

Year 7

Maths



ARENA
ACADEMY

Rounding

Round each number to a reasonable value and use this to calculate the answer to the following questions

a) Which is the best estimate for $72.34 \div 8.91$

6 7 8 9 10 11

b) Which is the best estimate for 32.7×0.48

1.2 1.6 12 16 120 160

c) Which is the best estimate for $597 \div 62$

200 100 20 10

d) Which is the best estimate for $349 \div 71$

9 7 5 3

e) Which is the best estimate for $987 \div 19$

60 50 40 30

f) Which is the best estimate for $73 \div 8.9$

12 10 8 6

g) Which is the best estimate for $476 \div 59$

43 21 8 3

h) Which is the best estimate for $87 \div 41$

40 120 20 2

BIDMAS

What does BIDMAS stand for?

B ___ I ___ D ___ M ___ A ___ S ___

Match each of these questions to the right answer

Question	Answer A	Answer B
$2 + 3^2 \times 4$	38	100
$(12 - 3^2) \times 4$	12	324
$4 \times (2 + 3)^2$	400	100
$22 - 2 \times (3^2 + 2)$	0	220

$5 \times 6 - 3^2 \times 2$	1458	12
$(3 + 2) \times 4$	11	20
$3 \times (2 + 6)$	24	12
$12 \div (9 - 6)$	4	3
$(5 + 7) \div 3$	4	3
$5 - 2^2 \times 2$	-3	2

Multiplication

$$123 \times 456$$

$$789 \times 98$$

$$31 \times 27$$

$$11 \times 25$$

$$653 \times 137$$

$$13099 \times 645$$

$$131 \times 11$$

$$8921 \times 270$$

$$101 \times 84$$

$$1090 \times 521$$

$$25 \times 9$$

$$39 \times 60$$

$$2501 \times 222$$

$$68 \times 86$$

$$963 \times 86$$

$$753 \times 98$$

$$654 \times 57$$

$$465 \times 55$$

$$1111 \times 22$$

$$4945 \times 899$$

$$111 \times 8$$

$$5696 \times 997$$

$$444 \times 333$$

$$107 \times 60$$

$$31 \times 25$$

Division

$$1) 84 \div 4$$

$$2) 98 \div 7$$

$$3) 160 \div 8$$

$$4) 81 \div 9$$

$$5) 96 \div 6$$

$$6) 126 \div 9$$

7) $152 \div 6$

8) $162 \div 3$

9) $194 \div 7$

10) $217 \div 9$

Converting Between Units

1) Fill in the gaps in these sentences

100 centimetres equal ____ metre
1 kilometre equals _____ metres
_____ grams equal one kilogram
_____ litre equals 1000 millilitres

2) Match up the equivalent measurements:

- | | |
|------------|-------------|
| a) 90 mm | i) 0.4 km |
| b) 400 m | ii) 600 cm |
| c) 85 km | iii) 62 mm |
| d) 6.2 cm | iv) 1.2 m |
| e) 3600m | v) 85000 m |
| f) 0.6 km | vi) 9 cm |
| g) 1200 mm | vii) 3.6 km |

3) Write these numbers in order from smallest to largest

500 cm	500 m	500 mm	500 km
5 km	0.5 m	0.5 cm	50 mm

Averages

Write instructions for calculating each of these types of average

Mode: _____

Mean: _____

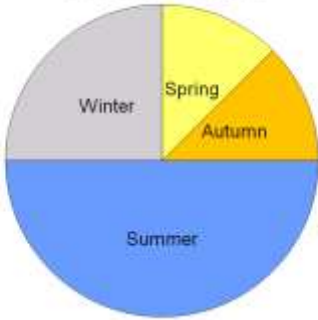
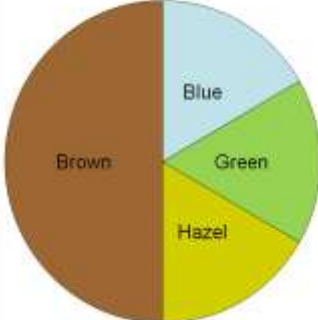
Median: _____

Range: _____

Calculate the averages for each of these sets of numbers:

