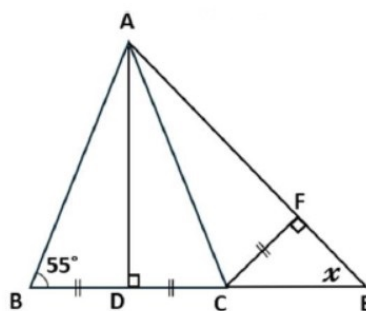


All questions carry equal marks.

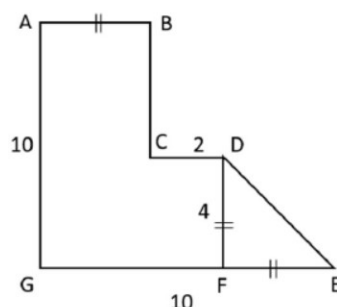
Total Marks 100

1. Simplify :  $\frac{31.5 \times 31.5 + 63 \times 18.5 + 18.5 \times 18.5}{23.5 \times 23.5 - 23.5 \times 27 + 13.5 \times 13.5}$
2. If 15% of 60 added to 15% of 20 is less than 35% of an unknown number by 2 , find the unknown number.
3. Find the sum of consecutive odd numbers between  $\sqrt{47}$  and  $\sqrt{291}$ .
4. Find the value of  $x$ , if  $2^{x+5} = 128^{\frac{x}{2}}$
5. Find the largest number that divides 125 and 137 such that we get 4 and 5 as remainders respectively.
6. A watchmaker repaired a watch and told it's owner that the watch was now showing the correct time as "  $3x$  minutes to 8 ". The customer took a look at the watch and said the time was "  $2x$  minutes past 7 ". If both were correct, what is the value of  $x$  ?
7. During a game, Manan stands 20 m to the west of Jay, Shruti stands 25 m to the south of Manan and Vedika stands 10 m to the south of Jay. What is the distance between Vedika and Shruti?
8. In trapezium  $ABCD$ ,  $AB \parallel DC$ , diagonals  $AC$  and  $BD$  intersect at  $P$ . If diagonal  $BD$  is three times of diagonal  $AC$  and  $AP = 2x - 3$ ,  $BP = 3x - 7$ ,  $CP = 4x - 5$ ,  $DP = 9x + 1$ , find the value of  $x$ .
9. Simplify  $2 + \frac{1}{\sqrt{2}} + \frac{1}{2} \left( \frac{2}{4 + 2\sqrt{2}} - \frac{2}{4 - 2\sqrt{2}} \right)$
10. Find the value of  $x$  in the following figure -

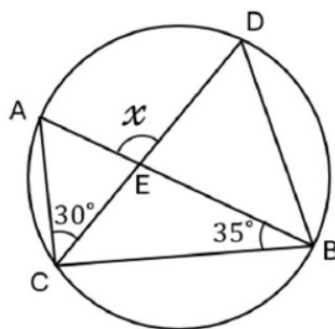


11. The ages of Rohit and Niraj are in the ratio of 4:3 and the product of their ages is 108 years. After how many years will the ratio of their ages be 6 : 5 ?
12. Find the value of :-  $\sqrt{\frac{\sqrt{324}}{\sqrt{16}} - \frac{\sqrt{1296}}{\sqrt{256}}} \times \frac{2}{3} =$

13. Find the area of the polygon



14. A father can complete a job twice as fast as his two sons working together. If one son completes the job in 3 hours and the other completes it in 6 hours, how many hours will the father take to complete the job?
15. The monthly pocket money given to Rajesh is Rs. 2400 . He spends  $\frac{1}{4}$  th of it on stationary items and  $\frac{2}{3}$  rd on fuel. Out of the remaining amount, he spends  $\frac{1}{4}$  th on food and  $\frac{3}{5}$  th on other expenses. Find the sum of money left with him.
16. The area of a right angled triangle is 24 sq. units and one side of the triangle measures 6 units, find the perimeter of the triangle.
17. The number of rows of plants are three times the plants planted in each row. If out of 600 plants in total, the plants in each row are 14, find the excess number of plants.
18. Find the value of  $x$  in the given figure, if AB is diameter and chord CD intersects AB at point E .



19. If Rs. 240 is to be divided among ' A ', ' B ' and ' C ' in the ratio 3 : 4 : 8. What is difference between the shares of ' A ' and ' C ' ?
20. The exterior angle of a polygon measures  $\frac{1}{3}$ rd of the interior angle. How many sides does the polygon have?