

YEAR 7 MATHEMATICS CHALLENGE

Final, Best Western Hotel WGC

Thursday 23rd April 2026

Melanie Chrisp

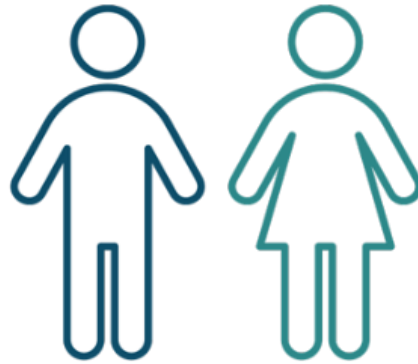
Secondary Mathematics Adviser

HOUSEKEEPING

- Fire alarm and exits



- Toilets



- Use of mobile phones



- Refreshments



FIRST OF ALL ...

83 teams took part over four heats.
The top-scoring 16 teams have been invited to
this final.

The mean score for all 83 teams in the heats was 131.
The mean score for the 16 teams selected for the Final
was 169. So, whatever happens:

CONGRATULATIONS!

FORMAT OF CHALLENGE

Round 1 General Maths questions

Round 2 Memory Round

Round 3 Estimation and Problem-Solving Round

Round 4 General Maths questions

60 marks for each round

PRELIMINARIES

- You should have pens or pencils, rubbers, and rough working out paper only.
- No calculators, no measuring equipment, and no use of computers, phones, Internet etc!
- Your Team Name from the Heat is on a card on your table. Include this team name on all the Answer Sheets you hand in.

PRELIMINARIES

- Don't leave any answers blank. 'Near misses' or partially correct answers may score points.
- Where necessary, make sure you include the correct **units**. If you forget to do this, you will not gain full marks for the question, even if the numerical answer is correct.

