



Brilliant Public School

Seepat Road Bahatarai, Bilaspur (C.G.)

Final Term Assessment - 2018-19

Class – IX

Subject - Mathematics

TIME: 3:00Hrs.
Date: 02.03.2019

M.M.80
Saturday

General Instructions:

- All questions are **compulsory**
- The question paper consists of **30** questions divided into four **sections-A, B, C and D**. **Section-A** comprises of **6** questions of **1mark** each, **section-B** comprises of **6** questions of **2** marks each, **Section-C** comprises of **10** questions of **3 marks** each, **Section-D** comprises of **8** questions of **4** marks each.
- There is no overall choice in this question paper
- Use of calculator is not permitted. (v) Two questions of graph to be done in 1 sheet.

SECTION-A (1 mark each)

Q.1 Express $0.4\bar{7}$ in form $\frac{p}{q}$.

Q.2 Find the zero of the polynomial $p(x) = 3x - 2$.

Q.3 Find the volume of a sphere whose radius is 0.21cm.

Q.4 Is it possible to construct a triangle with lengths of its sides as 7 cm, 8 cm and 5 cm? Give reason for your answer.

Q.5 Find the probability of getting a composite number on the upper face of a die?

Q.6 Prove that the sum of the angles of a triangle is 180°

SECTION-B (2 mark each)

Q.7 The taxi fare in a city is as follows. For the first kilometre, the fare is Rs 8, for the subsequent distance it is Rs 5 per km. Taking the distance covered as x km and the total fare as Rs y , write a linear equation for this information.

Q.8 If a point C lies between two points A and B such that $AC=BC$, then prove that $AC = \frac{1}{2} AB$. Explain by drawing the figure.

Q.9 Find the area of a triangle in which two sides are 18cm and 10cm and the perimeter is 42cm.

Q.10 The mean of 40 observations was 160. It was detected on rechecking that the value of 165 was wrongly copied as 125 for computation of mean. Find the correct mean.

Q.11 The angles of quadrilateral are in the ratio 3: 5 : 9 : 13. Find all the angles of the quadrilateral.

Q.12 Draw and show that there is one and only one circle passing through three given non-collinear points.

SECTION-C (3 mark each)

Q.13 Visualise $4.\overline{26}$ on the number line, up to 4 decimals places.

OR

Simplify: $-\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225}$

Q.14 Factorise the expression by splitting the middle term:

$$9(x-2y)^2 - 4(x-2y) - 13.$$

Q.15 If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 4x + a$ leaves the same remainder when divided by $x - 2$, find the value of a .

OR

The polynomial $p(x) = x^4 - 2x^3 + 3x^2 - ax + 3a - 7$ when divided by $x + 1$ leaves the remainder 19. Find the value of a . Also find the remainder when $p(x)$ is divided by $x + 2$.

Q.16 A conical tent is 10m high and the radius of its base is 24m. Find

- slant height of the cone.
- cost of the canvas required to make the tent, if the cost of 1 m^2 canvas is Rs 70.

Q.17 In which quadrant or on which axes do each of the points $(-2,4)$, $(3,-1)$, $(-1,0)$, $(1,2)$, $(0,-3)$ and $(-3,-5)$ lie? Write the co-ordinates of origin. Also write the equation of x and y axis.

Q.18 Find the area of quadrilateral ABCD, in which $AB=7\text{cm}$, $BC=6\text{cm}$, $CD=12\text{cm}$, $DA=15\text{cm}$, and $AC=9\text{cm}$.

OR

The sides of triangular field are 41 m, 40 m and 9 m. find the number of rose beds that can be prepared in the field, if each rose bed on an average need 900 cm^2 space?

Q.19 Three coins are tossed simultaneously 200 times with the following frequencies of different outcomes:

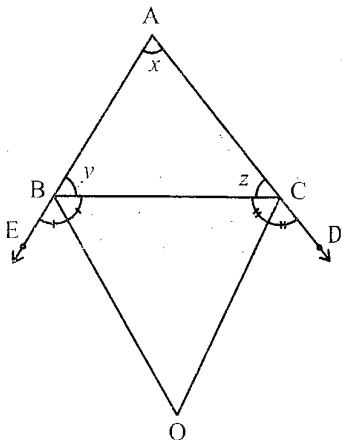
Outcome	3 heads	2 heads	1 head	No head
Frequency	23	72	77	28

If the three coins are simultaneously tossed again, compute the probability of

- 2 heads coming up.
- At least 2 heads coming up.
- 2 tails coming up.