Data Set	Mode	Median	Range	Mean
a) 6, 8, 8, 7, 6, 8, 13				
b) 13, 20, 27, 30, 25, 28, 30, 35				
c) 5, 7, 2, 8, 8				
d) 4,7,0,14,0,19,5				
e) 2, 9, 18, 12, 7, 2, 6				

Pie Charts

Favourite Seasons	Eye Colour
	
What fraction of the class said that winter was their favourite season?	What percentages of people in this survey have brown eyes?
If 40 people were asked, how many said that spring was their favourite?	If 60 people were asked, how many were found to have hazel eyes?

i) Results from a sports tournament			ii) Number of children in each year group		
Result	Score	Angle	Year Group	Children	Angle
Win	14		Year 4	20	
Lose	6		Year 5	30	
Draw	16		Year 6	10	
Total		360°	Total		360°
How many degrees will represent one result? ...			How many degrees will represent one child? ...		

Comparing Data

How can you find out who is the better cricketer?

This is Andrew Flintoff



He plays for Lancashire

These are the scores from his last 11 innings:

42, 18, 26, 112, 31, 40, 25, 58, 63, 72, 63

Median?

Mode?

Range?

Mean?

This is Michael Vaughn



He plays for Yorkshire

In his last 11 innings he has scored:

0, 1, 0, 0, 0, 614, 0, 0, 1, 0, 1

Median?

Mode?

Range?

Mean?

From your analysis who is the better cricketer?
(Give a reason for your answer based on their statistics)

Probability

The probability of rolling a 2 on a fair 1 to 6 dice is $\frac{1}{6}$, because 2 occurs once out of a total of 6 different possibilities.



What is the probability of rolling:

- | | |
|-------------------|------------------------------------|
| a. 5? | d. a number greater than 2? |
| b. an odd number? | e. a prime number? |
| c. zero? | f. a number lying between 0 and 7? |

Copy and complete this two way table about travel to school and then answer the questions about it:

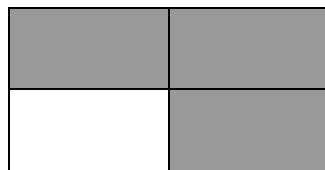
	Walk	Bus	Car	Total
Boys	17		2	30
Girls		5		
Total	32		7	55

- What is the probability of picking a boy who travels to school by bus?
- What is the probability of picking someone who travels to school by car?
- What is the probability of picking a girl who walks to school?

Fractions

- 1) What fraction of the shapes is shaded:







- 2) What is the numerator of a fraction? _____

- 3) What is a denominator of a fraction? _____

- 4) What is $2\frac{1}{2}$ as an improper fraction? _____

- 5) What is $\frac{9}{4}$ as a mixed number? _____

- 6) What is $\frac{23}{7}$ as a mixed number? _____

- 7) Write down a fraction that is equivalent to $\frac{1}{2}$ _____

- 8) Write down a fraction that is equivalent to $\frac{3}{7}$ _____

9) What is $\frac{10}{12}$ in its simplest form?

10) What is $\frac{70}{100}$ in its simplest form?

11) Find the following fractions of £60

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

£65

$$\frac{1}{4} =$$

$$\frac{1}{2} =$$

12) Put these fractions in order of smallest to biggest:

$$\frac{1}{4} \quad \frac{2}{3} \quad \frac{5}{6} \quad \frac{1}{12} \quad \frac{1}{2}$$

Decimals

1) Match up these common fractions with their decimals

$\frac{1}{2}$
$\frac{1}{4}$
$\frac{3}{4}$
$\frac{1}{10}$
$\frac{1}{100}$

0.01
0.5
0.75
0.25
0.1

3) Put these decimals in order on the number line (Smallest to biggest)

4.52

4.05

5.69

4.6

5.0

4) Now order these (Smallest to biggest):

4.523

4.52

6.5

4.601

4.501

Shuttle Activity

Increase £36 by 10% to find **A**

Round **A** to the nearest 10 to find **B**

Write **B** as a product of its primes ($2^c \times 5$)

Calculate \mathbf{C}^3 to find **D**

Find $\frac{2}{9}$ of **D** to find **E**

Find **E**% of 1800 to find **F**

Use £1 = \$1.5

Convert £**F** to \$ to find **G**

Convert $\frac{g}{200}$ into a percent to find **H**%

\sqrt{H} to find **I**

Calculate **I** + 3 x 2 to find **J**

Find **J**% of 80 to find **K**

If **K** amount of bottles cost £36 how many do 20 bottles cost? (**L** bottles)

Tim and Mike share £**L** in the ration 7:5 respectively. How much does Mike (**M**) receive?