Round 1

General Mathematics Questions

90 seconds for each question

ROUND 1, QUESTION 1

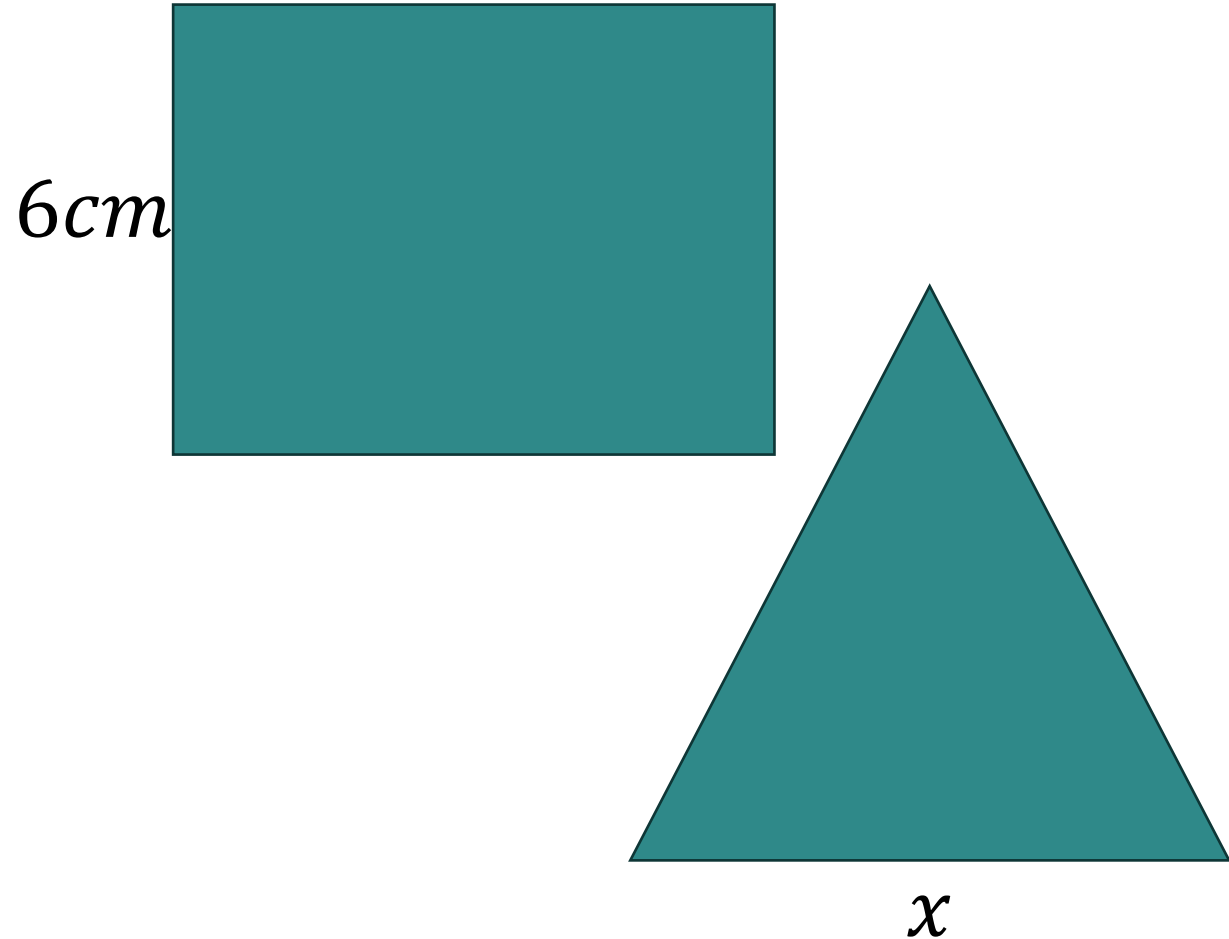
Work out $\frac{111}{0.2}$

ROUND 1, QUESTION 2

The diagrams are not drawn to scale.

This rectangle and triangle have **equal perimeters**.

The **area of the rectangle** is 72cm^2



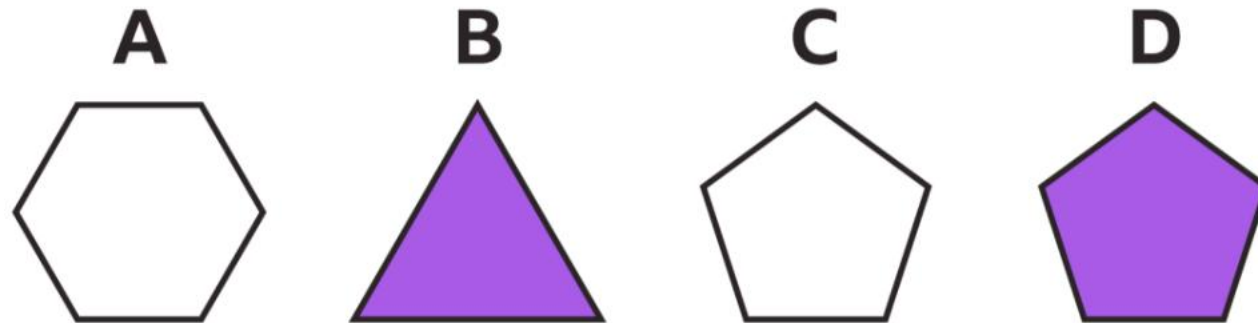
Work out the length of the side marked x

ROUND 1, QUESTION 3

Here is a shape sequence:



Which of the following is the missing shape?



