



MINISTRY OF EDUCATION AND HUMAN RESOURCES,  
TERTIARY EDUCATION AND SCIENTIFIC RESEARCH  
MAURITIUS EXAMINATIONS SYNDICATE

### NATIONAL ASSESSMENT AT FORM III

NAME

SCHOOL NAME

CLASS/SECTION

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## MATHEMATICS

**October 2015**  
**1 hour 45 minutes**

Students answer on the Question Paper.

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### READ THESE INSTRUCTIONS FIRST

Answer **all** questions.

Write your name, the name of your school and your class/section in the spaces provided above.

Write in dark blue or black ink.

You may use a soft pencil for any diagram or rough working.

Do not use correction fluid.

There are **18** questions in this paper.

Check that this document consists of **23** printed pages and **1** blank page.

Any discrepancy in the document must be immediately notified to the responsible officer in your school.

If working is needed for any question it must be shown in the space below that question.

Omission of essential working may result in loss of marks.

Diagrams are **not** drawn to scale.

### ELECTRONIC CALCULATORS MUST NOT BE USED IN THIS PAPER

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is **100**.

1. (a) Express  $\frac{17}{20}$  as a percentage.

Answer .....% [1]

(b) Express 0.25 as a fraction in its lowest term.

Answer ..... [1]

(c) Write down 693.89 correct to one decimal place.

Answer ..... [1]

2. (a) Evaluate  $6 + 4(4 - 2)$ .

Answer ..... [1]

(b) Which one of the numbers below is the **smallest**?

$\frac{23}{10}$  , 0.023 , 23%

Answer ..... [1]

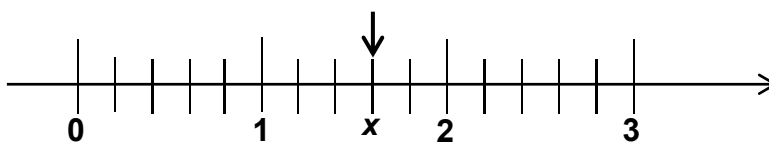
3. (a) What is the Highest Common Factor (H.C.F) of 35 and 45?

Answer ..... [1]

(b) Find the Least Common Multiple (L.C.M.) of 30 and 20.

Answer ..... [1]

(c) Given the number line,



write down the value of  $x$ .

Answer  $x =$  ..... [1]

4. (a) Evaluate

(i)  $2^0$

Answer ..... [1]

(ii)  $3^2 + 3^1$

Answer ..... [1]

(b) Simplify  $\frac{3b^3}{6b^5}$ .

Answer ..... [1]

(c) Given the equation  $2^{x+1} = 32$ ,

(i) express 32 in powers of 2,

Answer ..... [1]

(ii) solve for  $x$ .

Answer  $x =$  ..... [1]

5. (a) Write down the next term in each of the following sequences.

(i) 1, 3, 6, 10, ..... [1]

(ii) 1, 8, 27, 64, ..... [1]

(b)  $\xi = \{1, 2, 3, 4, 5, 6, 7, 8\}$ .

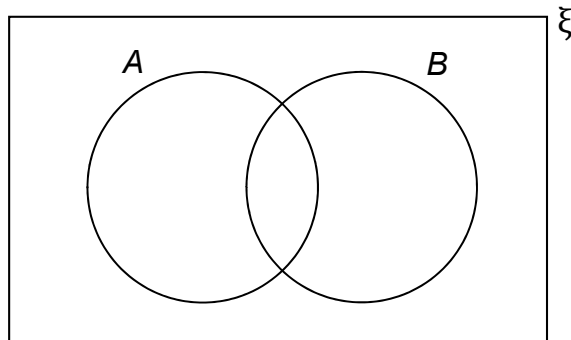
$A = \{x : x \text{ is a prime number}\}$  and

$B = \{x : 2 \leq x \leq 5\}$ .

(i) List the elements of set  $A$ .

Answer  $A = \{ \dots \}$  [1]

(ii) Complete the Venn diagram below.



[2]

(iii) List the elements of the set  $(A \cup B)'$ .

Answer  $(A \cup B)' = \{ \dots \}$  [1]

6. (a) Factorise  $x^2 - 16$ .

Answer ..... [1]

(b) Given that  $x = 2$  and  $y = -4$ , find the value of  $3x + y$ .

Answer ..... [2]

(c) Solve the inequality  $1 - 2x > 5$ .

