

අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) විභාගය, 2025(2026)
கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2025(2026)
General Certificate of Education (Ord. Level) Examination, 2025(2026)

ගණිතය II
கணிதம் II
Mathematics II

පැය තුනයි
மூன்று மணித்தியாலம்
Three hours

අමතර කියවීමේ කාලය - මිනිත්තු 10 යි
மேலதிக வாசிப்பு நேரம் - 10 நிமிடங்கள்
Additional Reading Time - 10 minutes

Use additional reading time to go through the question paper, select the questions and decide on the questions that you give priority to in answering.

Instructions:

- * Answer ten questions selecting five questions from Part A and five questions from Part B.
- * Write the relevant steps and the correct units in answering the questions.
- * Each question carries 10 marks.
- * The volume of a right prism of cross sectional area A and height h is Ah .
- * The volume of a sphere of radius r is $\frac{4}{3}\pi r^3$.

Part A

Answer five questions only.

1. A bank pays an annual compound interest rate of 15% for deposits. The interest is added to the deposit amount annually.

A share of a finance company can be bought for 60 rupees.

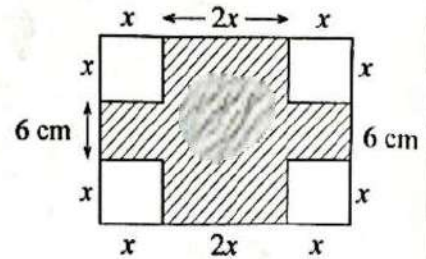
- Amal deposits 60 000 rupees in a bank account for two years. How much is the interest he receives for the first year?
- Find the total amount in Amal's bank account at the end of the two years.
- A year after Amal deposits the money in the bank, Ramani buys shares of the finance company for 60 000 rupees. How many shares does she buy?
- At the end of that year, Ramani receives the dividends for the year and sells all the shares she owns at 75.35 rupees per share. If the total amount Ramani has in hand now is equal to the total amount in Amal's bank account after 2 years, find the dividend amount the finance company has paid per share.

2. A table of y -values corresponding to several integral x -values of the quadratic function $y = (x + 1)(x - 3)$ in the interval $-2 \leq x \leq 4$ is given below.

x	-2	-1	0	1	2	3	4
y	5	0	-3	-4	-3	0	5

- Using the standard system of xy -axes and selecting a suitable scale, draw the graph of the quadratic function on the given graph paper, based on the above given table.
- Draw the axis of symmetry of the graph on the graph itself.
- Write the coordinates of the minimum point of the graph and thereby express the quadratic function in the form $y = (x - a)^2 - b$.
- Using the graph you drew,
 - find the coordinates of the turning point of the graph of the quadratic function $y = -(x + 1)(x - 3)$.
 - write separately the coordinates of the intersection points of the graph of the quadratic function $y = -(x + 1)(x - 3)$ and the graph you drew.

3. In the rectangle shown in the figure, the four unshaded parts are four squares of side length x cm each. The shaded area is 316 cm^2 .

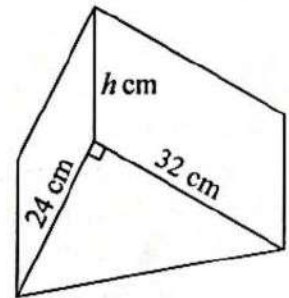


(i) Show that $x^2 + 6x - 79 = 0$.

- (ii) Find the value of x to the nearest first decimal place.
(Take that $\sqrt{22} = 4.69$.)

- (iii) Find the perimeter of the shaded region.

4. The height of a right prism shaped metal block with a right triangular cross section having the measurements shown in the figure, is h cm. This metal block is melted and 12 identical solid spheres are made without wastage of metal. If the radius of a sphere is r cm, show that the height of the prism is given by $h = \frac{\pi r^3}{24}$.



If the value of r is 4.32, take that $\pi = 3.14$ and find the value of h to the nearest first decimal place using the logarithms table.

5. A vendor sells brown eggs and white eggs. On a certain day, twice the number of brown eggs he sold was equal to the number that is obtained when 10 is added to the number of white eggs he sold. The amount he received that day by selling a brown egg at 40 rupees and a white egg at 32 rupees was 4880 rupees.

- (i) Taking the number of brown eggs that the vendor sold that day as x and the number of white eggs he sold as y , construct a pair of simultaneous equations and by solving them, find separately the number of brown eggs and the number of white eggs that were sold that day.
- (ii) Sumana who comes to the shop that day buys eggs for 1000 rupees without balance. The number of white eggs she buys is more than twice the number of brown eggs she buys. If Sumana buys the maximum number of brown eggs that she can buy under these conditions, find separately the number of brown eggs she buys and the number of white eggs she buys.

6. A frequency distribution containing information on the time spent on self-study per day by a group of 70 students in Grade 11 is given below.

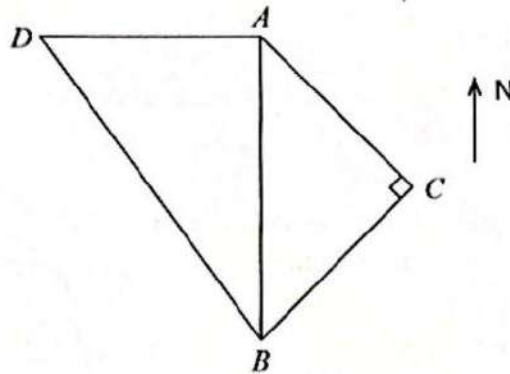
Time (Minutes)	40-60	60-80	80-100	100-120	120-140	140-160	160-180
Frequency (Number of Students)	8	12	15	15	10	7	3

Here, the interval 40-60 denotes greater than 40 and less than or equal to 60.

