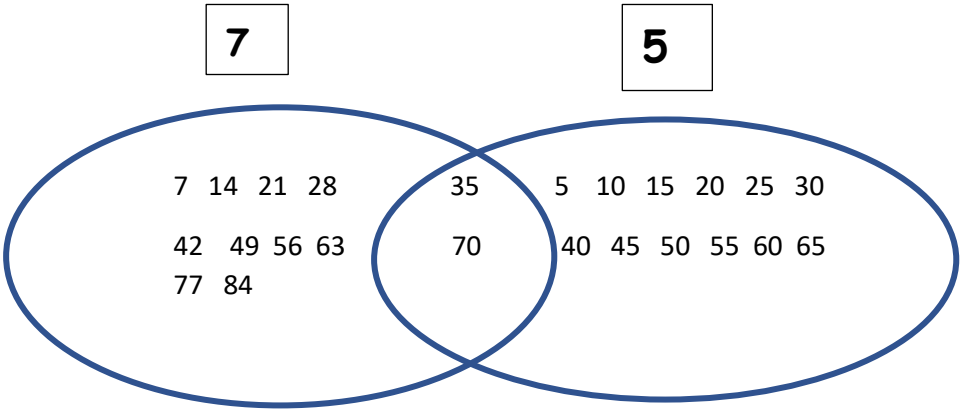












Session 2:

1. $\frac{2}{3} = \frac{4}{6}$ 2. $\frac{4}{8} = \frac{2}{4}$ 3. $\frac{1}{5} = \frac{4}{20}$ 4. $\frac{1}{4} = \frac{3}{12}$ 5. $\frac{4}{6} = \frac{8}{12}$ 6. $\frac{2}{12} = \frac{1}{6}$

Challenge: Sam is incorrect.

Session 3:

1) a) 9/12 = 3/4 b) 6/10 = 3/5

2)

$\frac{4}{5}$	$\frac{2}{3}$	$\frac{1}{6}$	$\frac{3}{7}$
$\frac{20}{25}$	$\frac{4}{24}$	$\frac{27}{63}$	$\frac{10}{15}$

1) *This is incorrect.*
$\frac{10}{12}$ is equivalent to $\frac{30}{36}$ but to simplify it completely, the correct answer is $\frac{5}{6}$.

2) *Marlon is correct.*
$\frac{10}{24}$ simplifies to $\frac{5}{12}$.

1) *Children should find all multiples of 30 that are divisible by 8 to find possible denominators, e.g. 120, 240, 360, 480, 600, 720, 840, 960.*
They should then use understanding of multiples and equivalent fractions to find all the possible fractions:
$\frac{45}{120}, \frac{90}{240}, \frac{135}{360}, \frac{180}{480}, \frac{225}{600}, \frac{270}{720}, \frac{315}{840}, \frac{360}{960}$

2) $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8}, \frac{1}{9}, \frac{1}{10}, \frac{1}{11}, \frac{1}{12}$
$\frac{2}{3}, \frac{2}{5}, \frac{2}{7}, \frac{2}{9}, \frac{2}{11}$
$\frac{3}{4}, \frac{3}{5}, \frac{3}{7}, \frac{3}{8}, \frac{3}{10}, \frac{3}{11}$
$\frac{4}{5}, \frac{4}{7}, \frac{4}{9}, \frac{4}{11}$
$\frac{5}{6}, \frac{5}{7}, \frac{5}{8}, \frac{5}{9}, \frac{5}{11}, \frac{5}{12}$
$\frac{6}{7}, \frac{6}{11}$
$\frac{7}{8}, \frac{7}{9}, \frac{7}{10}, \frac{7}{11}, \frac{7}{12}$
$\frac{8}{9}, \frac{8}{11}$
$\frac{9}{10}, \frac{9}{11}$
$\frac{10}{11}, \frac{11}{12}$

All the fractions that cannot be simplified will have at least one odd number. Fractions with a numerator of 1 (unit fractions) cannot be simplified.