$\sqrt{\mathbf{M}}$ + **M** to find **N**

Convert **N**% into a fraction to find **O**

Find **O** of 320 to find **P**

Write **P** as a product of its primes ($2^Q \times 3$)

A rectangle has dimensions of **Q**cm and **R**cm. If the area is 45cm², what is **R**?

Calculate **R** x 0.4 to find **S**

Calculate **S** ÷ 1.2 to find **T**

How many cm are in **T** metres, this is **U**.

Vikki and John share £**U** in the ratio 17:13 respectively, how much does Vikki (**V**) receive?

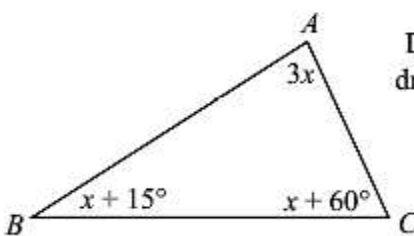
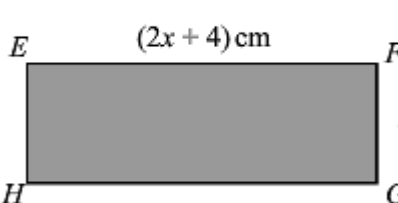
Convert into a percent to find **W**%

Find the **W**th odd number.

A parallelogram has an area of **X**cm² and height of 3cm. What is the width? (**Y**cm)

What is the **Y**th prime number

Simplify:	$a + a + a + a$	
Simplify:	$b \times b \times b \times b$	
Simplify:	$9e + 8f - 5e + 4f$	
Simplify:	$5h \times 6h$	
Simplify:	$x^3 \times x^6$	
Simplify:	$x^{12} \div x^5$	
Expand & Simplify:	$8(f + 2) + 5(f + 5)$	
Expand & Simplify:	$5(a + 3b) - 3(a - b)$	
Expand & Simplify:	$5y - 3(2y + 1)$	
Expand & Simplify:	$(q + 3)(q - 4)$	
Expand & Simplify:	$(2r + 3)(4r + 5)$	
Expand & Simplify:	$(x - 1)(3x + 1)$	
Solve:	$3x = 18$	
Solve:	$42 = 6x$	
Solve:	$\frac{x}{2} = 5$	
Solve:	$\frac{x}{6} = 48$	
Solve:	$2y - 4 = 28$	
Solve:	$5y + 7 = 27$	
Fully Factorise :	$35x + 20$	
Solve:	When $x = 4$ $3x + 6$	
Solve:	When $x = -3$ $9x + 30$	
Solve:	When $x = 2$ $6x^2 - 7$	
Solve:	When $x = -5$ $4x^2 + 4$	

$\frac{3}{8} + \frac{1}{6} =$	
$\frac{9}{10} - \frac{11}{15} =$	
$\frac{3}{5} + \frac{1}{4} =$	
$\frac{7}{8} - \frac{3}{4} =$	
$\frac{2}{5} \times \frac{10}{9} =$	
$\frac{2}{9} \div \frac{6}{7} =$	
$\frac{2}{3} \div \frac{4}{5} =$	
What is $\frac{4}{9}$ of £36?	
What is $\frac{3}{7}$ of £49?	
What is $\frac{10}{3}$ as a mixed number	
What is $\frac{23}{7}$ as a mixed number?	
What is $2\frac{2}{3}$ as an improper fraction?	
What is $6\frac{7}{8}$ as an improper fraction?	
 <p>Diagram not drawn to scale</p>	Work out the largest angle of this triangle.
 <p>Diagram not drawn to scale</p>	The perimeter of this shape is 66cm, work out the value of x:

Work out: $2 + 6 \times 4 \div 2$	
Work out: $(7 + 13) \times 20 \div 5$	