Mathematics Department - Transition to Year 7

Hello Year 6 and welcome to the Mathematics department at Our Lady's Catholic High School. We are truly sorry that we were unable to meet you before you start with us, but to get you ready for Mathematics at OLCHS we have shared some information about us below and set you some challenges.

The Team

The Mathematics department has nine enthusiastic specialist teachers and intervention teachers. Our vast range of experience and skills ensures that all students receive a quality learning experience and a supportive learning environment. Our ambition is to ensure that every student progresses to the best of their ability and achieves their potential. We have seven dedicated mathematics classrooms, each with an interactive whiteboard, enabling staff to utilise a wide range of interactive software to make lessons dynamic and exciting and a KS3 intervention classroom so that pupils can receive Mathematics support in smaller groups.

Equipment

In Mathematics, students use various pieces of equipment, some of which the school will provide. It is recommended that students arrive in September with the following equipment:

- Pen
- Pencil
- Ruler
- Protractor
- Rubber
- Calculator*

(*The recommended models are either Casio fx-85GTX, the Casio fx-83GTX or the Casio Fx-85GT Plus and these are available from school in the first few weeks)

Summer Challenge

To help keep you thinking about Mathematics we have set out some questions and challenges below and we can't wait to see your work on these. As you may have seen, we like to reward the hard work and enthusiasm of our students so anyone who brings this completed challenge pack back in September will be awarded with Green Writing or 'Being One of Ours' points. Anyone with exceptional effort on these will also be entered into our prize draw for an extra reward!

Key Facts

Here are some key facts to help you out with the questions and challenges

Types of number

- Square numbers 1 , 4 , 9 , 16 , 25 , 35 , 49 , 64 , 81 , 100 …
- Cube numbers 1 , 8 , 27 , 64 , 125 , 216 , 343 , 512 …
- Prime numbers 2 , 3 , 5 , 7 , 11 , 13 , 17 , 19 , 23 , 29 …

Shape

- A right angle = 90º
- Angles on a straight line = 180º
- Angles around a point = 360º
- Angles of a triangle = 180º
- Angles in a quadrilateral = 360º
- An acute angle is less than 90º
- An obtuse angle is more than 90º and less than 180º
- A reflex angle is greater than 180º but less than 360º
- Parallel lines never meet
- A perpendicular line is at right angles to another line

Measure

- 1000m = 1 km 100cm = 1m 10mm=1cm
- 1000g = 1kg (kilogram) 1000kg = 1 tonne
- 1000ml = 1l (litre) 100cl = 1 litre 10ml = 1cl

Time

- 60 seconds = 1 minute 60 minutes = 1 hour
- 24 hours = 1 day 7 days = 1 week
- 52 weeks = 1 year 12 months = 1 year
- 365 days = 1 year 366 days = 1 leap year
- 10 years = 1 decade 100 years = 1 century

Summer Challenge

On the following pages are some numeracy activities and some problems which are designed to help you prepare for Mathematics at OLCHS.

Please complete as much as you can over summer and if you bring what you have completed in September, you will be rewarded!

To get you started, see if you can solve the problem below then move on to the challenges on the next few pages. Give it your best attempt and we look forward to seeing them and you in September.

Have a lovely Summer,

OLCHS Mathematics Department

Challenge Questions

John has organised a cinema trip with his 5 friends:

Alan Mary Jenny Harry Keith

They manage to get tickets on the back row, seat numbers 3 to 8.

The friends cannot decide where to sit and need your help. Using the 4 pieces of information below can you work out who should sit next to who?

1. Alan must sit next to Jenny in a higher numbered seat.
2. Keith doesn't want to sit in seats 3 or 8.
3. John must have a gap of one seat between him and Harry.
4. Mary's seat number was odd and Jenny's even.

In the table below all the rows and all the columns are supposed to add up to the same value 119. However someone has made a mistake and one of the numbers is wrong.

Find out which number is wrong and what it should be.

62	34	23	
25	13	92	
32	72	15	

Find pairs of numbers with a;

Sum of 5 and a product of 6 ☐☐

Sum of 8 and a product of 12 ☐☐

Sum of 9 with a product of 20 ☐☐

Sum of 6 and a product of 9 ☐☐

Sum of 15 and a product of 26 ☐☐

Sum of 19 and a product of 84 ☐☐

Sum of -4 and a product -5 ☐☐

Sum of 23 and a product of 132 ☐☐

and a product of 2 ☐☐

Look at the cards.
Use the numbers on the cards to complete the problems.

534 417 825 109 255

a) ☐ + ☐ = 526

b) ☐ + ☐ = 789

c) ☐ - ☐ = 716

d) ☐ - ☐ = 117

Arrange the numbers 1-9 into the square so that each column, row and diagonal adds up to 15.

In each box there is an odd one out. Can you find it?

