Carmel Convent School

September Exam

Class 9

Subject: Mathematics **Total Marks: 80** **Time : 3 hours**

Instructions:

Question numbers 1 to 16 carry 1 mark each

Question numbers 17 to 20 carry 2 marks each

Question numbers 21 to28 carry 3 marks each

Question numbers 29 to 34 carry 4 marks each

Question numbers 35 and 36 are case study questions and carry 4 marks each

Section A

Q1. Product of $(\sqrt{10})$ $(\sqrt{15})$ is:

a) $6\sqrt{5}$
b) $5\sqrt{6}$
c) $\sqrt{25}$
d) $10\sqrt{5}$

Q2. Find one irrational number between 2 and $\frac{9}{2}$.

a) 1.0300303……

b) 3.010010001……

c) 4.6060060006…..

d) 1.505005000……..

Q3. Find zero of polynomial $x^2 - 81$

a) 9
b) -9
c) All of the above
d) None of the above

Q4. Complete the statement: $x^3+27=(x+3)$ (_____)

a) x^2+6-6x x^2+6-3x
b) x^2+9-6x x^2+9-3x
c) x^2-9+6x x^2-9-3x
d) x^2+3-6x x^2+3-3x

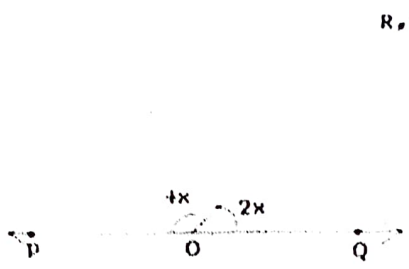
Q5. Find the quadrants where the coordinates of abscissa and ordinate have different signs.

a) I,II
b) I,III
c) I,IV
d) II,IV

Q6. Equation $5x + 2y = 0$ has how many solutions?

a) No solution
b) One solution
c) Two solutions
d) Infinitely many solutions

Q7. Find value of smaller angle:



a) 30
b) 60
c) 120
d) 45

Q8. An angle is half of it's complementary angle. Find the angles

a) 45,90
b) 60,30
c) 20,40
d) 25,65

Q9. Find area of equilateral triangle with sides 6cm

a) $6\sqrt{3}$
b) $9\sqrt{3}$
c) $6\sqrt{3}/4$
d) $12\sqrt{3}$

Q10 Factors of $x^2 + 3\sqrt{2}x + 4$ are:

a) $(x-2\sqrt{2})(x+2\sqrt{2})$
b) $(x+2\sqrt{2})(x-\sqrt{2})$
c) $(x+2\sqrt{2})(x+\sqrt{2})$
d) $(x-2\sqrt{2})(x-\sqrt{2})$

Section D

Q29

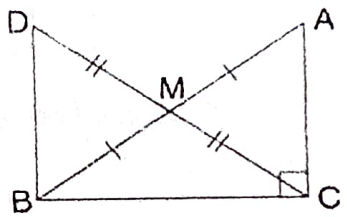
Draw a histogram of the following distribution table:

Marks obtained	No of students
0 – 10	4
10 – 20	8
20 – 40	20
40 – 45	10
45 – 60	12
60 – 70	6
70 - 80	10
Total	70

Q30 In right triangle ABC right angled at C,M is mid point of hypotenuse AB.C is joined to M and produced to point D such that DM=CM. Point D is joined to point B Show that

a) Triangles AMC is congruent to triangle BMD

b) Angle DBC is a right angle

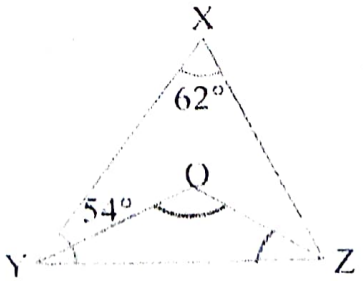


Q31 Factorise using identities:

a) $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy - 4\sqrt{2}yz + 8zx$

b) $x^2 - \frac{y2}{400}$

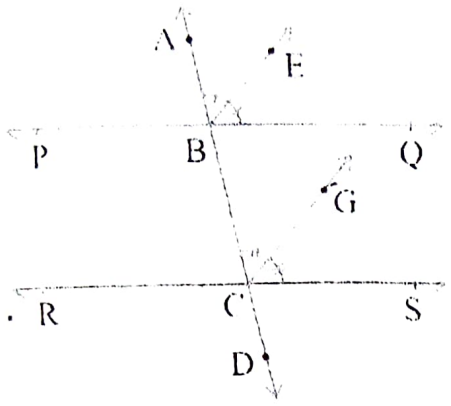
Q32 Angle XYZ=54^0 and angle YXZ=62^0 OY and OZ are angle bisectors of angle XYZ and angle XZY of triangle XYZ Find angle OZY



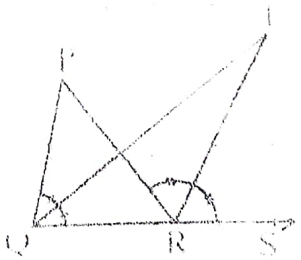
Q33. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are para then prove that the two lines are parallel

With reference to the figure give proof under following headings:

Given, To prove , and proof.

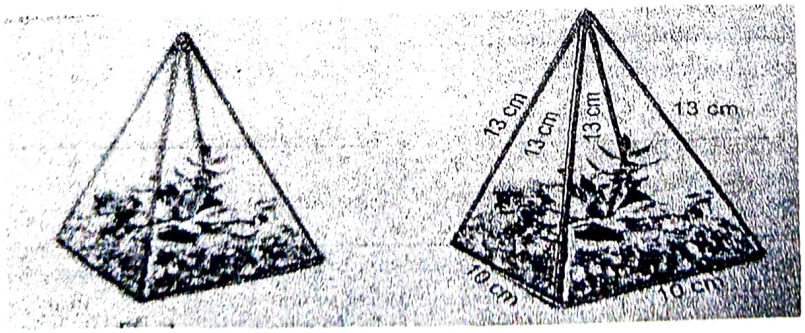


Q34Side QR of triangle PQR is produced to point S. If the bisectors of angle PQR and angle PRS meet at point T, then prove that angle QTR = $\frac{1}{2}$ angle QPR

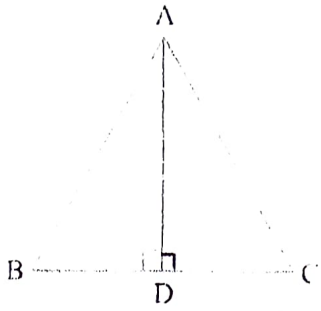


SectionE (Case study)

Q35 Ruhi bought a glass pyramid planter with square base for her office.She grew Cacti in it and used it as centre piece in her office. Use the measurements of its glass frames and answer the following questions:



Q19. In triangle ABC, AD is perpendicular bisector of BC. Show that triangle ABC is an isosceles triangle.



Q20. Draw graph of linear equation $5x+2y=16$

Section C

Q21 If $a=1+\sqrt{7}$, find value of $-6/a$ $1-\sqrt{7}$

Q22 Answer the following:

a) What is the name of horizontal and the vertical lines drawn to determine the position of any point on cartesian plane

b) What is the name of each part of the plane formed by these lines.

c) Write the name of the point where these two lines meet.

