

Class : 9

Time :  $2\frac{1}{2}$  hours  
 Score : 80

**Instructions**

- There is a 'cool off' time of 15 minutes in addition to the writing time. Use this time to get familiar with questions and plan your answers.
- Read the instructions carefully before answering the questions.
- Keep in mind, the score and time while answering the questions. Give explanations wherever necessary.
- No need to simplify irrationals like  $\sqrt{2}$ ,  $\sqrt{3}$ ,  $\pi$  etc., using approximations unless you are asked to do so.

**Answer any 3 Questions from 1 to 4. Each question carries 2 scores. (3 x 2 = 6)**

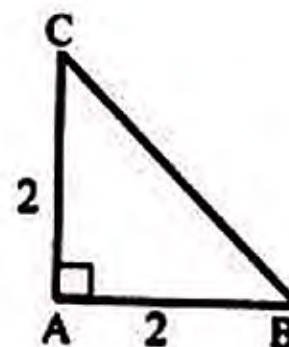
1. a) What is the area of a rectangle with length 6 centimetres and breadth 3 centimetres?  
 b) What is the breadth of a rectangle with same area and length 9 centimetres?
2. a) Which of the fractions given below is equal to  $\frac{2}{5}$ ?

$$\left(\frac{2}{10}, \frac{4}{10}, \frac{5}{2}, \frac{4}{5}\right)$$

- b) Write the decimal form of  $\frac{2}{5}$ .
3. 5 added to two times a number is 25.  
 a) Write the equation by take the number as  $x$ .  
 b) Find the number.

4. In the right triangle ABC,  
 $AB=AC= 2$  centimetres.

- a) What is the length of BC?
- b) If we draw a square with BC as side, what is its area?



**Answer any 4 Questions from 5 to 10. Each question carries 3 scores. (4 x 3 = 12)**

5. If a line of length 10 centimetres is divided in the ratio 2:3,
- What is the length of first part?
  - What is the area of a triangle drawn with second part as base and height 4 centimetres?

6. a) Write the decimal form of  $\frac{1}{10}$ .
- b) Write the decimal form of  $\frac{1}{10} + \frac{1}{100}$ .

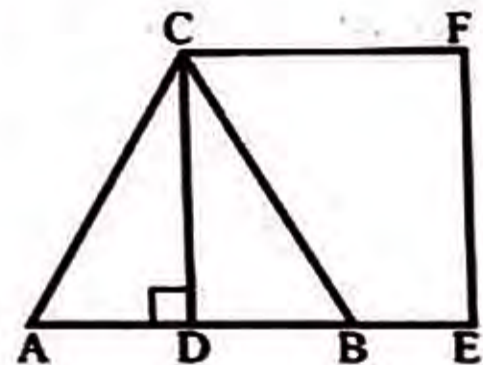
7. Perimeter of a rectangle is 40 centimetres. Length of the rectangle is 4 centimetres more than its breadth. Then,

- What is the sum of its length and breadth?
- Find length and breadth.

8. Draw an isosceles triangle with base 8 centimetres and height 5 centimetres.

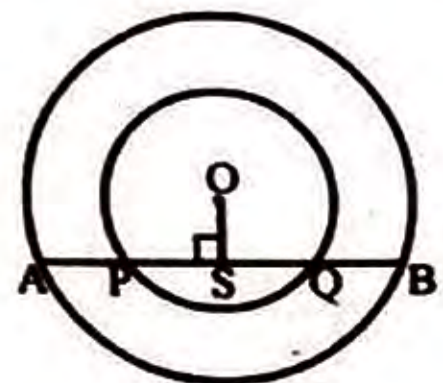
9. In the figure length of a side of the equilateral triangle ABC is 4 centimetres. A square DEFC is drawn with CD as side.

- What is the length of AD ?
- What is the length of CD ?
- Find the area of square DEFC.



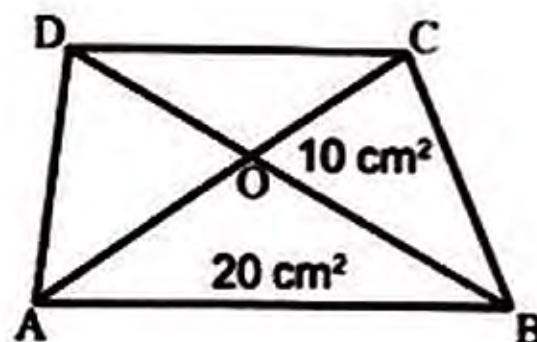
10. In the figure, 'O' is the common centre of both circles. The chord AB of the large circle intersects the small circle at P and Q. The line PQ and OS are mutually perpendiculars. AB = 10 centimetres and PQ = 6 centimetres, then,

- What is the length of PS?
- Find the length of AP and QB.