ROUND 1, QUESTION 4

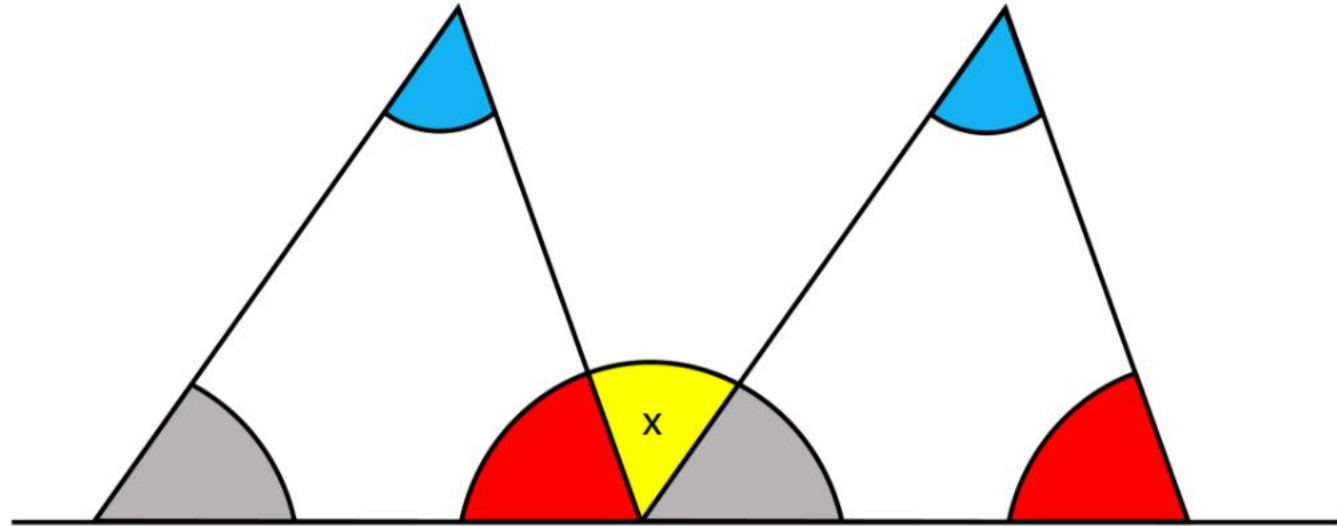
What fraction is halfway between

$$\frac{1}{4} \text{ and } \frac{1}{3} ?$$

Give your answer in it's simplest form.

ROUND 1, QUESTION 5

In this diagram,
which option
would give the
same as angle x ?
(Write down one letter)



A: 2 x Red

B: Red + Grey

C: Blue

D: 2 x Blue

ROUND 1, QUESTION 6

Six farmers catch six lambs
in six minutes.

How many farmers are needed to
catch sixty lambs in sixty minutes?

End of Round 1



ANSWERS TO ROUND 1

ROUND 1, QUESTION 1

Work out $\frac{111}{0.2}$

555

ROUND 1, QUESTION 2

The diagrams are not drawn to scale.

This rectangle and triangle have equal perimeters.
The area of the rectangle is 72cm^2



Work out the length of the side marked x

$x = 12\text{cm}$

(8 marks + 2 marks units)

ROUND 1, QUESTION 3

Here is a shape sequence:



Which of the following is the missing shape?



A

ROUND 1, QUESTION 4

What fraction is halfway between $\frac{1}{3}$ and $\frac{1}{4}$?

Give your answer in it's simplest form.

$\frac{7}{24}$

ROUND 1, QUESTION 5

In this diagram, which option would give the same as angle x ?
(Write down one letter)



A: 2 x Red B: Red + Grey C: Blue D: 2 x Blue

C: Blue

ROUND 1, QUESTION 6

Six farmers catch six lambs in six minutes.

How many farmers are needed to catch sixty lambs in sixty minutes?

6

Round 2

Memory Round



ROUND 2

We are going to show a mathematical poster to two members of the team (the **observers**).

The other two members of the team (the **artists**) will not see the poster. The observers must describe the poster from memory, and the artists must draw it.

The observers are not allowed to draw the poster, or make notes when they are looking at the poster.

When describing the poster, observers must use words only. They are not allowed to draw anything, or use their hands in any way.

ROUND 2

Copies of the poster are on tables at the back of the room. The artists must stay at their tables.

The observers will have **four** chances to get up and view the poster.

30 seconds to view
2 minutes to go and describe
30 seconds to view
2 minutes to describe
30 seconds to view
2 minutes to describe
30 seconds to view
2 minutes to describe

Artists can draw at any time during the whole period.

ROUND 2

Hint for the observers

Don't try to memorise the entire poster at once. The poster is in a number of sections, so focus on one or two parts at a time.

Note to the artists

Place your piece of paper in **landscape** orientation

Final Note: ignore any colours.... Your poster should be in black and white only

ROUND 2

Help from supervising teachers

Please can you help police this round!



ROUND 2

Pencils and rubbers only. No rulers or other drawing equipment.

You now have one minute to decide who will be the observers and who will be the artists!



HFL

ROUND 2

Poster about to be viewed
for the first time (30 secs).



HFL

ROUND 2

Back to tables (2 mins)!

ROUND 2

Second viewing of
poster coming up
(30 secs)



ROUND 2

Back to tables (2 mins)!

ROUND 2

Third viewing of
poster coming up
(30 secs)



ROUND 2

Back to tables (2 mins)!

ROUND 2

Fourth and final viewing
of poster coming up
(30 secs)



ROUND 2

Back to tables (2 mins)!