Week 5:

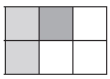
Year 6 Summer Learning
Maths Answer Booklet

Ark Globe Academy

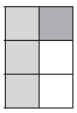
Session 1:

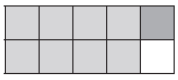
Use the grids to help you solve the calculations.

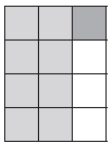
Example: $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$ 

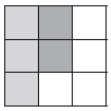
1. $\frac{1}{3} + \frac{1}{6} = \mathbf{\frac{3}{6}}$ 

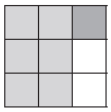
2. $\frac{2}{3} + \frac{1}{6} = \mathbf{\frac{5}{6}}$ 

3. $\frac{1}{2} + \frac{1}{6} = \mathbf{\frac{4}{6}}$ 

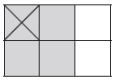
4. $\frac{4}{5} + \frac{1}{10} = \mathbf{\frac{9}{10}}$ 

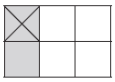
5. $\frac{2}{3} + \frac{1}{12} = \mathbf{\frac{9}{12}}$ 

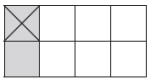
6. $\frac{1}{3} + \frac{2}{9} = \mathbf{\frac{5}{9}}$ 

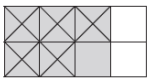
7. $\frac{2}{3} + \frac{1}{9} = \mathbf{\frac{7}{9}}$ 

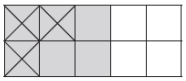
Use the grids to help you solve the calculations.

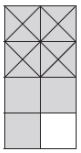
Example: $\frac{2}{3} - \frac{1}{6} = \frac{3}{6}$ 

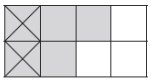
1. $\frac{1}{3} - \frac{1}{6} = \mathbf{\frac{1}{6}}$ 

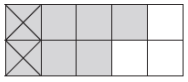
2. $\frac{1}{4} - \frac{1}{8} = \mathbf{\frac{1}{8}}$ 

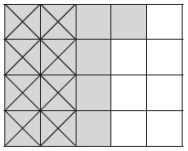
3. $\frac{3}{4} - \frac{5}{8} = \mathbf{\frac{1}{8}}$ 

4. $\frac{3}{5} - \frac{3}{10} = \mathbf{\frac{3}{10}}$ 

5. $\frac{7}{8} - \frac{1}{2} = \mathbf{\frac{3}{8}}$ 

6. $\frac{5}{8} - \frac{1}{4} = \mathbf{\frac{3}{8}}$ 

7. $\frac{7}{10} - \frac{1}{5} = \mathbf{\frac{5}{10} = \frac{1}{2}}$ 

8. $\frac{13}{20} - \frac{2}{5} = \mathbf{\frac{5}{20} = \frac{1}{4}}$ 

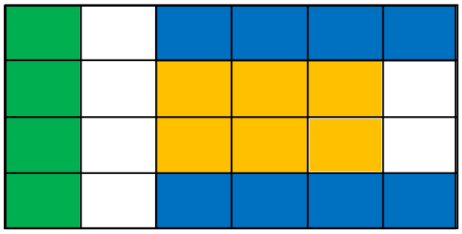
$\frac{1}{6} + \frac{1}{3} = \frac{3}{6} = \frac{1}{2}$

Session 2:

Year 6 Summer Learning
Maths Answer Booklet

Ark Globe Academy

What fraction of the flag is green and blue?



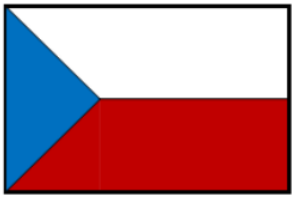
$\frac{1}{6}$ of the flag is green

$\frac{1}{3}$ of the flag is blue

$\frac{1}{2}$ of the flag is green and blue.

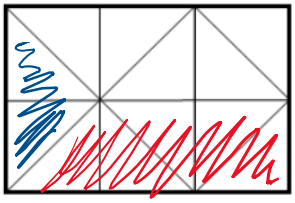
What fraction of the flag is not blue? → $1 - \frac{1}{3} = \frac{3-1}{3} = \frac{2}{3}$

1a) What fraction of the flag is blue?