Q23 Factorise: $2x^5 + 432x^2y^3$

Q24 $\frac{1}{\sqrt{7}-2} = a+b\sqrt{7}$ find a and b

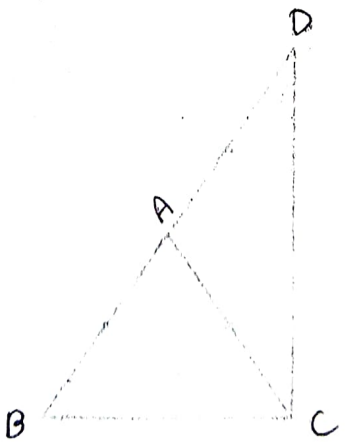
Q25 Prove that if two lines intersect each other than the vertically opposite angles are equal

Q26 Find value of k if x-1 is a factor of p(x)

$P(x) = x^3 - 2x^2 - x + 2 + K$

Q27 Expand: $(4a-2b-3c)^2$

Q28 ABC is an isosceles triangle in which AB=AC. Side BA produced to D such that AD=AB. Show that angle BCD is a right triangle.



Q11. In triangle ABC, BC=AB and angle B=80^0, Find angle A

a) 80^0
b) 40^0
c) 50^0
d) 100^0

Q12. If a transversal intersects two parallel lines, then which pair of angles is supplementary

a) Corresponding angles
b) Alternate angles
c) Vertically opposite angles
d) Co interior angles

Q13. A linear pair has three angles x, y and z such that y/x=3,z/x=5 find x

a) 30
b) 40
c) 20
d) 10

Q14. Which of the following is solution of the equation 3y=4x

a) X axis
b) Y axis
c) Origin
d) (',1)

Q15. Point (3,+5 lies)

a) In first Quadrant
b) On x axis
c) In second quadrant
d) In third quadrant

Q16. In triangle PQR, angle R= angle P and QR=4cm and PR=5cm. Then the length of PQ is

a) 4cm
b) 5cm
c) 2cm
d) 2.5cm

Section B

Q17 Factorise:

$$27a^3 + \frac{1}{64b^3} + \frac{27a^2}{4b} + \frac{9a}{16b^2}$$

Q18. Express 0.999999..... in the form of p/q

Q1. Area of each triangular glass frame is:

a) 600 sq cm
b) 60 sq cm
c) 360 sq cm
d) 3600sq cm

Q2 Total length of the brass frame wire used to connect all side walls and the base is

a) 52 cm
b) 40 cm
c) 92 cm
d) 120 cm

Q3 If brass frame is brought at the rate of Rs .7 per cm then the cost of brass frame is:

a) Rs 64.40
b) Rs 644
c) Rs 364
d) Rs 280

Q4 Consider another triangle with side lengths 5cm,12cm,13cm Its area is numerically

a) equal to its perimeter

b) greater than its perimeter

c)smaller than its perimeter

d)none of these

Q36. Some companies pay bonus to their employees on the basis of their salary structure. Data shows salaries in thousand of 8 employees of a company from lowest to highest:

32,40,40,48,48,56,56

A person having Rs 32000 as salary left the job and new employee with Rs 36000 salary joined.

Q1) What is the range of salaries?

a) Rs 24
b) Rs 24000
c) Rs 36
d) Rs 36000

Q1. Area of each triangular glass frame is:

a) 600 sq cm
b) 60 sq cm
c) 360 sq cm
d) 3600sq cm

Q2Total length of the brass frame wire used to connect all side walls and the base is

a) 52 cm
b) 40 cm
c) 92 cm
d) 120 cm

Q3 If brass frame is brought at the rate of Rs .7 per cm then the cost of brass frame is:

a) Rs 64.40
b) Rs 644
c) Rs 364
d) Rs 280

Q4Consider another triangle with side lengths 5cm,12cm,13cm Its area is numerically

a) equal to its perimeter

b) greater than its perimeter

c)smaller than its perimeter

d)none of these

Q36.Some companies pay bonus to their employees on the basis of their salary structure. Data shows salaries in thousand of 8 employees of a company from lowest to highest:

32,40,40,48,48,56,56

A person having Rs 32000 as salary left the job and new employee with Rs 36000 salary joined.

Q1)What is the range of salaries?

a) Rs 24
b) Rs 24000
c) Rs 36
d) Rs 36000