MOUNT CARMEL INTERNATIONAL SCHOOL, AKOLA

Cambridge International

Formative Assessment: I Subject: Mathematics Date: 02.09.2024

Student's Name: _____ Roll No. _____ Grade: 8

Marks: 40 Time Duration: 90 minutes Invigilator's Sign.

1. Classify the following as natural numbers, integers, rational numbers or irrational numbers. Use a venn diagram for the classification. (2)

$-3.5, 0.6, 7, 0, \sqrt{25}, \sqrt[3]{25}, \sqrt{8}, \sqrt[3]{8}$

2. Give an example of. (2)

a. One rational number and one irrational number such that their product is rational.

_____

b. One rational number and one irrational number such that their product is irrational.

_____

3. Is it possible to find a circle with its circumference and diameter that are both rational numbers? Explain. **(2)**

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_____

4. Between which two consecutive integers do the following lie? **(1)**

12 - √170

_____

5. Bill is asked to use a calculator to find the value of 14- $\sqrt[3]{900}$ **(2)**

What does the smudge stand for?

Without using a calculator, explain how you arrived at the answers.

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_____

_____.

6. Evaluate the following. Write the answer in the simplest form.

a. $7^2 \div 7^3 + 3^4 \times 3^7 \div 3^{12}$ **(2)**

_____

_____

b. $168.4 \div 10^{-4}$ **(1)**

_____

_____

7. a. Express the number **0.00398** in standard form. **(1)**

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b. A cell has a diameter of 3 micrometers. What is its diameter in metres? Write your answer in standard form. **(1)**

_____

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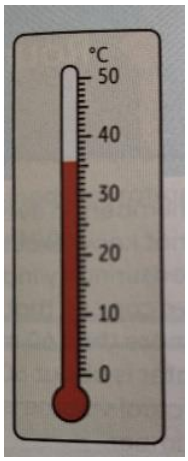
8. The temperature in a room is 36°C rounded to the nearest degree Celsius. What is the range of the actual temperature of the room? (2)



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9. During a sale, an electrical appliance shop offers a 20% reduction on all its item prices. After the sale, the owner of the shop increases the prices of all items by 20% of the reduced prices. What is the net percentage increase or decrease in item prices?

(2)

_____

_____

_____

_____

10. a. Evaluate $4(x+1)^2-1/5(x+2)^2$ when x=3. **(2)**

_____

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_____

b. Evaluate and give your answer correct to 2 decimal places. **(3)**

$2.6-3\times(1/2+1.5)\div0.01$

_____

_____

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11. In a rectangle, the length is 3 cm longer than its width.

a. The width of the rectangle is x cm. Write an expression for the area of the rectangle. **(1)**

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_____

b. Find the area of the rectangle if x=5. **(1)**

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12. Expand and simplify. **(2)**

(2x+1) (x - 2)

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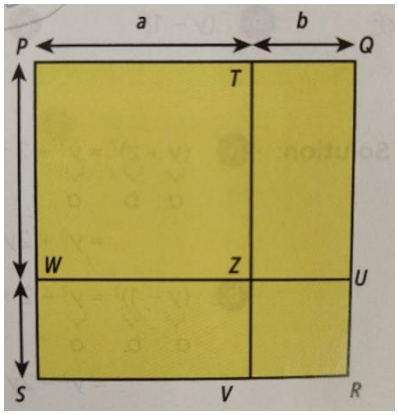
_____

13. Consider the expansion of $(a+b)^2$



a. Explain why the area of rectangle PQRS equals $(a+b)^2$ (2)

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b. Find the sum of the areas of the rectangles TQUZ, WZVS, PTZW and ZURV. (1)

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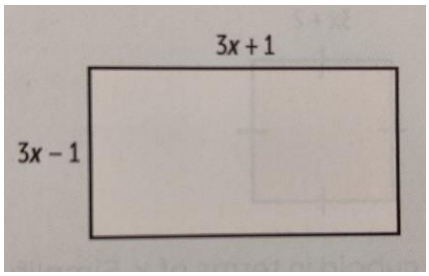
14. Write an expression to represent the area of the rectangle as shown. Simplify your answer. (1)



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15. Simplify the following. (1)

$$\frac{4x}{12}\,(x-5)$$

_____

_____

_____

16. The total surface area, A, of a cube is given by the formula $A = 6l^2$ where *l* is the length of the cube. Make l the subject of the formula. (2)

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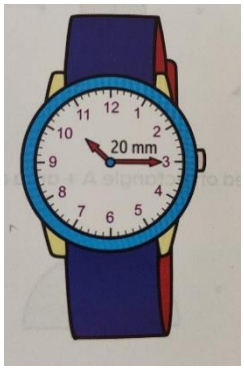
17. Find the area covered by the minute hand when it sweeps one round of the watch. Give your answer correct to 3 significant figures. (2)



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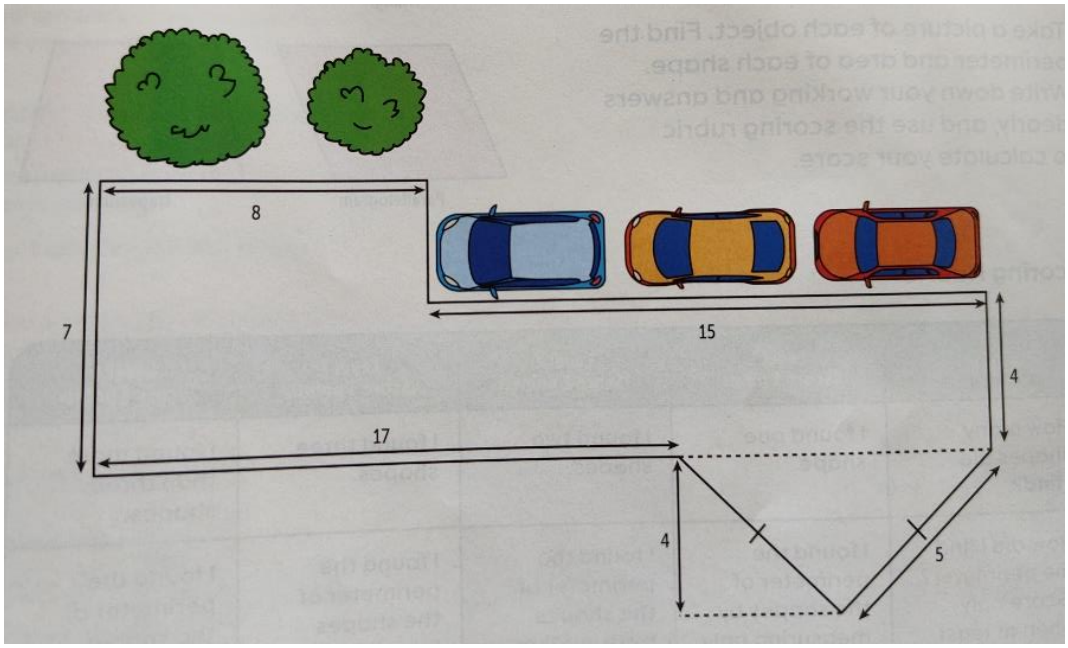
18. The diagram shows the floor plan of a school compound. All dimensions are in metres.



Calculate

a. The area **(2)**

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_____

b. Perimeter of the floor plan. **(2)**

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