Answer any 8 Questions from 11 to 21. Each question carries 4 scores. (8 x 4 = 32)

11. In trapezium ABCD, the sides AB and CD are parallel.  
The diagonals AC and BD intersect at O.

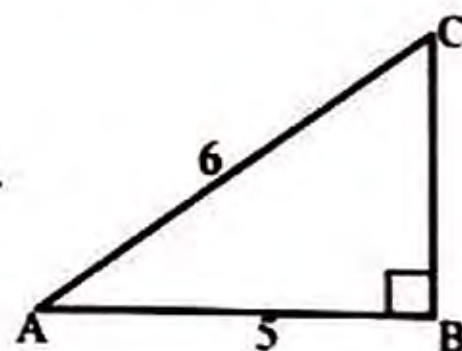


- a) Find the area of  $\triangle AOD$ .  
b)  $AO : OC =$  \_\_\_\_\_  
c) Find the area of the trapezium ABCD.
12. The decimal form of  $\frac{1}{9}$  is 0.111...

- a) Write the decimal form of  $\frac{2}{9}$  and  $\frac{4}{9}$ .  
b) Write the decimal form of  $\frac{4}{9} + \frac{2}{9}$ .  
c) Write the decimal form of  $\frac{4}{9} - \frac{2}{9}$ .

13. a) 52 is a number obtained by interchanging the digits of 25.  
 $25 = 2 \times 10 + 5$ . In the same way write 52.  
b) Sum of the digits of a two digit number is 13. By interchanging its digits, the number obtained is 27 more than the first number. Write the number.
14. In right triangle ABC, AB=5 centimetres and AC = 6 centimetres.

- a) What is the length of BC?  
b) Draw a square of area 11 square centimetres.

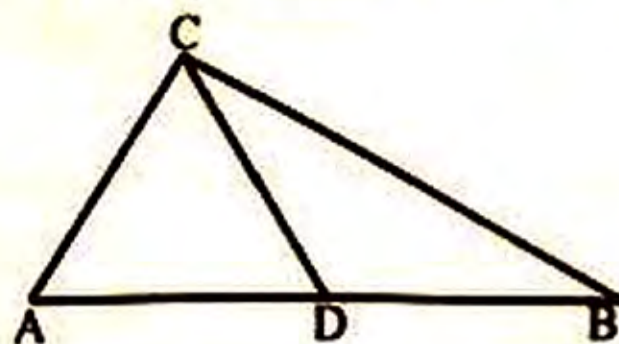


15. a) Write three fractions getting closer and closer to  $\frac{1}{6}$  with denominator powers of 10.  
b) Write the decimal form of  $\frac{1}{6}$ .

16.  $(a+b) \times (a-b) = a^2 - b^2$ .
- a) Simplify  $(\sqrt{5} + 2) \times (\sqrt{5} - 2)$ .
- b) Using the above principle calculate  $\frac{1}{\sqrt{5}-2}$  correct to 3 decimal places.  
 $(\sqrt{5} \approx 2.236)$
17. Sum of three times of a number and four times of another number is 68. While subtracting two times of the second number from four times of the first number get 10.
- a) By taking the numbers as  $x$  and  $y$  form a pair of equations.
- b) What are the numbers?
18. a) Draw a triangle with sides 4 centimetres, 5 centimetres and 6 centimetres.
- b) Draw a right triangle of same area with base 6 centimetres.
19. a) Which natural number is equal to  $\sqrt{12} \times \sqrt{3}$ ?
- b) If  $\sqrt{12} = x \times \sqrt{3}$ , what is  $x$ ?
- c) Simplify  $\sqrt{12} + \sqrt{3}$  and  $\frac{\sqrt{12}}{\sqrt{3}}$ .
20. a) Write 4.125 as a fraction, with denominator a power of 10.
- b) A two digit number divided by another two digit number gives 4.125. What are the numbers?
21. Anu bought 5 pens and 3 pencils for 108 rupees. Neethu bought 3 pens and 5 pencils for 84 rupees.
- a) Take price of a pen as  $x$  and price of a pencil as  $y$ .  
 What is the price of 5 pens? What is the price of 3 pencils?
- b) Form a pair of equations using the above statement.
- c) What is the price of a pen? What is the price of a pencil?