5	13	11
9	3	7

4	8	1
49	9	25

3	16	12
15	9	21

How much change would you receive from?

From £1.....	
50p	
20p	
30p	
25p	
£0.50	
7p	
27p	
39p	
99p	
£0.07	

From £5.....	
£1.00	
£2.00	
£1.30	
140p	
£2.70	
£3.50	
£4.80	
£2.42	
£3.12	
272p	

From £10.....	
£2.00	
£4.00	
£5.00	
£1.10	
£2.70	
£3.50	
£6.80	
£9.46	
£3.75	
£0.05	

There are 8 fractions in this grid that are the same as: $\frac{1}{2}$
Shade them.

$\frac{4}{8}$	$\frac{8}{24}$	$\frac{12}{56}$	$\frac{24}{48}$	$\frac{16}{72}$	$\frac{12}{48}$	$\frac{16}{64}$
$\frac{16}{48}$	$\frac{36}{72}$	$\frac{4}{48}$	$\frac{16}{64}$	$\frac{40}{80}$	$\frac{12}{56}$	$\frac{4}{48}$
$\frac{8}{40}$	$\frac{16}{80}$	$\frac{44}{88}$	$\frac{12}{64}$	$\frac{12}{40}$	$\frac{4}{24}$	$\frac{12}{56}$
$\frac{4}{24}$	$\frac{16}{32}$	$\frac{12}{12}$	$\frac{12}{24}$	$\frac{32}{64}$	$\frac{12}{64}$	$\frac{4}{24}$

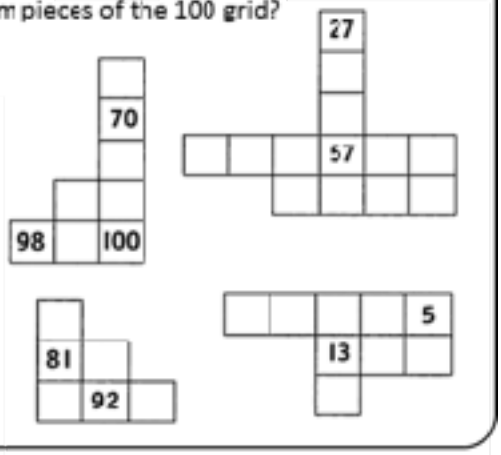
There are 8 fractions in this grid that are the same as: $\frac{2}{5}$
Shade them.

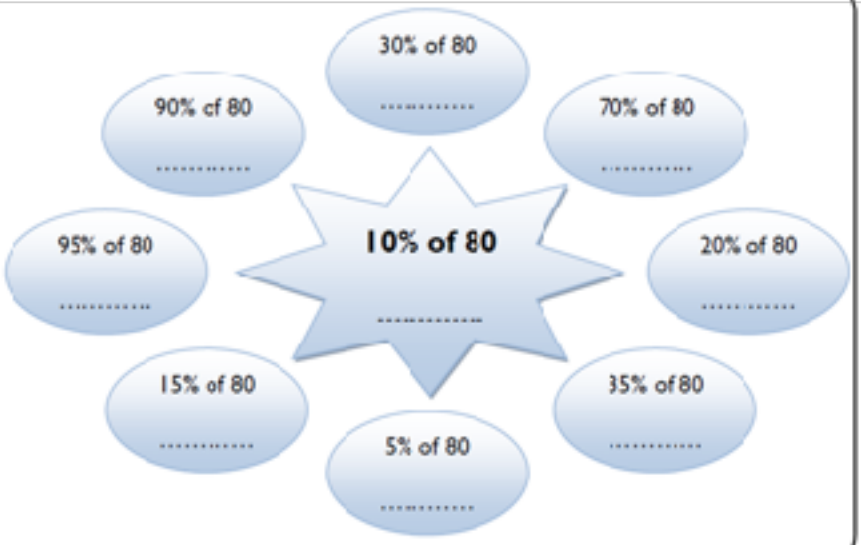
$\frac{2}{5}$	$\frac{2}{15}$	$\frac{6}{15}$	$\frac{20}{50}$	$\frac{4}{30}$	$\frac{10}{25}$	$\frac{8}{35}$
$\frac{2}{15}$	$\frac{6}{45}$	$\frac{6}{25}$	$\frac{14}{35}$	$\frac{6}{30}$	$\frac{4}{20}$	$\frac{4}{15}$
$\frac{18}{45}$	$\frac{6}{35}$	$\frac{4}{30}$	$\frac{6}{45}$	$\frac{6}{35}$	$\frac{16}{40}$	$\frac{12}{12}$
$\frac{2}{15}$	$\frac{8}{35}$	$\frac{2}{20}$	$\frac{2}{25}$	$\frac{22}{55}$	$\frac{4}{30}$	$\frac{2}{30}$