Q.20 In the given figure, the sides AB and AC of triangle ABC are produced to points E and D respectively.

If the bisectors BO and CO of $\angle CBE$ and $\angle BCD$ meet at point O, then prove that $\angle BOC = 90^\circ - \frac{1}{2} \angle BAC$.

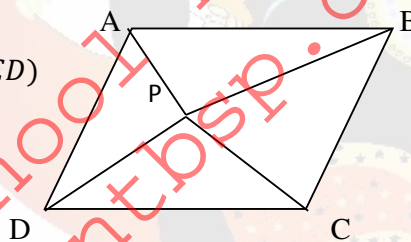


Q.21 Show that the diagonals of a parallelogram divide it into four triangles of equal area.

OR

In the given figure, p is point in the interior of the parallelogram ABCD. Show that:

- (i) $ar(APB) + ar(PCD) = \frac{1}{2} ar(ABCD)$
 (ii) $ar(APD) + ar(PBC) = ar(APB) + ar(PCD)$



Q.22 ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If $\angle DBC = 70^\circ$, $\angle BAC = 30^\circ$, find $\angle BCD$. Further, if $AB=AC$, find $\angle ECD$.

SECTION-D (4 mark each)

Q.23 If $x = \frac{2-\sqrt{5}}{2+\sqrt{5}}$ and $y = \frac{2+\sqrt{5}}{2-\sqrt{5}}$, find $x^2 - y^2$.

OR

Simplify: $\frac{7\sqrt{3}}{\sqrt{10} + \sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6} + \sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15} + 3\sqrt{2}}$.

Q.24 If $x^4 + \frac{1}{x^4} = 47$. Find the value of $x^3 + \frac{1}{x^3}$.

Q.25 A linear equation is given that converts Fahrenheit to Celsius:

$$F = \left(\frac{9}{5}\right)C + 32$$

- Draw the graph of the given linear equation.
- If the temperature is $95^\circ F$, what is the temperature in Celsius?
- Is there a temperature which is numerically same in both Fahrenheit and Celsius? If yes, find it.

Q.26 Find

- The lateral or curved surface area of a closed cylindrical petrol storage tank that is 4.2m in diameter and 4.5m high.
- how much steel was actually used, if $\frac{1}{12}$ of the steel actually used was wasted in making the tank.

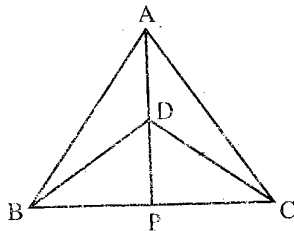
Q.27 100 surnames were randomly picked from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

Number of letters	Number of surnames
1 - 4	6
4 - 6	30
6 - 8	44
8 - 12	16
12 - 20	4

- Draw a histogram to depict the given information.
- Write the class interval in which the maximum number of surnames lie.

Q.28 $\triangle ABC$ and $\triangle DBC$ are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at P, then show that

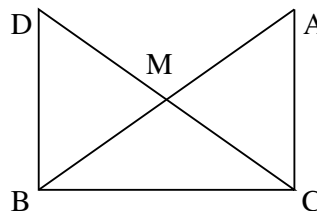
- $\triangle ABD \cong \triangle ACD$
- $\triangle ABP \cong \triangle ACP$
- AP bisects $\angle A$ as well as $\angle D$.
- AP is the perpendicular bisector of BC.



OR

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

- $\triangle AMC \cong \triangle BMD$
- $\angle DBC$ Is a right angle.
- $\triangle DBC \cong \triangle ACB$
- $CM = \frac{1}{2} AB$



Q.29 Prove that the line segment joining the mid points of any two sides of a triangle is parallel to the third side and equal to half of it.

Q.30 Construct a triangle XYZ in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and $XY + YZ + ZX = 11\text{cm}$.

OR

Construct a $\triangle ABC$ in which $BC = 5.6\text{cm}$, $AC - AB = 5.6\text{cm}$ and $\angle B = 45^\circ$. Justify your construction.

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