



MINISTRY OF EDUCATION AND HUMAN RESOURCES
MAURITIUS EXAMINATIONS SYNDICATE

NATIONAL ASSESSMENT AT FORM III

NAME

SCHOOL NAME

CLASS/SECTION

MATHEMATICS

October 2014
1 hour 45 minutes

Students answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

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 **19** 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.

Answer **all** questions.

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. Evaluate

(a) $\quad -$

Answer [1]

(b) $\frac{3}{5} \div 1\frac{1}{4}$

Answer [1]

2. (a) Write down the next term in the sequence

3, 6, 1 , 4,

Answer [1]

(b) Write down 8.93, correct to one decimal place.

Answer [1]

(c) Express 2.3 hours into minutes.

Answer minutes [1]

3. Simplify

(a) $x^6 \times x^5$

Answer [1]

(b) $y^8 \div y^2$

Answer [1]

(c) $(p^3)^7$

Answer [1]

4. (a) Express $\frac{3}{20}$ as a percentage.

Answer % [1]

(b) At noon on a particular day, the temperature at the bottom of a mountain was 15°C and that at the top of the mountain was -3°C .

Find the difference between these temperatures.

Answer $^{\circ}\text{C}$ [1]

(c) An empty container has a mass of 370 g.
When filled with powder, the total mass is 1.85 kg.
What is the mass of the powder in **kilograms**?

Answer kg [1]

5. Given that $\mathbf{A} = \begin{pmatrix} 6 & 3 \\ 1 & 5 \end{pmatrix}$ and $\mathbf{B} = \begin{pmatrix} 2 & 4 \\ 7 & 9 \end{pmatrix}$, find

(a) $3\mathbf{A} + \mathbf{B}$

Answer [2]

(b) \mathbf{AB}

Answer [2]

6. (a) Given that $a = 5$ and $b = -8$, find the value of $3a + 2b$.

Answer [1]

(b) Factorise

(i) $7x - x^2$

Answer [1]

(ii) $y^2 - 9$

Answer [1]

7. $\xi = \{a, b, c, d, e, f, g, h\}$.

$P = \{a, b, c, e, g, h\}$ and $Q = \{b, c, d, g\}$.

(a) List the elements of P' .

Answer [1]

(b) Find $n(P \cap Q)$.

Answer [1]

(c) One element is chosen at random from ξ .
What is the probability that it is an element of $P \cap Q$?

Answer [1]

8. (a) Expand and simplify

(i) $(x + 2)^2$

Answer []

(ii) $(2y - 5)(y - 8)$

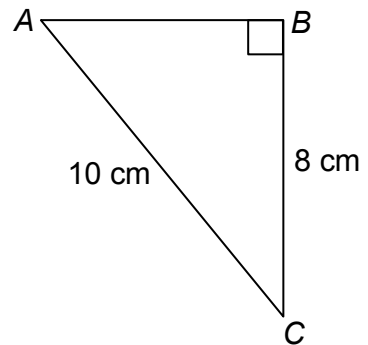
Answer []

(b) Given that vector $\overrightarrow{PQ} = \begin{pmatrix} -5 \\ 12 \end{pmatrix}$, find $|\overrightarrow{PQ}|$.

Answer []

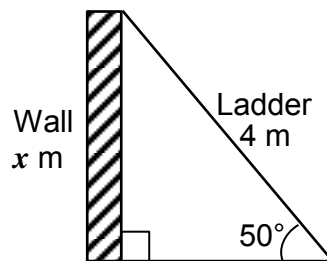
9. (a) In triangle ABC , $AC = 10$ cm, $BC = 8$ cm and $\hat{ABC} = 90^\circ$.

Calculate the length of AB .



Answer cm [2]

- (b) A ladder, 4 metres long, rests against the top of a vertical wall x m high. The ladder makes an angle of 50° with the horizontal (see diagram).



[$\sin 50^\circ = 0.766$, $\cos 50^\circ = 0.643$, $\tan 50^\circ = 1.192$]

Using as much of the given information as necessary, calculate the value of x .

Answer $x =$ m [3]

10. (a) Solve the following equations

(i) $\frac{x}{4} = \frac{9}{x}$

Answer [3]

(ii) $x^2 - 2x - 15 = 0$

Answer [3]

(b) Solve the inequality $7 - 3x > 31$.

Answer [3]

11. (a) The marks scored by 9 students in a Mathematics test are as follows:

23, 18, 19, 22, 15, 15, 12, 20, 15.

For this set of marks, find the

(i) mode

Answer [1]

(ii) median.

Answer [1]

(b) The table below shows the monthly wages of 20 workers of a factory.

Monthly wage	Rs 8000	Rs 10000	Rs 15000	Rs 20000
Number of workers	5	8	4	3

Calculate the mean wage.

