CBSE Class 9 Maths

SAMPLE QUESTION PAPER - 6

Self Assessment

Time : 3 Hours **Maximum Marks : 90**

SECTION 'A'

Question numbers 1 to 4 carry one mark each. For each question four alternative choices have been provided of which only one is correct. You have to select the correct choice.

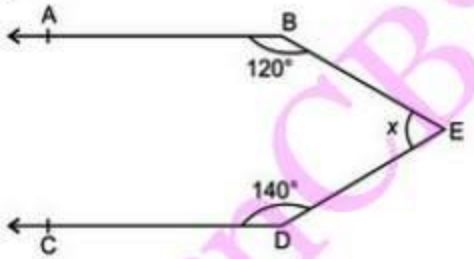
1. **The $\frac{p}{q}$ form of 0.777..... , where p and q are integers, $q \neq 0$ is :**

   (A) $\frac{77}{90}$ **(B)** $\frac{7}{10}$ **(C)** $\frac{7}{9}$ **(D)** $\frac{77}{99}$

2. **The factors of $a^3 - 1$ are :**

   (A) $(a-1), (a^2+a-1)$ **(B)** $(a+1), (a^2-a+1)$ **(C)** $(a+1), (a^2-a-1)$ **(D)** $(a-1), (a^2+a+1)$

3. **In the figure $AB \parallel CD$, find the value of x.**



   (A) 100° **(B)** 120° **(C)** 80° **(D)** 110°

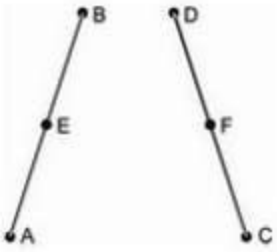
4. **The degree of the polynomial $(5 - x^3)(x^2 + 3x + 2)$ is :**

   (A) 5 **(B)** 3 **(C)** 4 **(D)** 1

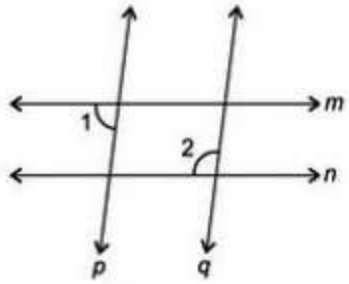
SECTION 'B'

Question numbers 5 to 10 carry two marks each.

5. Express $\frac{2157}{625}$ in decimal form and state whether it is teminating or not.
6. Evaluate : 249×251 by using indentities
7. Factorise : $343p^3 - 1331b^3$.
8. In figure, $AE = DF$, E is the mid-point *of* AB and F is the mid-point of DC. Using an Euclid's axiom, show that $AB = DC$.



9. In the given figure $m \parallel n$ and $p \parallel q$. If $\angle 1 = 75°$, then prove that $\angle 2 = \angle 1 + \frac{1}{3}$ of right angle.



10. The sides of a triangle are 5 cm, 12 cm and 13 cm. Find the length of perpendicular from the opposite vertex to the side whose length is 13 cm.

SECTION 'C'

Question numbers 11 to 20 carry three marks each.

11. Express $0.3\overline{28}$ in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

12. Simplify $\left[\left[5\left\{\left(\frac{1}{8}\right)^{-\frac{1}{3}} + \left(\frac{1}{27}\right)^{-\frac{1}{3}}\right\}\right]^2\right]^{\frac{1}{4}}$

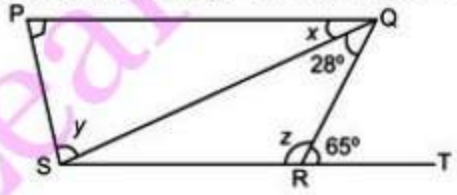
13. If $\left(x + \frac{1}{x}\right) = 3$, find the value of $x^3 + \frac{1}{x^3}$.

OR

If $p(x) = x^3 + 3x^2 - 2x - 4$, find the value of $p(-2) + p(1) + p(0)$

14. Factorise : $7(2x - y)^2 - 25(2x - y) + 12$

15. In the given figure, $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28°$ and $\angle QRT = 65°$. Find the values of x, y and z.



OR

Read the following statement :

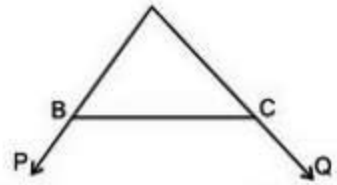
"A square is a polygon made up of four line segments, out of which, length of three line segments are equal to the length of fourth one and all its angles are right angles."

(i) Define the terms used in this definition which you feel necessary. Is there any undefined term in this ? Can you justify that all angles and sides of a square are equal ?

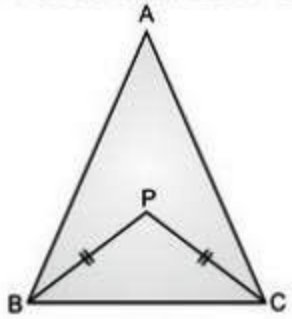
(ii) Which mathematical concept is used in this problem ?

(iii) What is its value ?

