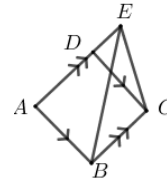


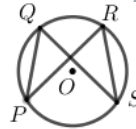
Attempt all the questions.

Group-A [3 × (1+1) = 6]

- Write the formula to calculate the discount rate when marked price and selling price are given.
 - What is the area of an isosceles triangle having one of the equal sides x cm and base y cm?
- Define HCF of algebraic expressions.
 - If A = assumed mean, d = deviation and $\sum fd$ = sum of product of frequency and deviation, what will be the mean of the data?



- In the figure, $AB \parallel DC$ and $AE \parallel BC$. What is the relation between the area of quadrilateral ABCD and $\triangle EBC$? Write it.
 - In the given figure, O is the centre of circle. Write down the angle which is equal to $\angle QSR$?



Group-B [4 × (2+2) + 3 × (2+2+2) = 34]

- A man noticed that the shopkeeper added Rs 715 as VAT at the rate of 13% to his bill while buying a watch, what was the bill excluding VAT? How much did he pay altogether?
 - The population of a city in the beginning of BS 2075 was 110000 and at the end of BS 2076 was 116699. Find the rate of population growth per annum.
- The lengths of the sides of a triangle are in the ratio 3:4:5 and the perimeter is 48 cm, find the area of the triangle.
 - 64 solid iron spheres, each of radii x cm are melted to form a sphere of radius y cm. Find the ratio x : y .
 - The roof of a temple is in the shape of square based pyramid. The side length of base of roof is 8 m and slant height is 5m. Estimate the cost of zinc plates required to cover the roof at the rate of Rs 110 per sq. meter.

6. (a) Simplify: $\frac{7^{q+2} + 4 \times 7^q}{7^{q+1} \times 8 - 3 \times 7^q}$

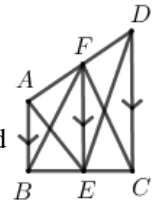
(b) Simplify: $\sqrt[3]{128} + 2\sqrt[3]{54} - \sqrt[3]{250}$

7. (a) Solve and check the solution of $\sqrt{x-2} + 3 = 0$.

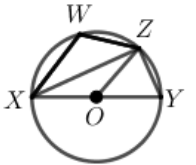
(b) Simplify: $\frac{a}{ab-b^2} + \frac{b}{ab-a^2}$

(c) Simplify: $\frac{m^2+1}{m+1} + \frac{m^2-m+1}{m^2-1}$

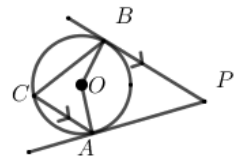
8. (a) In the given figure, $AB \parallel FE \parallel DC$ and E is the mid-point of BC . If the area of $\triangle BFE$ is 22.5 sq. cm, find the area of triangle AED.



- (b) In the given figure, O is the centre of the circle, and $\angle XYZ = 2 \angle YXZ$, find the measure of $\angle YOZ$ and $\angle XWZ$.



- (b) O is centre of circle given aside; AP and BP are tangents to the circle. If $\angle CAP = 125^\circ$, find $\angle ACB$.



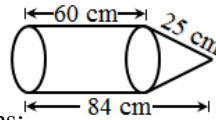
- In a parallelogram ABCD; $AB = 12$ cm and $BC = 18$ cm. If the area of the parallelogram is $108\sqrt{2}$ cm², find $\angle ABC$.
 - In a continuous series, the class where median lies is 30 – 36, the sum of frequencies (N) is 28, the cumulative frequency of pre-median class ($c.f.$) is 9 and the median (M_d) is 33, find the frequency of the median class.
- A marble is drawn at random from a bag containing 2 red marbles and 1 blue marble of same size and shape and at the same time a card is drawn from a pack of 52 playing cards. Find the probability of getting a blue marble as well as a faced card.
 - From a class having 20 boys and 15 girls, two students are selected randomly for the class captain and vice-captain. Show the probabilities of selecting a boy and a girl in a tree diagram.

Group-C**(10 × 4 = 40)**

11. In a survey, it was found that the ratio of number of people who liked 'Comedy Champion' and 'Voice of Nepal' is 5:4. Out of which, 45 people liked both the shows, 35 liked 'Voice of Nepal' but not 'Comedy Champion' and 65 liked none of the shows.
- (i) Represent the above information in a Venn-diagram.
 (ii) Find the number of people who participated in the survey.

12. The difference between the compounded interest compounded semi-annually and compound interest compounded annually on a sum of money is Rs. 220.25 at the rate of 10% per annum for 2 years. Find the sum.

13. Find the total surface area of the given solid.



14. Find the H.C.F. and L.C.M. of the following expressions:

$$x^3y + y^4, x^4 + x^2y^2 + y^4 \text{ and } 2ax^3 - 2ax^2y + 2axy^2$$

15. A farmer has vegetable garden of area 100sq. meter. He has only 30m barbed wire which sufficient to fence only three sides of the garden because his house compound wall is towards the length side of the garden. Find the length and breadth of his garden.
16. Prove that the parallelograms on the same base and between the same parallel lines are equal in area.
17. Construct a quadrilateral ABCD in which AB = BC = 5.5 cm, CD = DA = 4.5 cm and $\angle A = 60^\circ$. Also construct $\triangle ADE$ equal in area to the quadrilateral ABCD.
18. Verify experimentally that the opposite angles of a cyclic quadrilateral are supplementary. (Two circles of radii more than 3cm are necessary)
19. At the centre of a circular pond, there is a pole of 11.62m height above the surface of the water. From a point on the edge of the pond, a man of 1.62 m height observed the angle of the elevation of the top of the pole and found to be 30° . Find the diameter of the pond.
20. If the upper quartile of the following data is Rs 460, what will be the value of p ?

Daily wage (In Rs)	100-200	200-300	300-400	400-500	500-600
No. of workers	15	18	p	20	17

Group-D**(4 × 5 = 20)**

21. Mr. Rai had 8,000 USD when he was landing at Kathmandu from New York on 10th April 2019. He exchanged all his dollars into Nepali rupees and deposited all the rupees that exchanged with his dollars at a commercial bank at 10% per year compounded annually. For his business purpose, he needed to go UK. So, at the end of 2 years, he withdrew all his money from the bank and exchanged it in to the Pound Sterling on 10th April 2021. How much pounds did he get?

Date	Currency	Buying rate	Selling rate
10 th April 2019	USD 1	NRs 110.50	NRs 112.10
10 th April 2021	GBP 1	NRs 159.15	NRs 160.00

22. 12 identical metallic spheres; each of having diameter 10 cm are melted and recast a conical shape of height 15 cm and attached on the top of a temple. Estimate the cost of painting the surface of the cone with golden colour at Rs 1.50 per square centimetre. (Use $\pi=3.14$)
23. If $x^2 - 2 = 3^{\frac{2}{3}} + 3^{-\frac{2}{3}}$, show that:
- (i) $x = 3^{\frac{1}{3}} + 3^{-\frac{1}{3}}$
 (ii) $3x(x^2 - 3) = 10$
24. In a circle, chords PQ and TR are parallel. Q is joined to a point S on the circumference which lies between T and R such that $\angle PQT = \angle TQS$. Prove that TR = QS.

*** Best Wishes ***