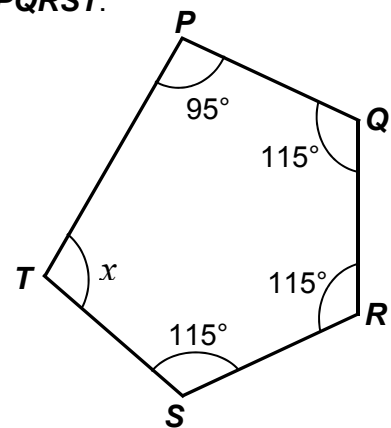
Answer ..... [3]

7. (a) Given that  $a^2 + b^2 = 34$  and  $ab = 15$ , find the value of  $(a + b)^2$ .

Answer ..... [2]

(b)  $PQRST$  is a pentagon.

(i) Write down the sum of the interior angles of  $PQRST$ .



Answer ..... [1]

(ii) Find the value of  $x$ .

Answer  $x =$  ..... [2]

8. Solve the simultaneous equations

$$2x + 3y = 13$$

$$5x + 2y = 16$$

Answer  $x = \dots\dots\dots$

$y = \dots\dots\dots$  [4]



9. (a) Evaluate  $\sqrt{2\frac{1}{4}}$ , giving your answer as a fraction.

*Answer* ..... [2]

(b) Using as much information given below as necessary, find the value of  $\sqrt{17750}$ .

( $\sqrt{1.775} = 1.332$  ,  $\sqrt{17.75} = 4.213$ )

*Answer* ..... [3]

10. (a) Given that vector  $\overrightarrow{AB} = \begin{pmatrix} -3 \\ 4 \end{pmatrix}$ ,  
find (i)  $\overrightarrow{BA}$

Answer ..... [1]

(ii)  $|\overrightarrow{AB}|$ .

Answer ..... [2]

(b) Find the equation of the straight line passing through the points A (2, -1) and B (4, 3).

Answer ..... [3]

11. (a) A bag contains **red**, **blue** and **black** pens only. The probability that a blue pen is chosen at random is  $\frac{1}{5}$ . The probability that a black pen is chosen at random is  $\frac{1}{3}$ .

(i) Write down the probability of choosing a **green** pen from the bag at random.

*Answer* ..... [1]

(ii) Calculate the probability of choosing a **red** pen from the bag at random.

*Answer* ..... [2]

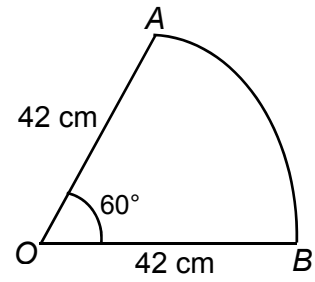
(b) In a class, the ratio of boys to girls is 2 : 5. If there are 18 **more** girls than boys, find the total number of students in the class.

*Answer* .....students [3]

12. The diagram shows sector  $OAB$  of a circle with centre  $O$  and radius 42 cm.

Given that  $\hat{AOB} = 60^\circ$ , calculate

(i) the area of sector  $OAB$ . [Use  $\pi = \frac{22}{7}$ ]



Answer .....  $\text{cm}^2$  [2]

(ii) the perimeter of sector  $OAB$ . [Use  $\pi = \frac{22}{7}$ ]

Answer ..... cm [3]

- 13. (a)** The simple interest,  $I$ , obtained on a sum of money  $P$ , invested at a rate of  $R$  % per annum for a period of  $T$  years can be calculated using the formula  $I = \frac{PRT}{100}$ .
- (i) Make  $T$  the subject of the formula.

*Answer* ..... [2]

- (ii) Ravi invests Rs 15 000 at a rate of 4% per annum at simple interest.  
After how many years will Ravi gain Rs 1200 as interest?

*Answer* .....years [2]

- (b)** A car company sells a car for Rs 240 000 and makes a profit of 20%.  
What is the original price of the car?

*Answer* Rs ..... [3]

14. (a) Given that  $\mathbf{A} = \begin{pmatrix} 4 & -3 \\ 2 & 1 \end{pmatrix}$  and  $\mathbf{B} = \begin{pmatrix} 1 & 0 \\ 3 & 6 \end{pmatrix}$ , find

(i)  $\mathbf{A} - 2\mathbf{B}$ ,

Answer ..... [2]

(ii)  $\mathbf{A}^2$ .

Answer ..... [2]

14. (b) Expand and simplify  $5(3x - y) - 7(8x - 6y)$ .

