FIRST TERM MODEL EXAMINATION

MATHEMATICS

Time :2 ½ Hr Total score: 80

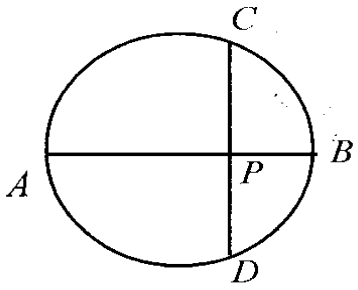
Instructions

- First 15 minutes given as 'cool off time' in addition to 2½ hours. Use this time to read and understand the questions.
- Answer the questions according to the score and time.
- Write the question numbers for main and sub questions correctly.

Answer any three from questions 1 - 4 . Each carries 2 scores. (3 x 2 = 6)

1 . a) Write an arithmetic sequence with first term 3 and common difference 5
b) Which is the first three digits term of this sequence?

2 . In the figure AB is the diameter CD is drawn perpendicular to AB. AB = 10 cm, PB = 2cm



a) What is the length of CP
b) What is the area of triangle ABC

3 . a) $\frac{1}{3}$ part of a rectangle is shaded. If a dot put on the rectangle without looking in it. What is the probability that the dots is not on the shaded part?
b) If the area of the rectangle is a and area of shaded part is b, what will be the required probability?

4 . If the sides of a square are extended by 1 cm, area will become 100 sq.cm. What will be the area of the first square?

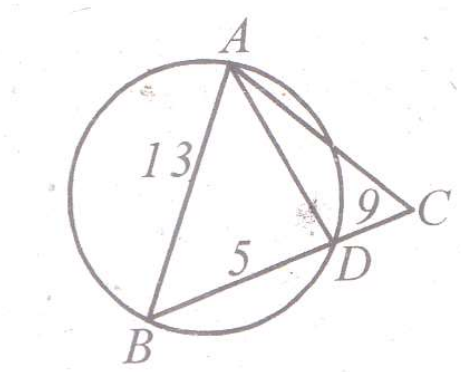
Answer any five from questions 5 to 1 1 . Each carries 3 scores. (5 x 3 = 1 5)

5. 6^{th} term of arithmetic sequences is 33 and its 11th term is 58.
a) What is its common difference?
b) What is its first term?
c) Write the algebra of the sequences.

6. Vertices of a triangle are points of a circle of radius 3cm. Two of its angles measures 55^0 and 55^0. Draw the triangle.

7. Find the sum:
a) What is 2 + 4 + 6 + …… + 40?
b) What is 1 + 2+ 3+ ……+ 20?
c) What is 5 + 10 + 15 + ……..+ 100?

8. In triangle ABC, AB = 13 cm. The circle with AB as diameter cuts BC at D. BD = 5cm, BC = 14 cm

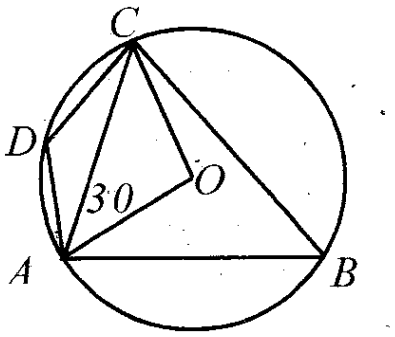


a) What is CD ×CB
b) What is the length of AD?
c) What is the length of AC?

9. A box contains 7 red beads and 8 blue beads. Another box contains 6 red beads and 5 blue beads. One bead is taken from each box,
   a) How many possible pairs are there?
   b) What is the probability of getting a red bead?
   c) What is the probability to get at least a blue bead?
10. The numbers 5, 8, 11 ……. From an arithmetic sequence.
   a) Is the difference between any two terms of the sequence be 30
   b) Verify whether 107 is a term of this sequence.
11. a) Draw a rectangle with sides 7cm and 6 cm
   b) Draw a square equal in area to this rectangle.

