

Instructions

- Your team will have 45 minutes to answer 10 questions. Each team will have the same questions.
- Each question is worth a total of 6 marks. However, some questions are easier than others!
- Do not spend too long on any one question without sharing it with the rest of the team.
- You will have to decide your team's strategy for this group competition.
- There is only one response sheet per team.
- Remember to finalise your answers and write them on the response sheet before the end of the round.

QUESTION 1

What is the sum of :

(a) the ten integers from 0 to 9, [2 marks]

(b) the ten integers from 30 to 39, [2 marks]

and

(c) the ten integers from 230 to 239? [2 marks]

QUESTION 2

(a) In the sum

$$\frac{20}{\square} + \frac{21}{\square} + \frac{22}{\square} + \frac{23}{\square}$$

the numbers 1, 2, 3 and 4 can be put into the boxes—one in each box—to make each fraction a whole number.

When this is done, what is the value of the sum? [3 marks]

(b) In the sum

$$\frac{24}{\square} + \frac{25}{\square} + \frac{26}{\square} + \frac{27}{\square} + \frac{28}{\square} + \frac{29}{\square}$$

the numbers 1, 2, 3, 4, 5 and 6 can be put into the boxes—one in each box—to make each fraction a whole number.

When this is done, what is the value of the sum? [3 marks]

QUESTION 3

(a) What is the value of

$$2024 + (2 + 0 + 2 + 4) - (2024 - (2 + 0 + 2 + 4))?$$

[2 marks]

(b) What is the value of

$$2024 \times (2 + 0 + 2 + 4)?$$

[2 marks]

(c) What is the value of

$$\frac{2024}{2 + 0 + 2 + 4}?$$

[2 marks]

QUESTION 4

The cost of first and second class stamps were 95p and 68p respectively.

- (a) The first class stamps went up to £1.10.

What is the cost now of 68 first class stamps? [3 marks]

- (b) The second class stamps went up to 75p.

What is the cost now of 95 second class stamps? [3 marks]

QUESTION 5

Julie and Marie each think of different numbers. They then multiply their numbers by $1\frac{1}{2}$.

Keri and Nali also each think of different numbers. They then divide their numbers by $1\frac{1}{2}$.

- (a) Julie thought of the number 36. She is surprised to find that after their calculations, she and Keri have ended up with the same number.

What number did Keri think of? [3 marks]

- (b) Nali thought of the number 36. She is surprised to find that after their calculations, she and Marie have ended up with the same number.

What number did Marie think of? [3 marks]

QUESTION 6

- (a) The next five years that are prime are:

2027, 2029, 2039, 2053 and 2063.

How many of these years have the sum of their digits equal to a prime? [3 marks]

- (b) How many two-digit primes have both their digits prime? [3 marks]

QUESTION 7

A room contains a group of minions.

Each minion has either one or two eyes.

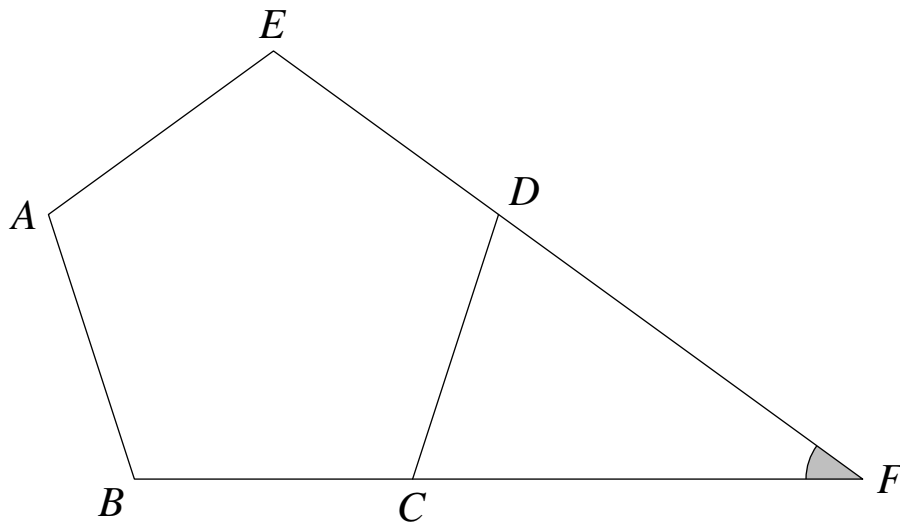
In the room there are five times as many minions with two eyes as there are with one eye.

There are 2024 eyes in the room.

- (a) How many minions have one eye? [2 marks]
- (b) How many minions have two eyes? [4 marks]

QUESTION 8

The pentagon $ABCDE$ is regular. The lines BC and ED when extended meet at the point F .



What is the angle DFC in degrees?

[6 marks]

QUESTION 9

Seven year old Rudolph '*Blaze*' Ingram ran 100 metres in 13.48 seconds.

Suppose that:

- the runner who came in second took $1\frac{1}{4}$ times 13.48 seconds to run the 100 metres;
- the runner who came in third took $1\frac{1}{2}$ times 13.48 seconds to run the 100 metres;
- the runner who came in fourth took $1\frac{3}{4}$ times 13.48 seconds to run the 100 metres.

In this case, what is the total of the times taken by the four runners?

[6 marks]

QUESTION 10

A, B, C, D, E, F, G and H are all different positive digits.


(a) $A^2 + B^2 + C^2 = D^2$.

What is the largest possible value of $A + B + C + D$? [3 marks]

(b) $E^2 + F^2 + G^2 = H^2$.

What is the smallest possible value of $E + F + G + H$? [3 marks]

TEAM NUMBER 

SCHOOL NAME 

1. (a) Number (b) Number (c) Number

(a) 0 2

(b) 0 2

(c) 0 2

6. (a) Number (b) Number

(a) 0 3

(b) 0 3

2. (a) Number (b) Number

(a) 0 3

(b) 0 3

7. (a) Number (b) Number

(a) 0 2

(b) 0 4

3. (a) Number (b) Number (c) Number

(a) 0 2

(b) 0 2

(c) 0 2

8. Angle

0 6

4. (a) Number (b) Number

(a) 0 3

(b) 0 3

9. Number

0 6

5. (a) Number (b) Number

(a) 0 3

(b) 0 3

10. (a) Number (b) Number

(a) 0 3

(b) 0 3

Circle the mark awarded for each question and cross out the others.

FINAL SCORE /60 