



Saint Joseph's
CATHOLIC SCHOOL

Maths Department
Year 7 High Achievers Booklet



ST JOSEPH'S CATHOLIC SCHOOL
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Maths Y7 Enrichment – Autumn

The purpose of this booklet is to give you practice in mathematical thinking. You should try as many questions as you can each term and hand your answers in to your mathematics teacher at the end of the each term.

1. What is the value of $0.1 + 0.2 + 0.3 \times 0.4$?

- A. 0.24 B. 0.312 C. 0.42 D. 1.0 E. 1.5

Show your working:

2. My train is scheduled to leave at 17:40 and to arrive at 18:20. However, it started five minutes late and the journey took 42 minutes. At what time did I arrive?

- A. 18:21 B. 15:23 C. 18:25 D. 18:27 E. 18:29

Show your working:

3. What is the remainder when 354972 is divided by 7?

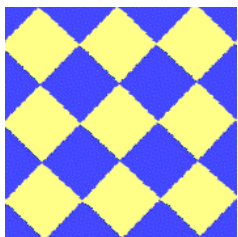
- A. 1 B. 2 C. 3 D. 4 E. 5

Show your working:

4. Which of the following numbers is three less than a multiple of 5 and three more than a multiple of 6?

- A. 12 B. 17 C. 21 D. 22 E. 27

Show your working:



5. In the diagram what fraction of the large square is coloured yellow?

- A. $\frac{9}{20}$ B. $\frac{9}{16}$ C. $\frac{3}{7}$ D. $\frac{3}{5}$ E. $\frac{1}{2}$

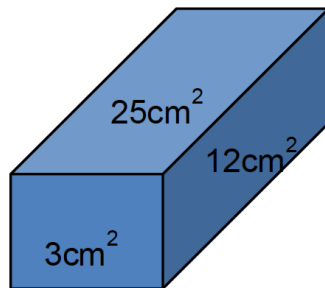
Show your working:

Special points to note:

- **No calculator** to be used
- You must show your working out
- Say what you know
- You will not get any marks for guessing the answer

Mathematics Trail

Question 6 – Boxed In



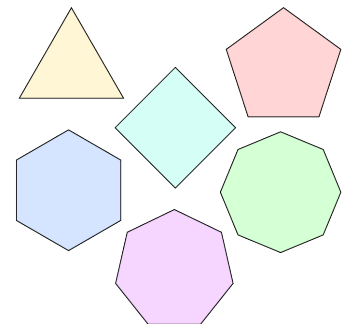
The diagram shows a rectangular box. The areas of the faces are 3, 12 and 25 square centimetres.

What is the volume of the box?

If the areas of the faces are p , q and r , what is the volume of the box in terms of p , q and r ?

Question 7 – Polygon

The perimeter of a regular octagon is 96cm. Find the length of one side.



Write your own question for a different regular polygon.

Question 8

The letters J, M, C represent three different non-zero digits. What is the value of $J+M+C$?

$$\begin{array}{r} \text{JJ} \\ \text{MM} \\ \underline{\text{CC}} \\ \text{JMC} \end{array} +$$

Question 9

At halftime, Sourwatts Academy had scored all the points so far in their annual match against Rosehill School. In the second half, each side scored three points. At the end of the game, Sourwatts had scored 90% of the points. What fraction of the points in the match was scored in the second half?



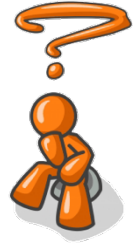
Question 10

The pages of a book are numbered 1, 2, 3.... In total, it takes 852 digits to number all the pages in the book. What is the number of the last page?





I think of a number...



My number is one less than a multiple of ten.

The sum of the digits in my number is a multiple of six.

My number is a multiple of three.

My number is less than 70.

The second digit in my number is a multiple of the first digit.

My number is one less than a multiple of four.

Use the number grid to discover the number I thought of.

0	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

Now it's your turn! Pick a number and then write six statements that will lead me to find your number.

Maths Y7 Enrichment – Spring

1. What is the value of $9002 - 2009$?

- A. 9336 B. 6993 C. 6339 D. 3996 E. 3669

Show your working:

2. All of the forty thieves were light fingered, but only two of them were caught red-handed. What percentage is that?

- A. 2 B. 5 C. 10 D. 20 E. 50

Show your working:

3. The diagram is made up of three rectangles, each measuring 3cm by 1cm. What is the perimeter of the shape?

- A. 16cm B. 18cm C. 20cm D. 24cm E. More information is needed

Show your working:



4. Which of the following numbers produces a multiple of 5?

- A. $1 \times 2 + 3 + 4$ B. $1 + 2 \times 3 + 4$ C. $1 \times 2 + 3 \times 4$ D. $1 + 2 \times 3 \times 4$ E. $1 \times 2 \times 3 \times 4$

Show your working:

5. A solid wooden cube is painted blue on the outside. The cube is then cut into eight smaller cubes of equal size. What fraction of the total surface area of these new cubes is blue?

- A. $1/8$ B. $1/3$ C. $3/8$ D. $1/2$ E. $3/4$

Show your working:



Special points to note:

- No calculator to be used
- You must show your working out
- Say what you know
- You will not get any marks for guessing the answer

Question 6 – Cashpoint



Flash Jack went to the cash point. He drew out the same amount of money as he had in his pocket.

He then spent £40 on CDs.

Jack went back to the cash point.

He drew out the same amount of money as he had in his pocket.

He then spent a further £40 on CDs.

Jack did this a third time.

He then had no money left.

How much money did he have with him to start?

Question 7

STEP ON NO PETS

A palindromic number is the same when written backwards, for example 121 or 343.

How many palindromic numbers are there between 100 and 250?

Question 8

Spending spree!

I had £120 and spent £30 at the supermarket. I then spent a quarter of the remainder of my money at the bookshop. How much money do I have left?



Question 9

Pet count

If two dogs weigh as much as three cats, and two cats weigh as much as 12 mice, how many dogs weigh as much as 108 mice?

Question 10

Window pain

A large window consists of six square panes of glass as shown below. Each pane is x m by x m and all the dividing wood is y m wide. The total area of the glass is 1.5m^2 and the total area of the dividing wood is 1m^2 . Find the values of x and y .



Always, sometimes, or never?

Read the statement in each box and decide whether the statement is always, sometimes, or never true. You must give your reasons.

<p>If I add a number to 1... ...will the answer be more than 1?</p>	<p>Always Sometimes Never</p> <p><i>Show your working out and reasoning.</i></p>
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<p>If I divide a number by 1... ...will the answer be less than the number?</p>	<p>Always Sometimes Never</p> <p><i>Show your working out and reasoning.</i></p>
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<p>If I add 1 to a number... ...will the answer be more than the number?</p>	<p>Always Sometimes Never</p> <p><i>Show your working out and reasoning.</i></p>
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Maths Y7 Enrichment – Summer

Getting ready for end of year exams:

You should go back through your exercise book(s) and with help from your homework book create a table of topics.

GOOD: I understand this topic	NEARLY: I understand most of this topic but need to revise it	NEED HELP: I do not understand this topic, so I need to ask for help

GOOD: this should contain the areas within topics that you have mastered and are confident in.

NEARLY: this should contain areas within topics that you are less confident in, but with practice can master.

NEED HELP: this should contain the areas within topics that you 'just don't get'.

This will help you identify your learning needs to exceed in your exams.