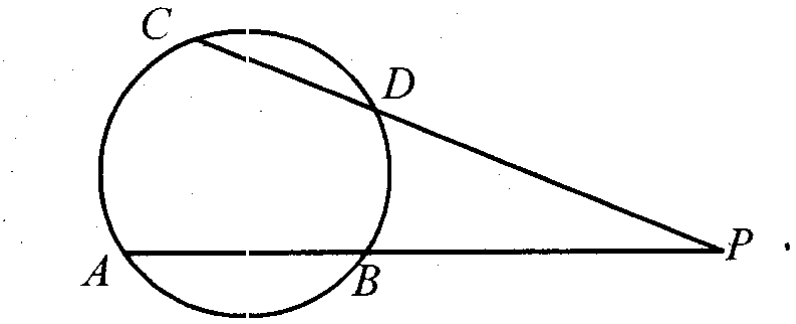
Answer any seven from questions 1 2 to 2 1 . Each carries 4 scores. (7 x 4 = 2 8)

12. A, B, C are points on a circle with centre O.
   $< OAC = 30^0$, BC = AB = 7cm.

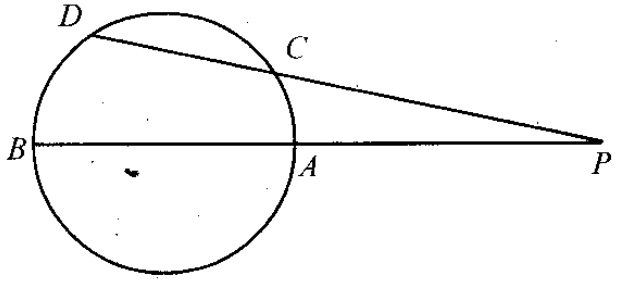


a) What is $< OA$?
b) What is $< ABC$?
c) What is the length of AC?
d) What is $< ADC + < AB$?

13. A box contains 18 beads of black and white, If a bead is taken from the box, Probability of it being black is $\frac{1}{3}$
    a) What is the probability of getting a white bead?
    b) How many black beads are there?
    c) How many white beads are to be put into the box, so that probability of getting a black bead becomes $\frac{1}{4}$
14. Consider the arithmetic sequence whose algebra is 4n +11
    a) What is its common difference?
    b) What is its 11^{th} term?
    c) Which is the first integer term of the sequence $\frac{14}{8}, \frac{17}{8}, \frac{20}{8}, \ldots\ldots\ldots\ldots\ldots\ldots$
    d) Write the sequence of integer terms of this sequence.
15. In the figure, the chords AB and CD are produced to meet at P. PA = 9 cm, AB = 6 cm, CD = 6 cm



    a) What is PA × PB?
    b) What is length of PD?
16. Sum of first n terms of an arithmetic sequence is n^2+4n
    a) Write its algebra?
    b) What is its common difference?
    c) How many terms of this sequence are added to get the sum 285?
17. When one pair of opposite sides of a square are extended by 4 cm, its area is found to be 396 sq.cm
    a) If sides of the square is x cm. What would be the sides of the rectangle.
    b) Write a second degree equation and find the length of the rectangle.
18. First term of a arithmetic sequence is 3 and sum of its first 6 terms is 93
    a) What is the 6^{th} term?
    b) What is its common difference?
    c) Find the sum of its first 11 terms.
19. In the figure, O is the centre of the circle. The chord DC produced and the diameter BA produced meet at P. PC = 9cm, PA = 6 cm, radius = 6 cm



    a) What is PA × PB?

b) What is PC × PD?

c) Find the length of CD

20. Algebra of an arithmetic sequence is 51 − 6n

a) What is its 8^{th} term?

b) Find the sum of the first 15 terms.

c) Sum of the first few terms of this sequence is zero. How many terms from the beginning are added to get the sum zero.

21. Perimeter of a rectangle is 48 cm and its area is 108 sq.cm

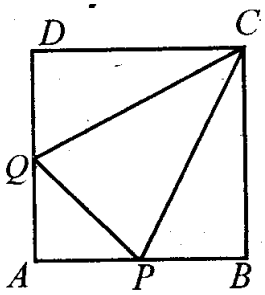
a) If the length of the shortest side is (12− x) cm, What will be the length of the longest side.

b) What is length + breadth?

c) Find the length and breadth?