Answer Rs [3]

12. Solve the simultaneous equations

$$4x + 5y = 29$$

$$3x + 2y = 13$$

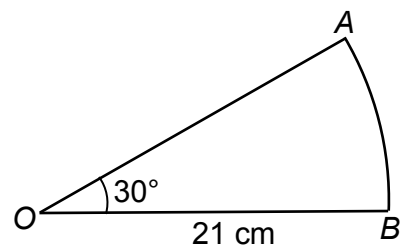
Answer $x = \dots\dots\dots$

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

13. The diagram shows sector OAB of a circle with centre O and radius 21 cm.

Given that $\hat{AOB} = 30^\circ$, calculate

(a) the length of arc AB . [$\pi = \frac{22}{7}$]



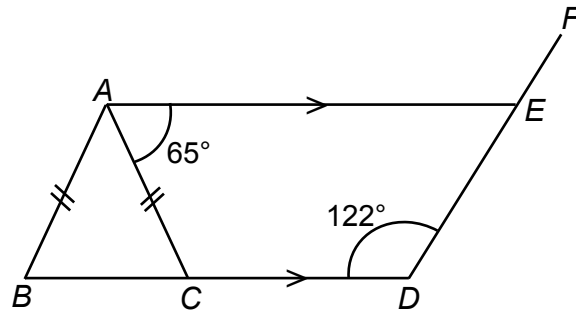
Answer cm [2]

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

Answer cm^2 [2]

14. (a) In the diagram, ABC is an isosceles triangle with $AB = AC$. Line AE is parallel to the line BCD .

DEF is a straight line.



Find

(i) \hat{ACB}

Answer [1]

(ii) \hat{BAC}

Answer [1]

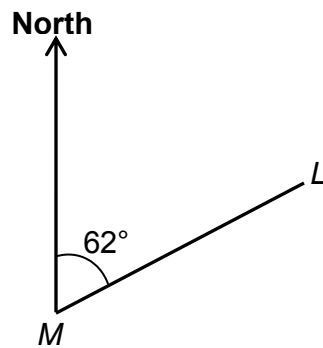
(iii) \hat{AEF}

Answer [1]

(b) Each of the **interior** angle of a **regular** polygon is 135° . Calculate the number of sides in the polygon.

Answer [2]

(c) The bearing of L from M is 062° . Calculate the bearing of M from L .



Answer [2]

15. (a) Find the equation of the straight line passing through the points P (4, 3) and Q (6, 13).

Answer [3]

- (b) Given that $y = \frac{3x + a}{2x - 5}$, express x in terms of a and y .

Answer [4]

16. (a) Ravi sold his mobile phone at Rs 2520 and made a **loss** of 10%. Calculate the price at which he bought the mobile phone.

Answer Rs [3]

- (b) 15 workers can build a bridge in 60 days.

How many days would you expect 20 workers to take to build the bridge?

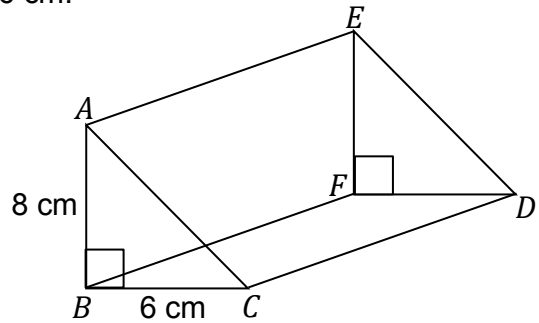
Answer days [3]

17. (a) The diagram shows a prism $ABCDEF$.

$\hat{ABC} = \hat{EFD} = 90^\circ$, $AB = 8$ cm and $BC = 6$ cm.

The volume of the prism is 360 cm³.

Calculate the length of the prism.



Answer cm [3]

(b) A **solid** metal cylinder has radius 10 cm and height 40 cm.

(i) Calculate the total surface area of the cylinder.

[Use $\pi = 3.14$]

Answer cm² [3]

The cylinder is melted down. All of the metal is used to make solid cubes of length 2 cm.

(ii) Calculate the number of cubes that are made.

[Use $\pi = 3.14$]

Answer cubes [4]

18. (a) Simplify $\frac{x^2 + 8x + 12}{2x + 4}$

Answer [3]

(b) (i) Express 84 as the product of its prime factors.

Answer [1]

(ii) Find the smallest positive integer value of n for which $84n$ is a multiple of 35.

Answer [1]

- (c) A map is drawn to a scale of 1 : 50 000.
An airport runway is represented on the map by a line.
The actual length of the runway is 3 km.
What is the length, in cm, of the runway on the map?

Answercm [3]

19. A juice seller sells juice in small, medium and large glasses.

The cost of a small glass is Rs 7, the cost of a medium glass is Rs 10 and the cost of a large glass is Rs 12.

The number of small glasses of juice sold was x .

The number of medium glasses of juice sold was **twice** the number of small glasses of juice sold.

The number of large glasses of juice sold was **20 more** than the medium glasses of juice sold.

Given that Rs 2790 was received from the sale of the juice, find the **total** number of glasses of juice sold.

Answer glasses [8]

End of question paper.

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