සියලු ම හිමිකම් ඇවිරිණි/முழுப் பதிப்புரிமையுடையது/All Rights Reserved]

නව නිර්දේශයයුතිය පාடத்திட்டம்/New Syllabus

NEW

ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව... இலங்கைப் பரீட்சைத் திணைக்களம்... Department of Examinations, Sri Lanka

32 | E | I

අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) විභාගය, 2016 දෙසැම්බර්
கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2016 டிசெம்பர்
General Certificate of Education (Ord. Level) Examination, December 2016

ගණිතය	I	පැය දෙකයි
கணிதம்	I	இரண்டு மணித்தியாலம்
Mathematics	**I**	**Two hours**

Index Number: ....

Certified Correct

....
Signature of Invigilator

Important:

* This question paper consists of **8 pages**.

* Write your **Index Number** correctly in the appropriate places on **this page** and on page three.

* Answer **all** questions on **this question paper** itself.

* Use the space provided under each question for working and writing the answer.

* Indicate the **relevant steps** and the **correct units** in answering the questions.

* Marks are awarded as follows:

   In Part A
   2 marks for each question

   In Part B
   10 marks for each question

* Blank papers can be obtained for scratch work.

For Marking Examiners' Use Only		
Part	Question Numbers	Marks
A	1 - 25	
	1	
	2	
B	3	
	4	
	5	
	Total	

.... First Examiner	.... Code Number
.... Second Examiner	.... Code Number
.... Arithmetic Checker	.... Code Number
.... Chief Examiner	.... Code Number

Part A

Answer all questions on this question paper itself.

1. Duty of 6% has to be paid when an item worth Rs 800 is imported. Find the duty.

2. In the given Venn diagram, shade the region that represents the subset $A \cap B$.
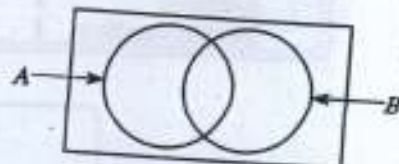
3. A bus which moves at a uniform speed, travels a distance of 48 metres in 3 seconds. Find the speed of the bus in metres per second.

4. Represent in index form: $\log_2 16 = 4$

5. Solve: $(x - 1)(x - 2) = 0$

6. Write all the positive integers that satisfy the inequality $2x + 1 \leq 5$.

7. Simplify: $\frac{1}{x} + \frac{1}{2x}$

8. Find the least common multiple of the two algebraic expressions xy and x^2.

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9. It takes 6 hours to harvest a paddy field with a machine. How many hours will it take to harvest this paddy field with three such machines?

10. Write the probability of getting a card with an odd number written on it, when a card is drawn randomly from a box which contains 3 identical cards with the numbers from 1 to 3 written on them.

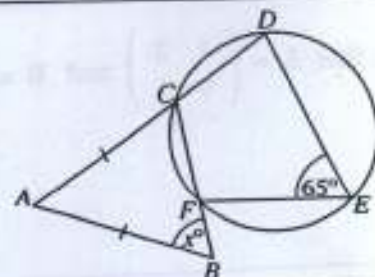11. Using the information given in the table, find the first approximation of $\sqrt{90}$.

x	9.3	9.4	9.5	9.6
x^2	86.49	88.36	90.25	92.16

12. The two triangles ABC and PQR in the figure are congruent. Find the values of x, y and z using the given information.
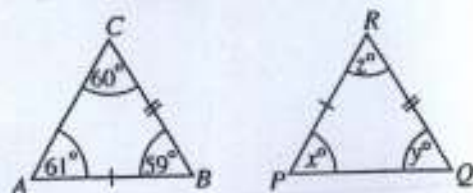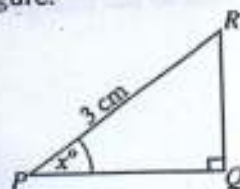
13. The radius of a solid cylinder is 7 cm and its height is 2 cm. Taking $\frac{22}{7}$ for the value of π, find the area of its curved surface (the area of the curved surface of a solid cylinder of radius r and height h is $2\pi rh$).
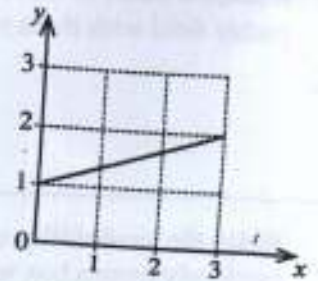
14. Find the value of x using the information given in the figure.

