Saint Joseph's
CATHOLIC SCHOOL

Maths Department

Yr7 High Achievers Booklet

HIGH ATTAINERS

St. Joseph's Catholic School

Year 7 – 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.

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

1. What is the value of 0.1 + 0.2 + 0.3 x 0.4?

   A 0.24 B 0.312 C 0.42 D 1.0 E 1.5

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

Working:

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

   A 1 B 2 C 3 D 4 E 5

Working:

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

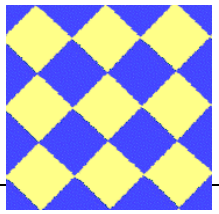
   A 12 B 17 C 21 D 22 E 27

Working:

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

   A 9/20 B 9/16 C 3/7 D3/5 E 1/2

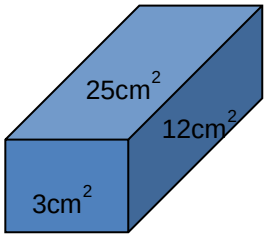
Working



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?

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 JJ
 MM +
 CC
JMC
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Question 9

At halftime, Sourwarts Academy had scored all of 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, Sourwarts 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 of the pages of 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.

Year 7 – Enrichment – Spring

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

1. What is the value of 9002 – 2009?

A 9336 B 6993 C 6339 D 3996 E 3669

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

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

Working:

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

A 1x2+3+4 B 1+2x3+4 C 1x2+3x4 D 1+2x3x4 E 1x2x3x4

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 D1/2 E 3/4

Working

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?

Year 7 – Enrichment - Spring

Question 8

Sending spree!

I had £120, and spent 30% at the supermarket. I then spent a quarter of the remainder of my money at the book shop.

How much money do I have left?

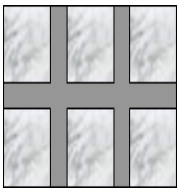
Question 9

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.

Each pane is x m by x m

and all the dividing wood

is y m wide.

The total area of the glass is 1.5m2 and the total area of the dividing wood is 1m2. 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.

If I add a number to 1…

… will the answer be more than 1?

Always Sometimes Never

Working out and reasoning

12

Always Sometimes Never

Working out and reasoning

If I divide a number by 1 …

… will the answer be less than the number?

18

If I add 1 to a number …

… will the answer be more than the number?

Always Sometimes Never

Working out and reasoning

13

Year 7 – 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 you can master.

Need Help: this should contain the areas of topics that you 'Just don't get'.

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