HFL

ROUND 2

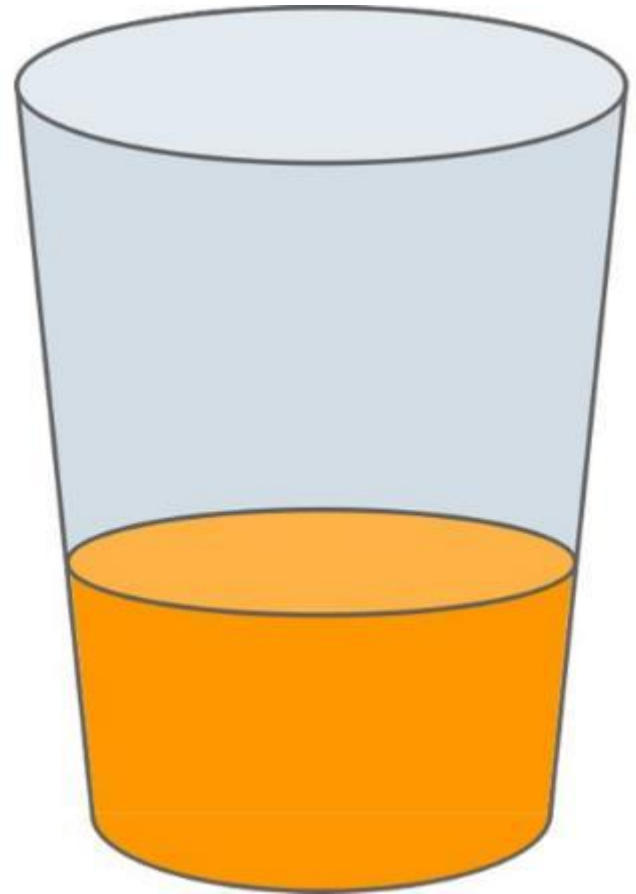
Time's up!

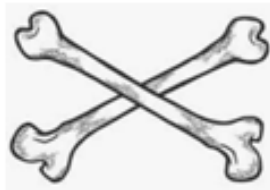
Pencils down. Time to submit your efforts.



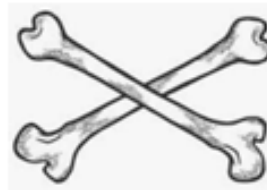
End of Round 2







Napier's Bones



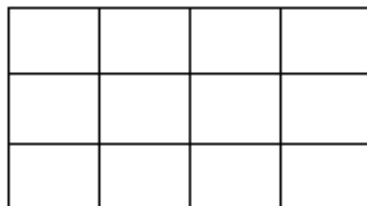
John Napier was a Scottish Mathematician.

In 1617 he published a method for multiplying numbers.

It became known as Napier's Bones as, historically, rods of bone or ivory were used to perform these calculations.

Example: 1423×175

Step 1: draw a 4 x 3 grid



Step 2: Write the digits across the top and down the side and draw in diagonal lines