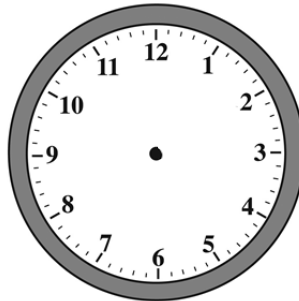
*Answer* ..... [3]

(c) Solve  $x^2 - 8x + 15 = 0$ .

*Answer*  $x = \dots\dots$  or  $x = \dots\dots$  [3]

15. A plane flies from Hong Kong to Mauritius. The time in Hong Kong is 18 15. The flight is 10 hours long and the time in Hong Kong is 4 hours **ahead** of that in Mauritius.

(i) Indicate the time the plane left Hong Kong on the clock face below.



[1]

(ii) What is the time in Mauritius when it is 18 15 in Hong Kong?

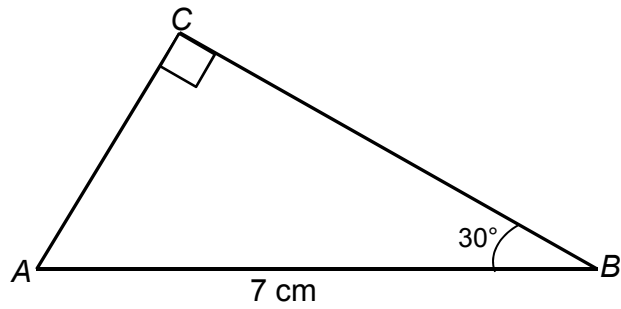
*Answer* ..... [1]

(iii) Find the time in Mauritius when the plane lands at S.S.R International Airport .

*Answer* ..... [2]



16. (a) In triangle  $ABC$ ,  $AB = 7$  cm,  $\hat{A}BC = 30^\circ$  and  $\hat{A}CB = 90^\circ$ .

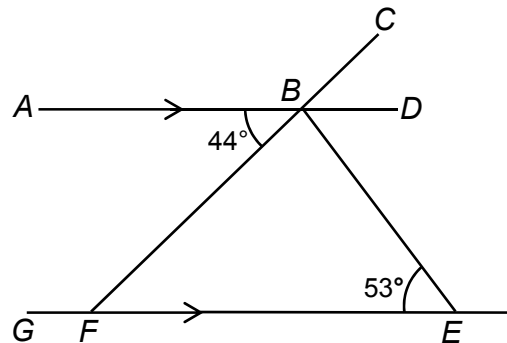


[ $\sin 30^\circ = 0.5$ ,  $\cos 30^\circ = 0.866$ ,  $\tan 30^\circ = 0.577$ ]

Using as much of the given information as necessary, calculate the length of  $AC$ .

Answer  $AC = \dots\dots\dots$  cm [3]

16. (b) In the diagram below, straight lines  $AD$  and  $GE$  are parallel,  $\hat{ABF} = 44^\circ$  and  $\hat{BEF} = 53^\circ$ .



Find

(i)  $\hat{BFE}$

Answer ..... [1]

(ii)  $\hat{CBD}$

Answer ..... [1]

(iii)  $\hat{FBE}$

Answer ..... [2]

17. (a) For the following set of eleven numbers,

2 6 5 21 13 5 25 5 8 11 9

(i) state the mode,

*Answer* ..... [1]