15. Given that $\cos x° = 0.8$, find the length of PQ using the information in the figure.

**16.** Write the values that are obtained for m and c when the equation of the straight line in the figure is expressed in the form $y = mx + c$.


17. In the table, place the mark "√" in the boxes in front of the true statements, if any, and the mark "X" in the boxes in front of the false statements, if any.

In a parallelogram, opposite sides are equal and parallel.	
In a parallelogram, opposite angles are equal.	
The area of a parallelogram is bisected by each diagonal.	

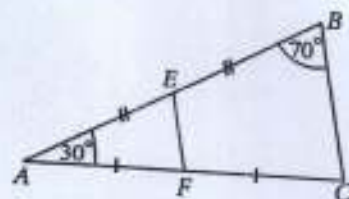**18.** Using the information given in the figure, find the magnitude of $C\hat{D}A$.
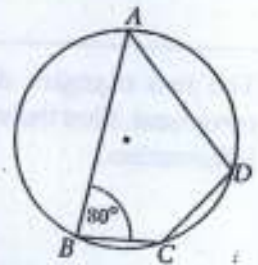
19. The radius of the circle with centre O in the figure is 10 cm. Find the length of the chord AB using the given information.
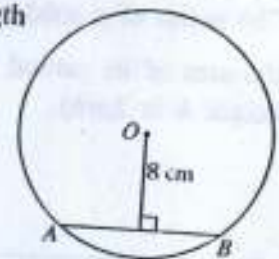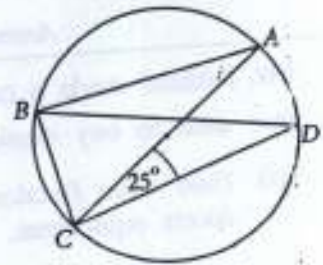

20. Given that $A = \begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix}$ and $B = \begin{pmatrix} 2 & 0 \\ 0 & 4 \end{pmatrix}$, find the matrix AB.
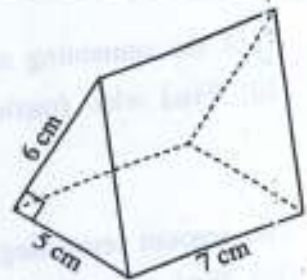
21. Find the magnitude of $E\hat{F}C$, using the information relevant to the triangle ABC in the figure.

22. The centre of the circle in the figure lies on AC. Find the magnitude of $C\hat{B}D$ using the given information.

23. Find the volume of the triangular prism in the figure using the given information.
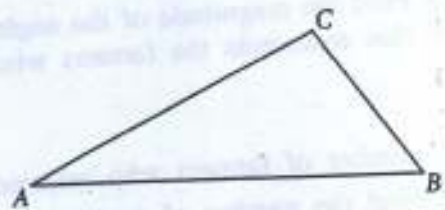
24. The first 12 data of 23 data that are written in ascending order is as follows.

$$4, 4, 6, 7, 7, 8, 9, 9, 10, 11, 13, 15$$

Write the median and the first quartile of the 23 data.

25. In the figure, draw a sketch of the construction lines required to find the point on AC that is equidistant from the points A and B, and indicate this point by naming it D.

* *

Part B

Answer all questions on this question paper itself.

1. Mr. Kithsiri made a cash donation to a community centre. $\frac{2}{9}$ of the total amount he donated was used to buy musical instruments and $\frac{1}{2}$ to buy sports equipment.

   (i) Find what fraction of the total amount was used to buy the musical instruments and sports equipment.

 $\frac{1}{5}$ of the remaining amount was used to buy books for the library.

   (ii) Find what fraction of the total amount was used to buy books.

   The amount remaining after purchasing the books was used to renovate the community centre.

   (iii) Find what fraction of the total amount was used for the renovation.

   (iv) If the renovation cost was Rs 20 000, find the total amount Mr. Kithsiri donated.

2. The pie chart given in the figure shows how a certain group of farmers selected various types of vegetables for growing. Each farmer grew only one type of vegetable.

   The number of farmers who selected pumpkins is equal to the number of farmers who selected brinjals.

   (i) Find the magnitude of the angle at the centre of the sector that represents the farmers who selected brinjals.
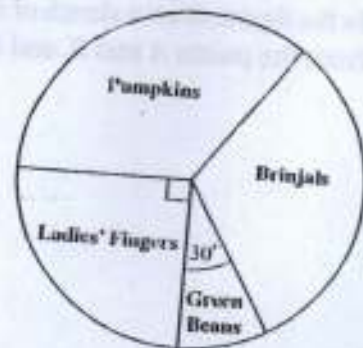
   The number of farmers who selected green beans is 15.

