

First Term Examination 2015 Mathematics - I

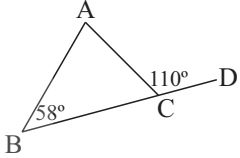
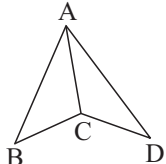
Grade 10

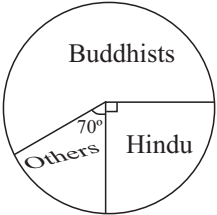
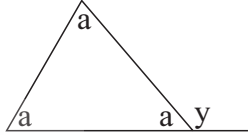
භෞතික - I

Time: 2.30 hours

Name/ Index No.

- Answer all questions. Part - A

01	6 People could finished $\frac{1}{3}$ of a certain work in 5 days. How many man days are needed to complete the work ?	
02	The radius of a semi-circular flower bed is 7m. Find the circumference of the flower bed.	
03	Write $\frac{3}{4}$, $\frac{3}{5}$, $\frac{2}{3}$ in the ascending order.	
04	If $x = 2$, find the value of $(x - 3)(x + 5)$	
05	In the triangle ABC, side BC is extended up to D. Using given data find the magnitude of $\hat{BAC}$.	
06	Find the factors. $x(a - 2b) - y(2b - a)$	
07	Find the first approximation of $\sqrt{75}$	
08	When $\frac{5}{6}$ of the money which Nimal had was spent Rs. 110 remained. Find the amount of money Nimal had.	
09	In the figure $AB = AD$. What are the other sides or angles that should be equal for the two triangles ABC and ADC ?	

10	The pie-chart below show the people in a certain village according to their different religions. Find the angle of the sector in the pie-chart corresponding to the Buddhists.	
11	Find the L.C.M. of the following algebraic terms $2x^2y^2$, $6xy^2$, $3x^2y$	
12	Find the value of $\sqrt{12 \times 27}$	
13	Find the value of the angles denoted by symbols a and y.	
14	A cow is tied to a post in a grassy land using a code of 7m long. Find the area of the land where the cow is eating grass.	
15	Fill in the blanks. $(x + \dots)^2 = x^2 + 12x + \dots$	
16	Simplify. $(3a + b - c) - (4a + 2b - 3c)$	
17	The length of a diagonal of a square is $2x$. Form an expression in terms of x for the area of the square.	
18	Simplify. $\left(\frac{2}{5} - \frac{1}{5}\right) + 1\frac{2}{5}$	
19	Find the value of 13^2 using the square of a binomial expression.	
20	In a hostel there is a sufficient food for 28 students in 15 days. If two new students were admitted find how many days the foods will last ?	

Part - II

- Answer first question and four other questions. 16 marks in first question and 11 marks in each other questions.

01 (a) (i) Express $a^2 - b^2$ as a product of two factors.

(ii) Hence find the values of $17.72^2 - 2.28^2$

(b) Find the factors in following expressions.

(i) $3a^2 - 12$

(ii) $3a^2 - 12a + 12$

(c) Find the L. C. M. of the above (b) expressions.

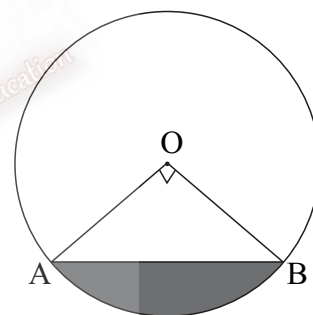
(d) Simplify the expression and find factors. $x^2 + (a + b + c)x + ab + bc$

02 In the diagram below shows a circular plot of land, in a garden. The center of the circular land is O and radius 7m. Chillies are grown in the shaded area of the circular land.

(i) Find the length of AB. (take $\sqrt{2} = 1.4$)

(ii) Find the perimeter of the shaded area.

(iii) Find the area of the shaded area.



03 (a) Find the square root of following numbers.

(i) $5 \frac{1}{16}$

(ii) 18.5761

(b) How many rectangular pieces of sheet each of length $\frac{1}{3}$ cm and breadth $\frac{1}{4}$ cm. can be cut from a piece of a rectangular sheet of length $5 \frac{1}{3}$ cm and breadth $3 \frac{3}{4}$ cm.

(c) A man who owns $\frac{5}{8}$ of a land transferred $\frac{1}{3}$ of it to his son. What fraction of the whole land is the part transferred to the son?

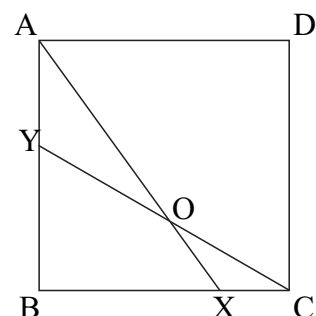
04 ABCD is a square. X and Y are points on BC and AB such that AY = CX. The lines AX and CY intersect at O. Prove that,

(i) $BY = CX$

(ii) The triangles BYC and ABX are congruent.

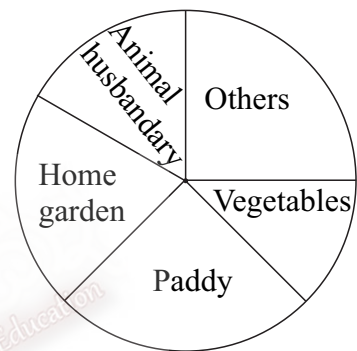
(iii) The triangles AOY and COX are congruent.

(iv) $\angle DAO = \angle BCO$



- 05 (a) Find the area of a square with a side of $(2x + 3)$ cm.
- (b) The breadth of a rectangle is $(2x + 3)$ cm and its length is twice the breadth.
- (i) Find the length of the rectangle.
- (ii) Find the area of the rectangle.
- (c) Find the values of y and k of the following expression using the $(x + y)^2$
 $x^2 - 12x + k$
- (d) If $(x + \frac{1}{x}) = 5$ find the value of $(x^2 + \frac{1}{x^2})$

- 06 The pie-chart shown here illustrates how a certain farmer's income is derived. He gets $\frac{2}{5}$ of his total income from Paddy Cultivation, $\frac{1}{10}$ from vegetable farming, $\frac{1}{8}$ from home gardening, $\frac{1}{8}$ from animal husbandry and $\frac{1}{4}$ from others. Show



- (i) find the magnitude of the angle in each sector of the circle in relation to each source of income.
- (ii) Express the different parts of the income as a ratio.
- (iii) If his monthly income is Rs. 40000, find the amount of each source of the different parts of the income he gained.
- 07 (a) Show that the angles opposite to equal sides of an isosceles triangle are equal.
- (b) In the triangle ABC, $AB = AC$. The bisectors of the angles B and C meet at D. Extended AD meets BC at E. Show that,
- (i) $BD = DC$
- (ii) $\triangle BDE$ and $\triangle DEC$ are congruent.
- (iii) AE is the perpendicular bisector of BC.