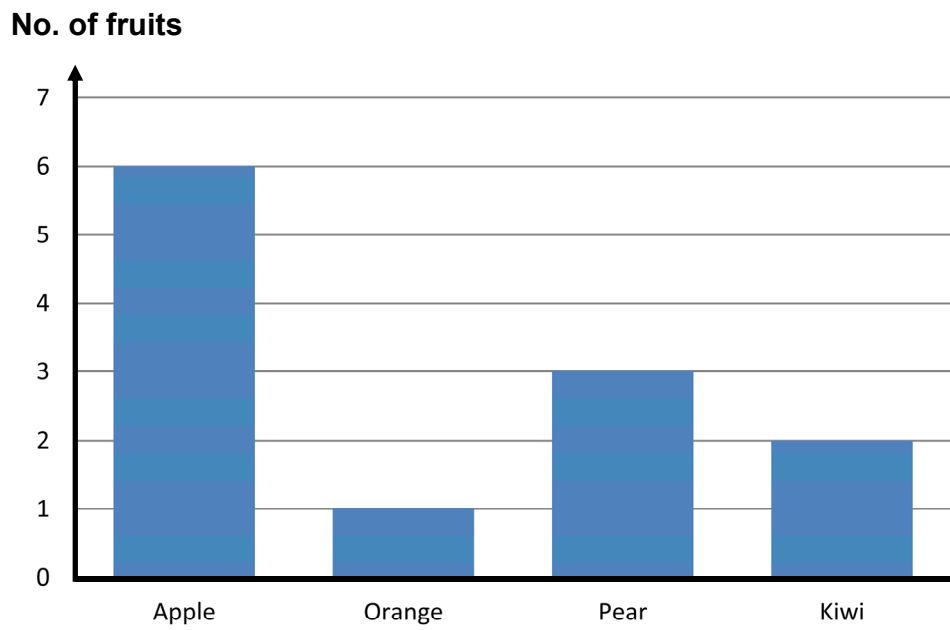
(ii) find the median,

*Answer* ..... [2]

(iii) calculate the mean.

*Answer* ..... [2]

17. (b) The bar chart shows the number of apples, oranges, pears and kiwis in a basket.

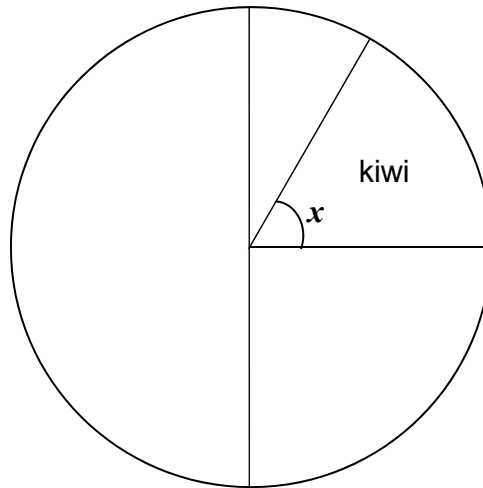


(i) How many fruits are there in all?

Answer ..... [1]

17. (b) Part of the information in the bar chart is represented in the pie chart below.

(ii) Complete the pie chart by writing the **names** of the fruits in the appropriate sectors.



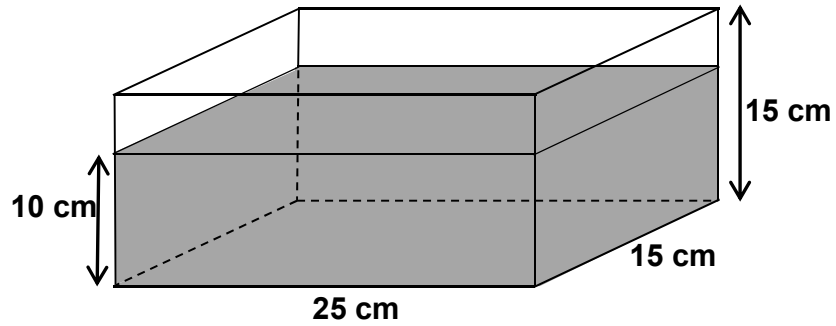
[1]

(iii) Calculate angle  $x$ .

Answer  $x = \dots\dots\dots$  [2]

18. A water tank is 25 cm long, 15 cm wide and 15 cm high.

It contains water to a depth of 10 cm.

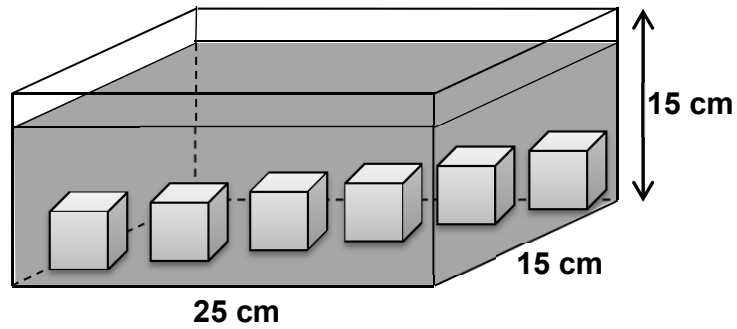


(a) Calculate the surface area of the tank which is in contact with water.

Answer .....  $\text{cm}^2$  [3]

18. (b) Six identical cubes of length 5 cm are now completely immersed in the water tank, as shown on the diagram.

Diagram not drawn to scale



Calculate the **rise** of the water level in the tank.

Answer ..... cm [4]

End of question paper.

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