1b) What fraction of the flag is blue and red?

Why does this image help?



2a) What fraction of the flag is red?

2b) What fraction of the flag is black?

2c) What fraction of the flag is red and green?

Why does this image help?

1a) $\frac{2}{12} = \frac{1}{6}$

1b) $\frac{1}{6} + \frac{5}{12} = \frac{7}{12}$

2a) $\frac{1}{3}$

2b) $\frac{2}{9}$

2c) $\frac{1}{3} + \frac{2}{9} = \frac{5}{9}$

Ark Globe Academy

Session 3:

$\frac{4}{6} + \frac{3}{6} =$

$\frac{7}{6}$

1 mark

$\frac{62}{100} - \frac{38}{100} =$

$\frac{24}{100}$

1 mark

Ark Globe Academy

$\frac{3}{4} - \frac{3}{8} =$

$\frac{10+8+4}{40} = \frac{22}{40} = \frac{11}{20}$

$\frac{11}{20}$

1 mark

$2\frac{1}{3} + \frac{5}{6} =$

$2\frac{1}{3} + \frac{5}{6} = \frac{2+5}{6}$

$2\frac{7}{6}$

1 mark

Ark Globe Academy

$\frac{2}{6} - \frac{1}{8} =$

$\frac{16-6}{24} = \frac{10}{24}$

$\frac{10}{24}$

1 mark

Ark Globe Academy

Mixed times tables

Times Table Test

1) 7 x 8 =
2) 9 x 4 =
3) 3 x 6 =
4) 5 x 4 =
5) 12 x 3 =
6) 3 x 9 =
7) 2 x 12 =
8) 11 x 6 =
9) 4 x 2 =
10) 7 x 9 =
11) 6 x 2 =
12) 4 x 8 =

Times Table Test

1) 3 x 2 =
2) 7 x 12 =
3) 5 x 8 =
4) 6 x 5 =
5) 11 x 11 =
6) 8 x 9 =
7) 2 x 7 =
8) 9 x 9 =
9) 8 x 3 =
10) 11 x 5 =
11) 3 x 8 =
12) 10 x 7 =

Times Table Test

1) 70 x 5 =
2) 40 x 80 =
3) 30 x 2 =
4) 60 x 40 =
5) 10 x 90 =
6) 50 x 4 =
7) 80 x 80 =
8) 90 x 4 =
9) 7 x 30 =
10) 20 x 50 =
11) 400 x 4 =
12) 11 x 30 =

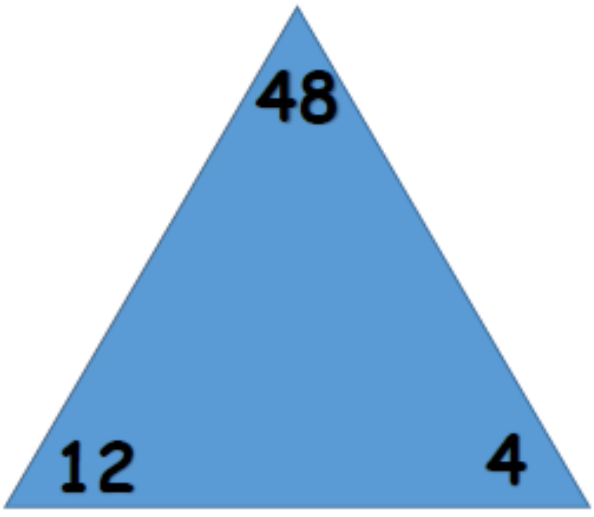
Times Table Test

1) 21 ÷ 3 =
2) 40 ÷ 8 =
3) 110 ÷ 10 =
4) 12 ÷ 3 =
5) 50 ÷ 5 =
6) 36 ÷ 4 =
7) 42 ÷ 6 =
8) 28 ÷ 7 =
9) 63 ÷ 9 =
10) 27 ÷ 3 =
11) 84 ÷ 12 =
12) 121 ÷ 11 =

Mixed times tables

1) Andrew is buying some new computer games. He buys six new games for £11 each. Draw a representation of this below before writing out the calculation and finding the answer.

