



FORM 3

MATHEMATICS
 Main Paper

TIME: 1 hr 30 min.

Question	1	2	3	4	5	6	7	8	9	10	11	Main	NC	Global Mark
Mark														

DO NOT WRITE ABOVE THIS LINE

NAME: _____ Class: _____

INSTRUCTIONS TO CANDIDATES:

Read all the questions carefully before you start answering.

- Answer all questions.
- This paper carries 75 marks.
- Calculators and mathematical instruments are allowed but all necessary working must be shown.

1. Round:

a) 17.452 correct to 1 decimal place

Ans: _____

b) 36.198 correct to 2 decimal places

Ans: _____

(2 marks)

2. The distance from the earth to the moon is 374 000 km.

a) i) Write this distance in **metres**.

Ans: _____ m

ii) Write 374 000 km in **standard form**.

Ans: _____ km

b) On a calculator, Ryan types 3×10^6 and Alexia types 9×10^5 .

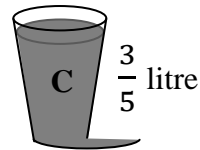
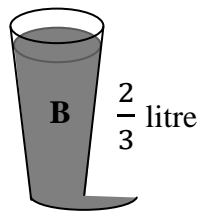
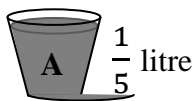
Who typed the **larger number**? Explain.

(4 marks)

3. a) Write these numbers in order, starting from the **smallest**: 0.5 , $\frac{8}{25}$, $\frac{2}{5}$.

Ans: _____

b)



i) Glasses A, B and C are filled with water.
How much water is there in glasses A, B and C altogether?

Ans: _____ litre

ii) Lucy tries to pour all the water from the glasses into the empty **1 litre bottle**.
How much water **does not fit** into the bottle?

Ans: _____ litre

(7 marks)

4. There are **18 000** different types of fish in the world.



a) **47%** of these different types of fish are found in the Mediterranean Sea. How much is this?



Ans: _____ different types of fish



b) It is estimated that the 18 000 different types of fish will **decrease** by 1% by the year 2026. How many different types of fish will there be in 2026?

Ans: _____ different types of fish

(5 marks)

5. The table shows the hours of rain on weekdays in the first week of December 2015.

a) Work out the **mean**.

Weekdays	Week 1
Monday	6.3
Tuesday	5.4
Wednesday	2.0
Thursday	4.6
Friday	5.4

Ans: _____

b) The **mode** is _____.

c) Calculate the **median**.

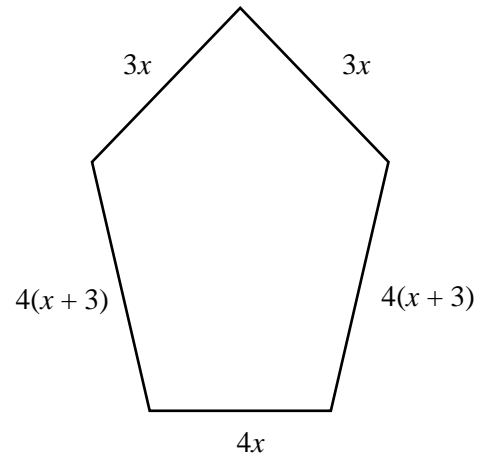
Ans: _____

d) Calculate the **range**.

Ans: _____

(8 marks)

6. This polygon is called a pentagon.



a) Is the polygon **regular** or **irregular**?

Ans: _____

b) **Expand:** $4(x+3)$

Ans: _____

c) i) Write down an expression for the **perimeter** of the pentagon. **Simplify** your answer.

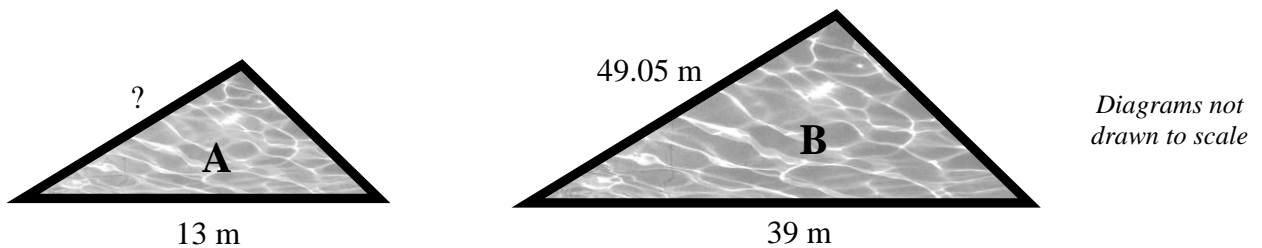
Ans: _____

ii) The perimeter of the pentagon is **474 cm**. **Form an equation** for x and **solve** it.

$x =$ _____

(7 marks)

7. Triangular pools A and B are **similar**. The length of their base is 13 m and 39 m respectively.



a) Write down and simplify the ratio **base of A : base of B**.

Ans: _____ : _____

b) Work out the missing length of pool A.

Ans: _____ m

(3 marks)

8. A milkshake recipe requires 300 ml of milk, 240 ml of ice cream and 60 ml of chocolate.

a) Write down and **simplify** the **ratio** of milk : ice cream : chocolate.

Ans: _____:_____:

b) How many millilitres of ice cream is needed with 960 ml of milk?

Ans: _____ ml

c) How many millilitres of each ingredient is needed to make **5.4 litres** of milkshake?