	1	4	2	3	
1	1				1
7	7				7
5	5				5

Step 3: Multiply the single digits

	1	4	2	3	
1	1	4	2	3	1
7	7	8	4	1	7
5	5	0	0	1	5

Step 4: Add the diagonals.
The answer is the total of each in order

	1	4	2	3	
1	1	4	2	3	1
7	7	8	4	1	7
5	5	0	0	1	5
2		9	0	2	
4					

Answer: $1423 \times 175 = 249,025$

Round 3

Estimation and Problem-Solving

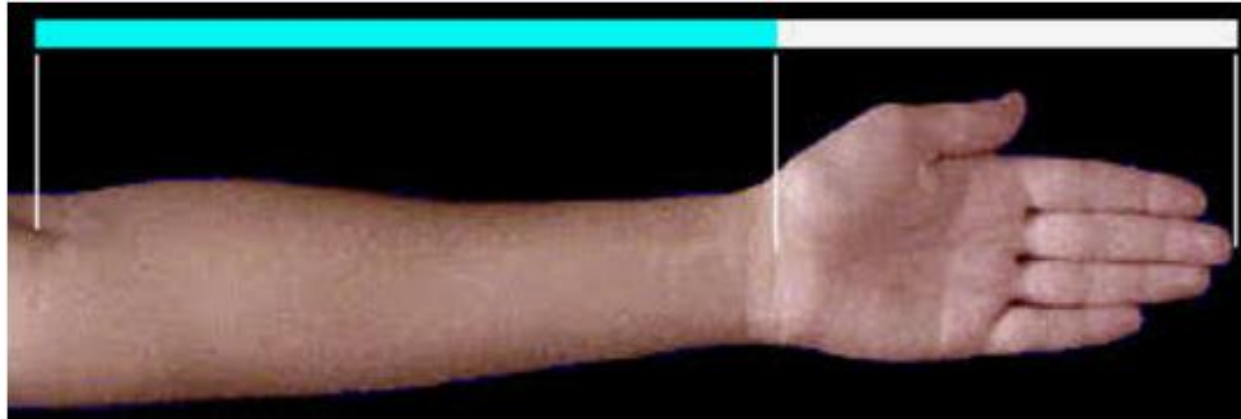


ROUND 3, QUESTION 1

There are pots of
'Chocolate Beans' on
your tables.
Estimate the number
of beans in one pot.



ROUND 3, QUESTION 2



Here is a human arm.

Estimate how many hands could fit into the forearm (how many white lengths could fit into the blue length).

Give your answer to one decimal place

ROUND 3, QUESTION 3



There are tins of beans on your tables (missing their labels).

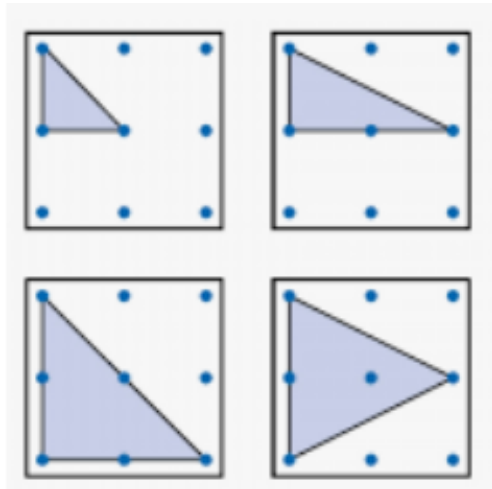
Each tin is approximately 11cm tall.

Estimate the area of the label that has been removed (in cm^2).

ROUND 3, QUESTION 4



In a 3 x 3 dot grid,
approximately how
many triangles can
be drawn?



(Repeats in different
places/orientations
are allowed)

ROUND 3, QUESTION 5

2	a	6
b	c	d
4	e	8

This is a **Magic Square**.

Every row, column and diagonal adds up to the same total.

Each box has the number 1-9 in it, and each number can only be used once.

I have filled four boxes already.
Work out what the letters a, b, c, d and e are worth.

ROUND 3, QUESTION 6

I always get excited when I look at the clock and the time is something like **12:34**.



That is, all the numbers in ascending, consecutive numerical order on the clock.

Ignoring zeros (for example **04:56** and **00:01** counts, but **01:24** doesn't), how many times will this event happen in 24 hours on a 24-hour clock?

End of Round 3



ANSWERS TO ROUND 3

ROUND 3, QUESTION 1

There are pots of 'Chocolate Beans' on your tables. Estimate the number of beans in one pot.



275-285

ROUND 3, QUESTION 2



Here is a human arm.

Estimate how many hands could fit into the forearm (how many white lengths could fit into the blue length).
Give your answer to one decimal place

1.618 – the golden ratio!
(1.6-1.7 accepted)

ROUND 3, QUESTION 3



There are tins of beans on your tables (missing their labels).

Estimate the area of the label that has been removed (in cm²).

250-260cm²

ROUND 3, QUESTION 4



In a 3 x 3 dot grid, approximately how many triangles can be drawn?



(Repeats in different places/orientations are allowed)

76 (bonus point if exact!)
(70-80 accepted)

ROUND 3, QUESTION 5

2	a	6
b	c	d
4	e	8

This is a Magic Square.

Every row, column and diagonal adds up to the same total. Each box has the number 1-9 in it, and each number can only be used once.

I have filled four boxes already. Work out what the letters a, b, c, d and e are worth.

(2 points for each)
(solutions in a moment)

ROUND 3, QUESTION 6



I always get excited when I look at the clock and the time is something like 12:34.

That is, all the numbers in ascending, consecutive numerical order on the clock.

Ignoring zeros (for example 04:56 and 09:01 counts, but 01:24 doesn't), how many times will this event happen in 24 hours on a 24-hour clock?