2) Find all the number facts you can for the triangle below:



3) Fill in the gaps below:

4.5		6.3			9.0

Mixed times tables

4) Fill in the gaps below:

11 x _____ = 44

121 ÷ _____ = 11

11 x _____ = 770

220 ÷ 11 = _____

11 x _____ = 132

110 ÷ _____ = 11

5) Sarah says "I know my 5 times table so I can work out 5 x 70 without using a written method."

Explain why Sarah can do this.

6) A bicycle has 2 wheels. How many wheels are there on 6 bikes?

7) Create a word problem that requires you to use the 3 x table.

Mixed times tables

11) Sarah says "Because 12 is a multiple of 4, that means any multiples of 12 will also be multiples of 4."

Is Sarah correct? Explain your reasoning.

12) Write the number sentences for the diagram below:

_____ x _____ = _____

_____ x _____ = _____

_____ ÷ _____ = _____

_____ ÷ _____ = _____

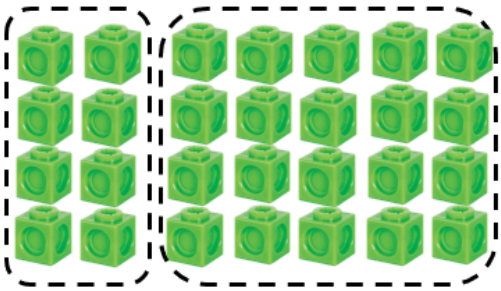
Challenge Yourself!

Question 1:

How many ways can you represent the calculation below?

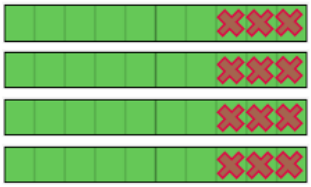
7×4 is equal to...

2×4 add 5×4



$8 + 20$

10×4 subtract 3×4



$40 - 12$

Question 2:

I am thinking of a number.
It is a multiple of 7.
It is not multiple of 9 or 6.
It is an even number where one digit has a value less than 6.
The number is greater than 30 and less than 150.

What could the mystery number be?

There may be more than one possible value for the mystery number.
How many different possible values could the mystery number be?
What if you removed one of the statements? Are there more or fewer possible values? How do you know?
What if you removed two statements?

Question 3:

Here are the first ten multiples of seven:

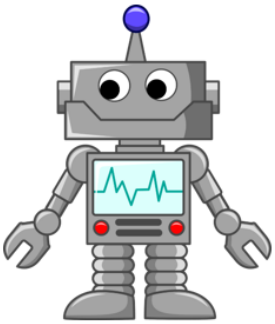
$$7, 14, 21, 28, 35, 42, 49, 56, 63, 70$$

Mike the Machine increases each multiple by the same value:

$$11, 18, 25, 32, 39, 46, \ldots$$

What do you notice about the digits in the ones place?

Will the number 73 be in this new pattern? How do you know? How about the number 88?
Can you name a 3-digit number that will be in the pattern?



Explore other ways Mike the Machine could change the multiples and the number that will be in the patterns that are made.
Start with the first ten multiples of nine and explore changes that Mike the Machine could make and the patterns created.

Question 4:

My calendar wasn't printed correctly. Most of the dates are missing from this month!

What will the date be on the 3rd Saturday of this month?
What will the date be on the 4th Tuesday of this month?
How about the date of the 4th Thursday this month?

Mon	Tues	Weds	Thurs	Fri	Sat	Sun
	1	2	3	4	5	6

Extra challenge!

What if this month began on Thursday, instead of Tuesday – what would the date be on the 3rd Saturday of the month?

How about the 4th Tuesday of the month?

Will there be four Tuesdays in the month? How do you know?

Question 5:

Do you agree or disagree with Joe?
Explain your reasons why.