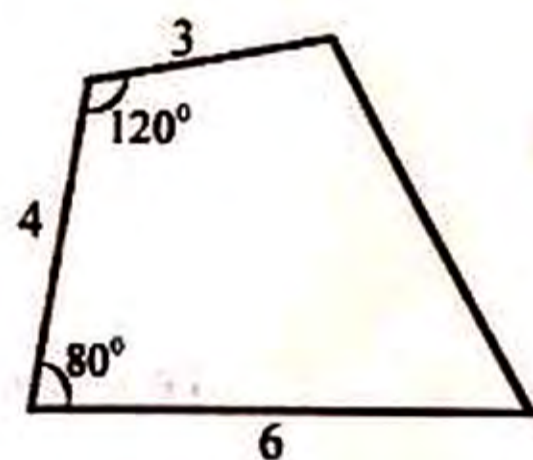
Answer any 6 Questions from 22 to 29. Each question carries 5 scores. (6 x 5 = 30)

22. In the figure D is the mid point of AB. The line CD divides the  $\triangle ABC$  into two triangles.

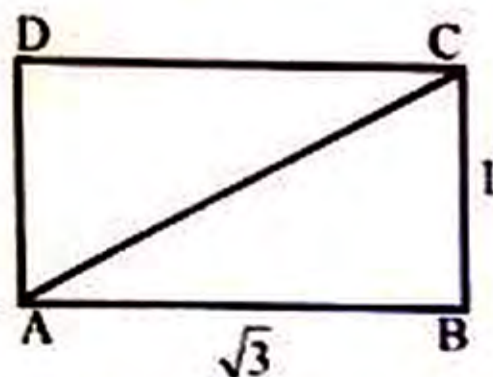


- If  $AB = 10$  centimetres, Find AD.
  - If the height of  $\triangle ABC$  is 4 centimetres, calculate the area of the  $\triangle ADC$ .
  - The midpoint of CD is joined to other two vertices of  $\triangle ABC$ . Find the area of one smaller triangle.
23. Before 5 years age of Babu was 4 times the age of Rasheed. After 5 years age of Babu becomes two times the age of Rasheed. Taking the present age of Babu as  $x$  and age of Rasheed as  $y$ ,
- Write the ages of Babu and Rasheed before 5 years in terms of  $x$  and  $y$ .
  - Write the ages of Babu and Rasheed after 5 years in terms of  $x$  and  $y$ .
  - Find the present ages of Babu and Rasheed.

24. Draw a quadrilateral with measures given in the figure. Draw a triangle with the same area as that of the quadrilateral.



25. In the figure length of rectangle ABCD is  $\sqrt{3}$  metres and breadth is 1 meter.



- What is the length of AC?
- Calculate the perimeter  $\triangle ABC$ .
- Calculate the perimeter of rectangle ABCD.
- How much more is the perimeter of rectangle ABCD than the perimeter of  $\triangle ABC$ .

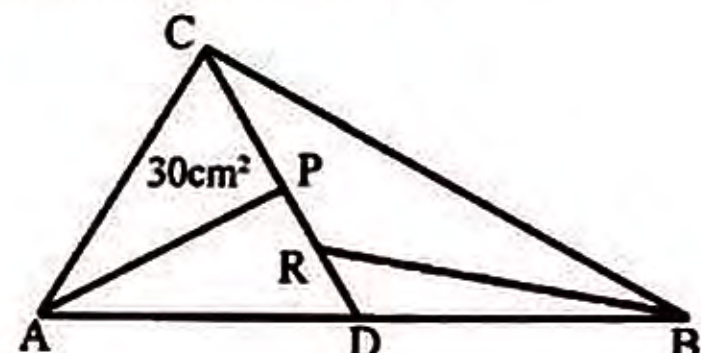
$$(\sqrt{3} \approx 1.732)$$

26. Fill in the blanks in the following table.

Sum	Denominator powers of 10	Decimal form
$\frac{1}{2}$	$\frac{5}{10}$	_____
$\frac{1}{2} + \frac{1}{4}$	$\frac{5}{10} + \frac{25}{100}$	_____
$\frac{1}{2} + \frac{1}{4} + \frac{1}{8}$	$\frac{5}{10} + \frac{25}{100} + \text{---}$	_____

27. Perimeter of a rectangle is 60 centimetres and its area is 216 square centimetres. Taking the length of the rectangle as  $x$  and breadth as  $y$ , then
- What is  $x + y$ ?
  - What is  $x \times y$ ?
  - What is  $x - y$ ?
  - Find  $x$  and  $y$ .

28. In the figure D is the mid point of AB and P is the mid point of CD.  $CR : RD = 2 : 1$  and area of  $\Delta APC$  is 30 square centimetres.



- Find area of  $\Delta ADP$ .
  - Find area of  $\Delta ADC$  and  $\Delta BDC$ .
  - Find area of  $\Delta BRC$  and  $\Delta ABC$ .
29. Read the following number pattern carefully and answer the questions given below.

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          1
        2  3  4
       5  6  7  8  9
      10 11 12 13 14 15 16
    
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.....  
 .....

- Write next two lines.
- Write last numbers in each rows in order.
- Write the last number in the tenth row.
- Write the last number in the  $n^{\text{th}}$  row.