8 (partial points for 7 or 9)
(solutions in a moment)

ROUND 3, QUESTION 5

SOLUTIONS (TOTAL = 15)

2	$a=7$	6
$b=9$	$c=5$	$d=1$
4	$e=3$	8

This is a **Magic Square**.

Every row, column and diagonal adds up to the same total.

Each box has the number 1-9 in it, and each number can only be used once.

I have filled four boxes already.
Work out what the letters a, b, c, d and e are worth.

ROUND 3, QUESTION 6 SOLUTIONS



I always get excited when I look at the clock and the time is something like **12:34**.

That is, all the numbers in ascending, consecutive numerical order on the clock.

Ignoring zeros (for example **04:56** and **00:01** counts, but **01:24** doesn't), how many times will this event happen in 24 hours on a 24-hour clock?

00:01

00:12

01:23

02:34

03:45

04:56

12:34

23:45

Round 4

General Mathematics Questions

90 seconds for Questions 1 to 4
2 minutes for Questions 5 and 6



ROUND 4, QUESTION 1

I am a 3-digit number.

All of my digits are even, and they are all different.

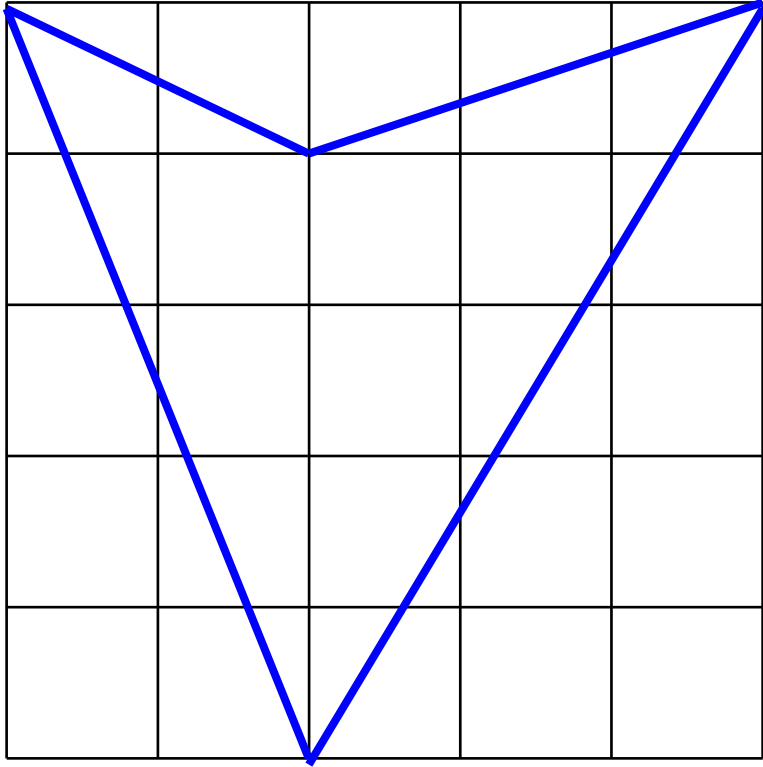
The sum of my digits is 12.

My tens digit is larger than my hundreds digit.

If you reverse my digits, the new number is 198 less than the original.

What number am I?