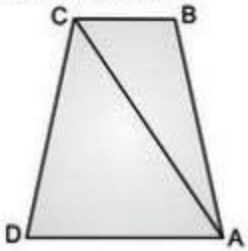
16. Sides AB and AC of triangle ABC are extended to P and Q respectively. If $\angle PBC < \angle QCB$, prove that $AC < AB$.



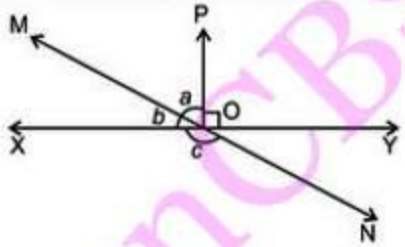
17. In the given figure, $AB = AC$, $BP = PC$. Prove that $\angle ABP = \angle ACP$.



18. In the figure, prove that $CD + DA + AB + BC > 2AC$.



19. In the figure, lines XY and MN intersect at O. If $\angle POY = 90°$ and $a : b = 2 : 3$, find the value of c.



20. A park, in the shape of a quadrilateral $ABCD$ has $\angle C = 90°$, $AB = 9$ m, $BC = 12$ m, $CD = 5$ m and $AD = 8$ m. How much area does it occupy ?

SECTION 'D'

Question numbers 21 to 31 carry four marks each.

21. If $x = \dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, find $x^2 + y^2$.

OR

Prove that : $\left(\dfrac{x^{a^2}}{x^{b^2}}\right)^{\frac{1}{a+b}} \left(\dfrac{x^{b^2}}{x^{c^2}}\right)^{\frac{1}{b+c}} \left(\dfrac{x^{c^2}}{x^{a^2}}\right)^{\frac{1}{c+a}} = 1$

22. If $x = \frac{1}{2-\sqrt{3}}$, find the value of $2x^2 + 7x + 5$.

23. By using factor theorem, factorise : $x^3 + x^2 - 4x - 4$.

24. Without actual division, show that $f(x) = 2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly divisible by $x^2 - 3x + 2$.

25. Given $a + b + c = 5$, $ab + bc + ca = 10$, then prove that $a^3 + b^3 + c^3 - 3abc = -25$

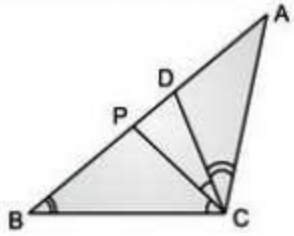
26. **(i)** Plot the points (x, y) given in the following co-ordinating table on the plane choosing suitable units of distance on the axes.

x	–2	–1	0	1	3
y	8	7	–1.25	3	–1

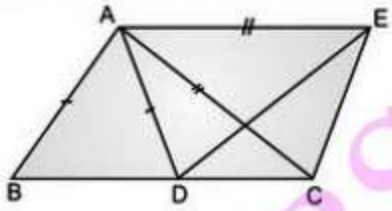
(ii) Which mathematical concept is used in this problem ?

(iii) Which value is depicted in this problem ?

27. In the given figure, $\angle ACD = \angle ABC$ and CD bisect $\angle BCD$. Prove that $\angle APC = \angle ACP$.

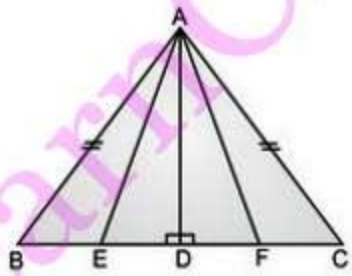


28. In the given figure, $AC = AE$, $AB = AD$, $\angle BAD = \angle EAC$. Show that $BC = DE$.



OR

In the given figure, $AB = AC$, $AD \perp BC$, E is the mid-point of BD and F is the mid-point of DC. Prove that : $\Delta ABE \cong \Delta ACF$

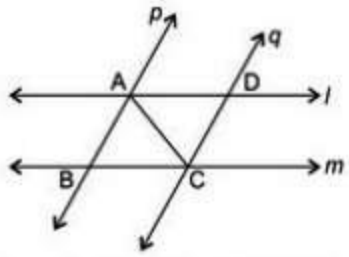


29. l and m are two parallel equal lines intersected by another pair of parallel lines p and q (see figure):

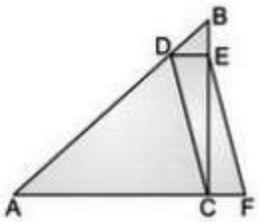
(i) Show that : $\Delta ABC \cong \Delta CDA$.

(ii) Which mathematical concept is used in this problem ?

(iii) What is its value ?



30. In figure, $\angle ACB$ is a right angle and $AC = CD$ and $CDEF$ is a parallelogram. If $\angle FEC = 10°$, then calculate $\angle BDE$.



31. The triangular side walls of a flyover have been used for advertisements. The sides of the walls are 122 m, 22 m, and 120 m (see figure). The advertisements yield an earning of ₹ 5000 per m^2 for year. A company hired one of its walls for 3 months. How much rent did it pay ?