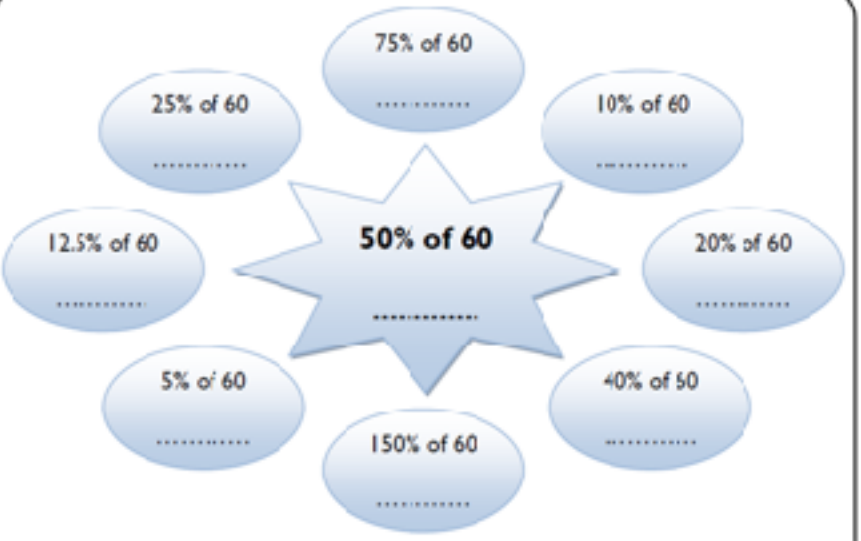
How many...

1. hours and minutes in 213 minutes?
2. minutes in 4 hours and 47 minutes?
3. hours in a week.?
4. seconds in 90 minutes?
5. minutes in a day?

Can you find the missing numbers from pieces of the 100 grid?







Use your multiplication facts to complete the following;

X	5	6		
3				
			56	
			63	
4				

X			4	
		72		
	10			15
6				
		63		

X				
				12
	40	10		
			63	21

C. Put the 4 cards in the boxes so each sum is correct.
For each question find 4 different ways!

1) 4 2 2 1 → ☐☐ + ☐☐ = **36**

2) 5 1 3 4 → ☐☐ + ☐☐ = **49**

3) 2 5 2 3 → ☐☐ + ☐☐ = **57**

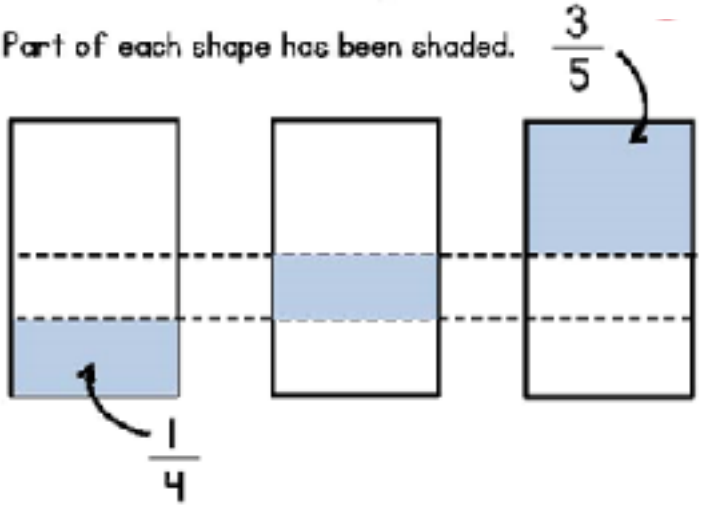
4) 2 4 5 3 → ☐☐ + ☐☐ = **68**

5) 8 2 1 6 → ☐☐ + ☐☐ = **44**

Problem 1

Here are 3 identical rectangles.

Part of each shape has been shaded.



What fraction of the middle shape is shaded?

Problem 2

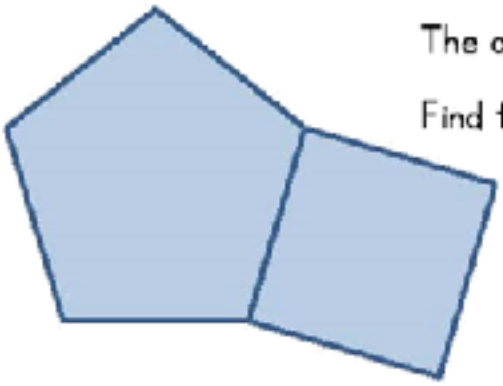
Mrs Jones has £20 to spend on presents.

She buys 4 mugs and 3 teddy bears.

What is the greatest number of key-rings she can buy?

Problem 3

This shape is made of a regular pentagon and a square.



The area of the square is $81cm^2$.

Find the perimeter of the shape.