ROUND 4, QUESTION 2



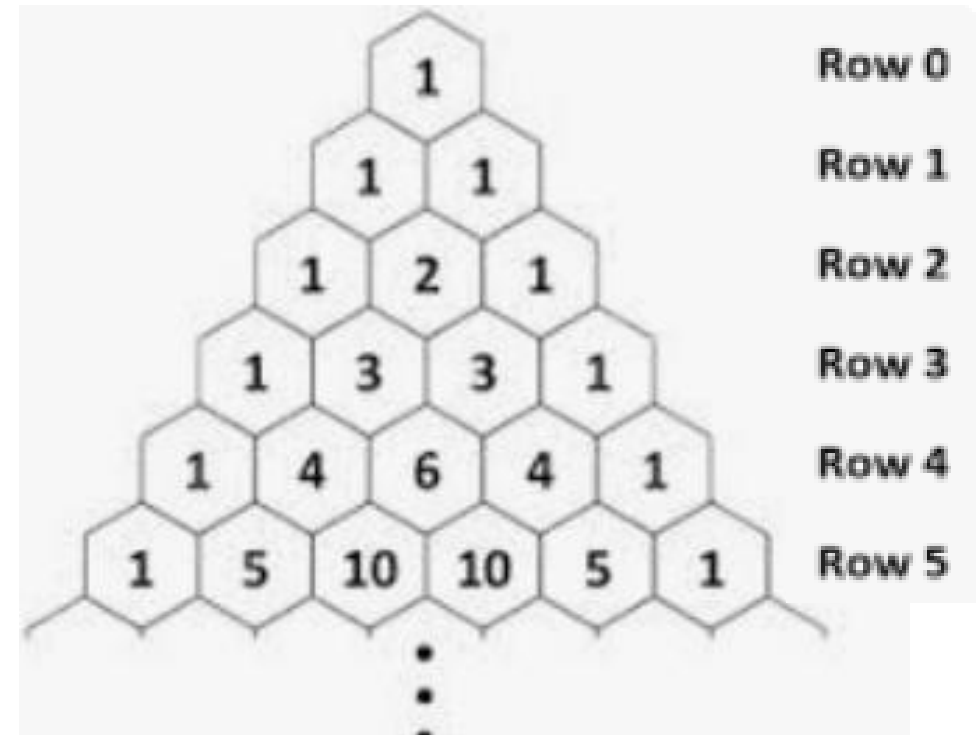
Here is an asymmetrical
arrow-head drawn on a
centimetre square grid

What is the area of the arrow-head?

ROUND 4, QUESTION 3

In **Pascal's Triangle**, each row is created by adding the two numbers directly above.

The top row is row 0, and so on.



In which row does the number 55 first appear?

ROUND 4, QUESTION 4

If A is 50% larger than C, and B is 25% larger than C, then A is what percent larger than B?

ROUND 4, QUESTION 5

Here are some **equivalent fraction** cards:

$$\frac{4}{A}$$

$$\frac{B}{C}$$

$$\frac{20}{50}$$

A + B makes a multiple of 4.

Give **three examples** of values **C** could take?

ROUND 4, QUESTION 6

The numbers are the totals for each row and column.

Work out what the column with the question mark is worth.

				28
				30
				18
				20
?	30	23	22	

End of Round 4



ANSWERS TO ROUND 4

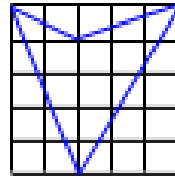
ROUND 4, QUESTION 1

I am a 3-digit number.
All of my digits are even, and they are all different.
The sum of my digits is 12.
My tens digit is larger than my hundreds digit.
If you reverse my digits, the new number is 198 less than the original.

What number am I?

264

ROUND 4, QUESTION 2



Here is an asymmetrical arrow-head drawn on a centimetre square grid

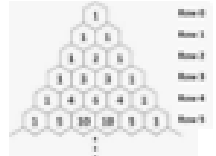
What is the area of the arrow-head?

10 cm²

(8 marks + 2 marks units)

ROUND 4, QUESTION 3

In *Pascal's Triangle*, each row is created by adding the two numbers directly above.



The top row is row 0, and so on.

In which row does the number 55 first appear?

Row 11

ROUND 4, QUESTION 4

If A is 50% larger than C, and B is 25% larger than C, then A is what percent larger than B?

20%

ROUND 4, QUESTION 5

Here are some **equivalent** fraction cards:

$$\frac{4}{A} \quad \frac{B}{C} \quad \frac{20}{50}$$

A + B makes a multiple of 4.

Give **three examples** of values C could take?

5, 15, 25, 35, 45, ... etc

(3 marks for each, +1 for three correct)

ROUND 4, QUESTION 6

The numbers are the totals for each row and column.

▲	■	■	▲	28
●	■	●	■	30
●	▲	●	●	18
●	■	●	●	28
?	30	33	29	

Work out what the column with the question mark is worth.

? = 21

YEAR 7 MATHS CHALLENGE 2026, FINAL

Marking in progress

YEAR 7 MATHS CHALLENGE 2026, FINAL

Results imminent!

YEAR 7 MATHS CHALLENGE 2026, FINAL

Firstly, well done
to all!



The results are ...

THE MYSTERY OF THE MISSING TROPHY!!!



Sorry no
reward!!!

YEAR 7 MATHS CHALLENGE 2026, FINAL

Thank you for taking
part.

YEAR 7 MATHEMATICS CHALLENGE

Final, Best Western Hotel WGC

Thursday 23rd April 2026

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Secondary Mathematics Adviser