Answer any five questions from 22 to 28. Each question carries 5 Score. (5 x 5 = 25)

22. In the figure, the mid points of the side AB and AD of square ABCD are joined.

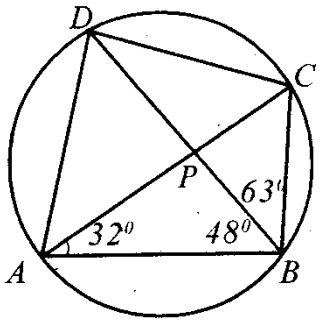


a) If the length of the square is a, what is the area of ΔBDC?

b) What is the area of ΔPQC?

c) If a dot is put on the figure without looking into it, what is the probability that the dots is on ΔPQC?

23. In the figure A, B, C, D are points of the circle
$< BAC = 32^0$, $< ABD = 48^0$, $< CBD = 63^0$



Find

a) $< BDC$

b) $< AC$

c) $< CA$

d) $< BAD$

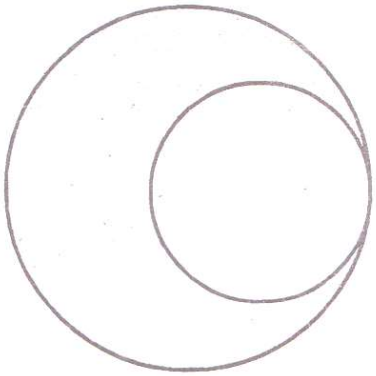
e) $< ABC$

24. Length of a rectangle is 7 cm more than the breadth. Area of this rectangle is 1248 sq.cm

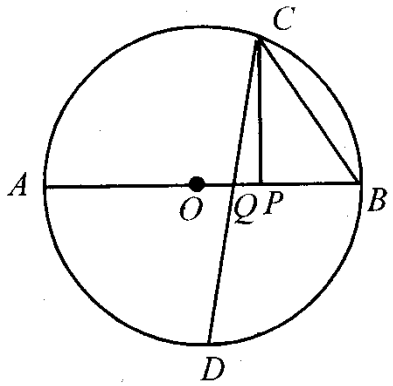
a) If breadth is x, what is its length?

b) Form a second equation based on this.
c) Find the length and breadth of the rectangle.

25. Consider the numbers between 100 and 500 which when divided by 7 gives a remainder 3.
    a) What is the first number of the sequence?
    b) What is the last number of the sequence?
    c) How many terms are there in this sequence?
    d) Find the sum of these terms?
26. In the figure, diameter of the smaller circle is radius of a larger circle. The part in between the two circles are shaded.



    a) If radius of the smaller circle is r, what is radius of the larger circle.
    b) If a dot is put on the circle without looking into it, what is the probability that the dot is on the shaded part?
27. In the figure, AB is the diameter of the circle centred O.



    BC = 13 cm
    QC = 15 cm
    PQ = 9 cm
    a) What is the length of PC?
    b) What is the length of PB?
    c) What is the length of OC?
28. 23rd term of an arithmetic sequence is 32 and its 35th term is 104.
    a) What is its common difference?
    b) What is its first term?
    c) Is the difference of any two terms of this sequence be 90?
    d) Find the sum of the first 35 terms?
29. Read the gives mathematical concept and answer the questions that follow.
    In the sequence 1, 2, 4, 8, …….. one number multiplied by 2 gives the next number. Such sequences are called geometric sequence. The common number is used for repeated multiplication is

called common ratio.

a) What is the 5^{th} term of the geometric sequence 1, 2, 4, 8……..

b) Write the geometric sequence with first term 2 and common ratio 3?

c) What is the common ratio of the geometric sequence 3, 12, 48……

d) Writer the 10^{th} term of the geometric sequence 1, -1, 1, …….

e) What is the sum of 10 consecutive terms of the geometric sequence 1, -1, 1, ……

f) Which of the following numbers will not be a term of any geometric sequence?

$(\pi, 0, \sqrt{2}, \frac{1}{\pi})$