- (i) How many students are engaged in self-study for two hours or less per day?
- (ii) Find the mean time that a student in this group engages in self-study per day, to the nearest minute.
- (iii) Show that the time that can be expected to be spent by a student in this group on self-study during a week exceeds 11 hours.
- (iv) The students who spend two hours or less per day in self-study wish to increase their daily mean self-study time to 2 hours. To do this, by how many minutes should these students increase their current mean self-study time per day?

Part B*Answer five questions only.*

7. As shown in the figure, the points A , B , C and D lie on a level ground such that the point B is to the south of A , the point C is on a bearing of $44^\circ 50'$ from B , the point D is to the west of A , $AC = 70.5$ m and $\hat{ACB}$ is a right angle.

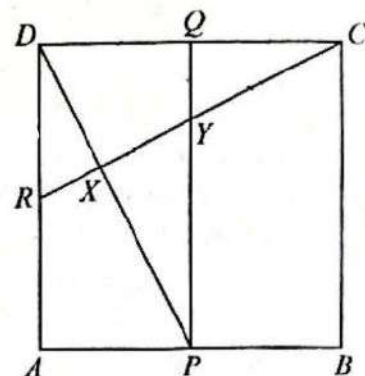


Copy the given figure in your answer script and include the above information in it.

Using trigonometric ratios,

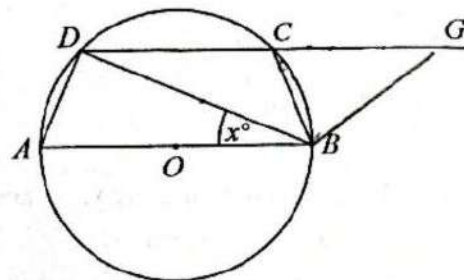
- (i) find the distance AB , and the time it takes to travel that distance at a speed of 8 metres per second.
 - (ii) find the magnitude of $\hat{ABD}$ if $AD = 70.92$ m.
8. (i) 24 book racks have been placed in a row in a library. There are 33 books in the first rack and every other rack has 3 more books than the previous rack.
- (a) Write the number of books in the first three racks of this row of racks, respectively.
 - (b) Find the number of books in the 13th rack of this row of racks.
 - (c) Find the total number of books in the last 12 racks of this row of racks.
- (ii) In another book rack consisting of five shelves, there are 12 books in the topmost shelf and books have been placed in the remaining shelves such that every shelf has three times the number of books in the shelf immediately above it. Show that the total number of books in this rack is given by $6(3^5 - 1)$.
9. Do the following geometric constructions using only a straight edge with a cm/mm scale and a pair of compasses. Show the construction lines clearly.
- (i) Construct the triangle ABC such that $AB = 8.0$ cm, $AC = 7.0$ cm and $BC = 6.5$ cm.
 - (ii) Construct the bisector of $\hat{BAC}$ and label the point at which it intersects BC as D .
 - (iii) Construct a perpendicular to the side AB from the point D and construct the circle with centre D which touches the side AB at E .
 - (iv) If the point at which the circle touches the side AC is F , give reasons why $AEDF$ is a cyclic quadrilateral.

10. In the given figure, $ABCD$ is a square. The midpoints of its sides AB , CD and DA are P , Q and R respectively. Copy this figure in your answer script.



- Give reasons why $APQD$ is a rectangle.
- Show that the triangle PQD and the triangle CDR are congruent. The straight line RC intersects the lines PD and PQ at the points X and Y respectively.
- Give reasons why $QY = \frac{1}{2}DR$.
- Show that the triangle RXD and the triangle PXY are equiangular and hence show that $3RX = 2XY$.

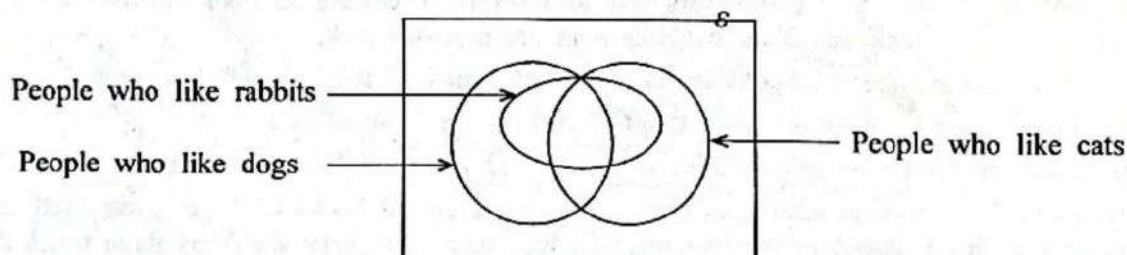
11. In the circle shown in the figure, O is the centre and AB is a diameter. The chord DC drawn parallel to AB is produced to G .



Copy the figure in your answer script.

- $\angle ABD = x^\circ$. Giving reasons, find the magnitude of $\angle BCG$ in terms of x° .
- The point E lies on DC produced such that $DB = BE$. Join AC and show that $AB = CE$.

12. An incomplete Venn diagram drawn to represent the information collected from 120 people regarding the types of pets they like from the types rabbits, dogs and cats is given below.



- * The number of people who like only the two types dogs and cats is 20.
- * The number of people who like all three types, rabbits, dogs and cats is 15.

Copy the given Venn diagram in your answer script and include the given information in it.

- How many people like both the types dogs and cats?

- * The number of people who like rabbits is 42.
- * The number of people who like only the two types rabbits and dogs is 23.

- How many people like exactly two of these three types of pets?
- The number of people who like exactly one of these three types of pets is 52. How many people do not like even one of these three types of pets?
- The number of people who like only dogs is 30. How many people like cats?