Ans: milk = _____ l; ice cream = _____ l; chocolate = _____ l
(9 marks)

9. Laura and Greg live in the same house. They ride their bikes to school, which is **16 800 m away**.

Laura takes 40 minutes to arrive to school.

a) i) Change 40 minutes to seconds.

Ans: _____ seconds

ii) Using your answer to part (ai), work out Laura's **average speed** in metres/second when she cycles to school.

Ans: _____ m/s

b) Greg travels at a speed of 12 m/s. How **long** does Greg's journey take?

Ans: _____ seconds

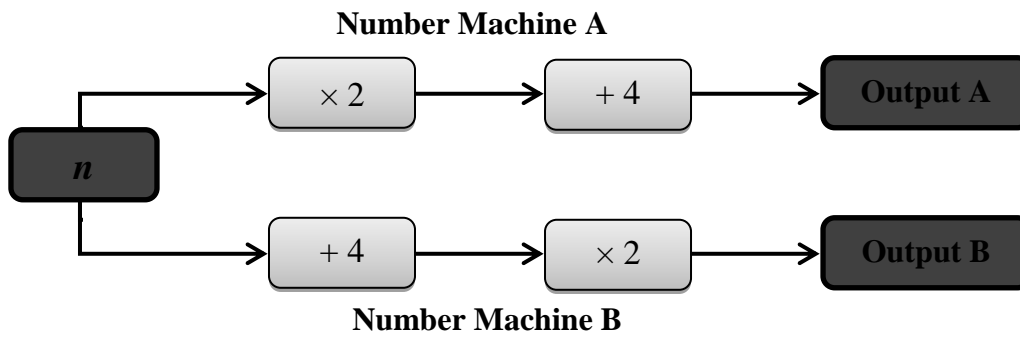
c) If Laura and Greg leave home together to go to school, who arrives **first**? Explain why.

_____ arrives first because _____

(8 marks)



10. Number machines A and B produce different outputs to the same input n .



a) Write down the **first term** ($n = 1$) for Number Machine A.

Ans: _____

b) Write down the **first three terms** for Number Machine B.

Ans: _____, _____, _____

c) Using number machines A and B, complete the tables below:

n	Output A
9	
	38
62	

n	Output B
9	
	42
62	

d) For the **same input** n , what is the **difference** between outputs A and B?

Ans: _____

e) Which of the following expressions represents Number Machine A?

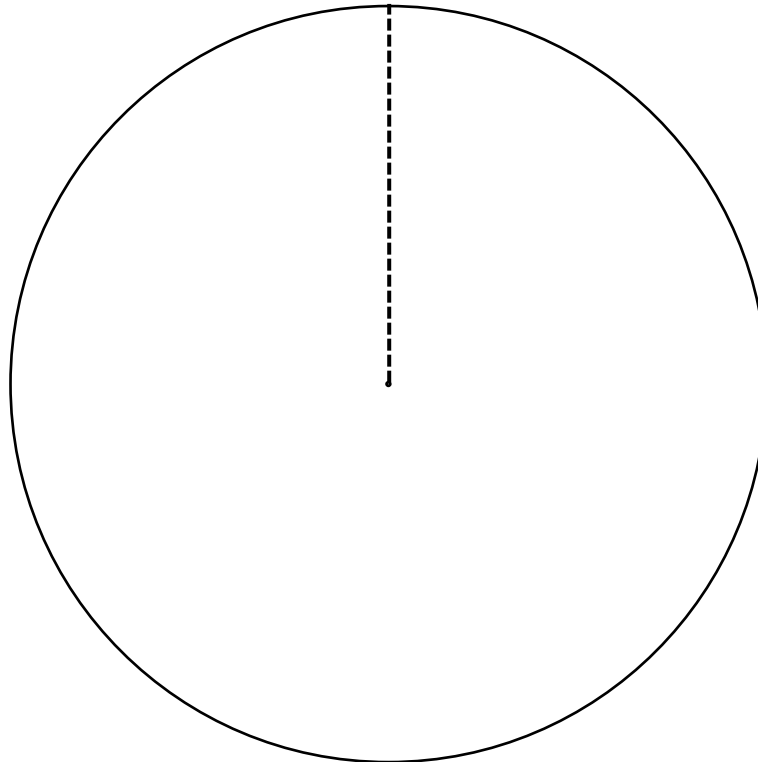
A) $(n + 2) \times 4$

B) $n \times (2 + 4)$

C) $(n \times 2) + 4$

(11 marks)

11. a) Construct a regular **octagon** (8 sides) in the circle below.



b) A **regular** polygon X has each of its **exterior** angles equal to 24° .

i) The sum of the **exterior** angles of any polygon is _____ $^\circ$.

ii) How many **sides** does polygon X have?

Ans: _____ sides

iii) What is the size of **each interior** angle y of polygon X?

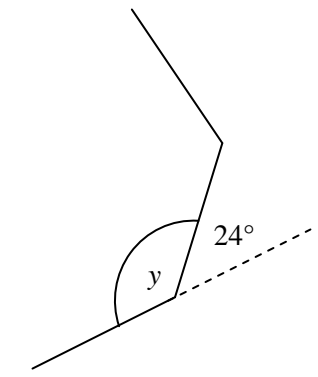


Diagram not drawn to scale

Ans: $x =$ _____ $^\circ$

iv) What is the **sum** of the **interior** angles of polygon X?

Ans: _____ $^\circ$

(11 marks)

END OF EXAM