   (ii) Find the number of farmers who selected pumpkins.

   (iii) Find the total number of farmers represented in this pie chart.

   After one year, 20 farmers who had been growing brinjals stopped growing vegetables.

   (iv) Find the magnitude of the angle at the centre of the sector which represents the farmers growing brinjals, in a new pie chart drawn considering the changed data.

3. Mr. Perera, who is an investor in the stock market, invests Rs 40 000 to buy shares of a compan̄ at the market price of Rs 80 per share. The company pays annual dividends of Rs 6 per share.

   (i) Find the number of shares Mr. Perera buys.

   (ii) Find the annual dividend income Mr. Perera receives.

   After one year, Mr. Perera sells all the shares and makes a capital gain of Rs 3 500.

   (iii) Find the selling price of a share.

   Mr. Perera adds Rs 3 500 to the capital gain and dividend income he receives and depo the whole amount for a period of two years, in a fixed deposit account which pays an an compound interest rate of 10%.

   (iv) Find the total amount in the account at the end of the two years.

4. There are three red tennis balls and one green tennis ball in a box. A ball is drawn the box, its colour is recorded and is put back. A ball is drawn from the box again a colour is also recorded. The balls are drawn randomly.

   (i) Indicate the relevant sample space in the given grid using the mark "x" (R_1, R_2, R_3 represent red balls and G represents the green ball).

   (ii) Indicate the event of drawing the green ball at least once, by encircling it in the grid, and write down its probability.
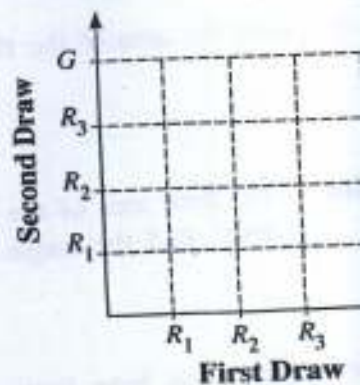
Two of the three red balls are each marked with the letter X, and the remaining red ball green ball are each marked with the letter Y. Suppose that the letter marked on the ball v recorded in each of the above drawings.

(iii) Complete the following tree diagram relevant to this random experiment.

First Draw   **Second Draw**
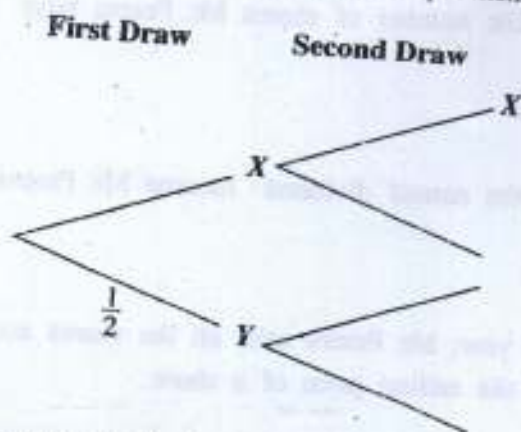
(iv) Find the probability of drawing balls marked with the same letter on both occasions.

(v) State with reasons whether there is a greater probability of drawing balls marked with the same letter on both occasions or drawing the green ball at least once.

5. A sketch of the floor of a theatre is shown in the figure. It consists of a semicircular part CED on which the stage is built and a rectangular part ABCD where the auditorium is built. The length of DC is 14 m.

In the following calculations, use $\frac{22}{7}$ for the value of π when required.

(i) Find the arc length of the semicircle CED.

(ii) Find the area of the floor on which the stage is built.
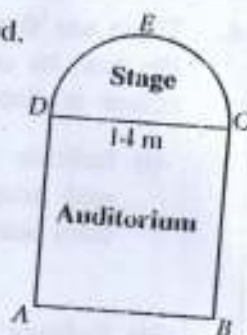
(iii) If the floor area of the auditorium is three times the area of the floor on which the stage is built, find the length of AD.

(iv) Light bulbs have been fixed around the floor on which the stage is built, with bulbs at C and D too. There is an equal gap of 1.4 metres between adjacent bulbs on the line CD. The bulbs on the arc CED are also fixed with an equal gap. The number of bulbs on the line CD and on the arc CED are equal. Calculate the distance along the arc between two adjacent bulbs on the arc CED.

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