SECTION-A

Question numbers **1** to **4** carry one mark each

1 Simplify : $\sqrt[4]{\sqrt[3]{2^2}}$ 1

2 If $x^{51}+51$ is divided by $x+1$, then find the remainder. 1

3 Is Δ ABC possible, if AB = 6 cm, BC = 4 cm and AC = 1.5 cm ? 1

4 In which quadrants the points X(−3, 3) and Y(−3, −2) lie ? 1

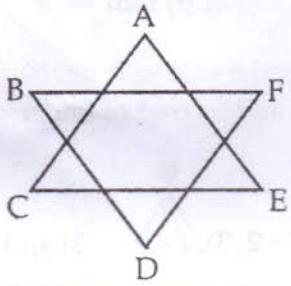
SECTION-B

Question numbers **5** to **10** carry two marks each.

5 Express $2.\bar{8}$ in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$. 2

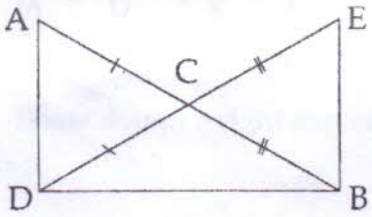
6 Verify whether the following are zeroes of the polynomial, indicated against them : $p(x)$ 2
$= 2x^2-3,\ x=\sqrt{\frac{2}{3}}, x=\sqrt{\frac{3}{2}}$

7 2



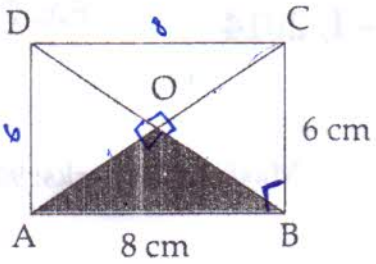
In figure, prove that $\angle A+\angle B+\angle C+\angle D+\angle E+\angle F=360°$.

8 In the given figure, AC = DC and CB = CE. Show that AB = DE. Write the Euclid's axiom 2
to support this.



9 Using Heron's formula find the area of an isosceles right angled triangle whose one side is 2
7 m greater than its equal side and perimeter is 70 m.

10 In the given figure, ABCD is rectangle in which AB = 8 cm, BC = 6 cm and the diagonals intersect each other at O. Find the area of the shaded region by using Heron's formula. 2



SECTION-C

Question numbers **11** to **20** carry three marks each.

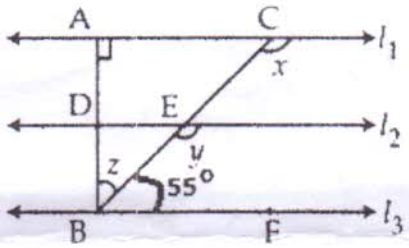
11 If $a = 2+\sqrt{5}$ and $b = \frac{1}{a}$, find a^2+b^2 3

12 Find the value of $\left(\frac{64}{125}\right)^{-2/3} + \frac{1}{\left(\frac{256}{625}\right)^{1/4}} + \frac{\sqrt{25}}{\sqrt[3]{64}}$. 3

13 If $x^2 + y^2 = 29$ and $xy = 10$, then find the value of $x^3 - y^3$. 3

14 If one zero of the polynomial $2x^3 + 5x^2 - x - 6$ is 1, then factorise the polynomial completely. 3

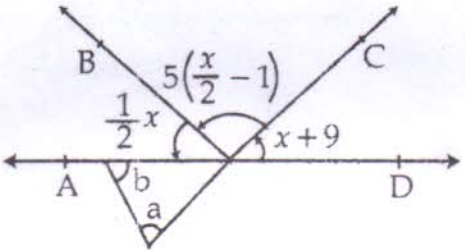
15 Prove that the angles opposite to equal sides of a triangle are equal. 3

16 

3

In figure $l_1 \| l_2$ and $l_2 \| l_3$. $AB \perp l_1$ and $\angle CBF = 55°$. Find the values of x, y and z.

17 If the bisector of the exterior angle C of a ΔABC is parallel to the side AB, then prove that the triangle ABC is an isosceles triangle. 3

18 

3

In the given figure, find $a + b$.

19 Draw a trapezium ABCD in which vertices A, B, C and D are (4, 6), (−2, 3), (−2, −3) and (4, −7) respectively. 3

20 Locate the points A(1, 6), B(0, 4), C(7, 0), D(−2, −2), E(4, −1), F(2, −3), G(−1, 1) and H(−2, −3) in the cartesian plane. 3

SECTION-D

Question numbers **21** to **31** carry four marks each.

21 If $x = \dfrac{\sqrt{p+2q} + \sqrt{p-2q}}{\sqrt{p+2q} - \sqrt{p-2q}}$, show that $qx^2 - px + q = 0$ 4

22 Simplify : $\frac{3\sqrt{2}}{\sqrt{6}-\sqrt{3}} + \frac{2\sqrt{3}}{\sqrt{6}+\sqrt{2}} - \frac{4\sqrt{3}}{\sqrt{6}-\sqrt{2}}$ 4

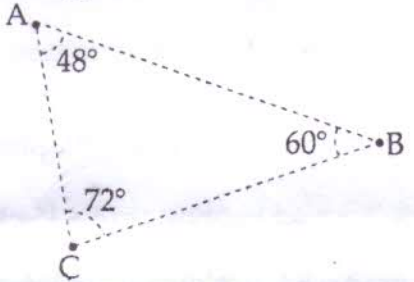
23 If $x-y=5$ and $xy=9$, find the value of x^3-y^3. 4

24 Show by long division that $2x+3$ is a factor of $p(x)=4x^4+8x^3+5x^2+x-3$. 4

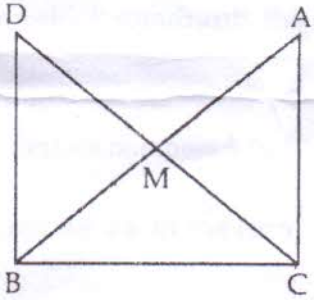
25 A and B be the remainders when the polynomials $x^3+2x^2-5ax-7$ and $x^3+ax^2-12x+6$ are divided by $x+1$ and $x-2$ respectively and $2A+B=6$, find the value of a. 4

26 Factorise : x^3-3x^2-9x-5 4

27 As shown in figure, three towns form a triangle on a map. 4
The angle formed at the point designating A is 48°, at B 60°, and at C 72°.
Which distance among AB, BC and AC is largest and why?
Govind is travelling from Place A to B to C. He asked driver to use CNG gas instead of Petrol and diesel. Why do you think he opted for CNG? What value is he showing by doing so ?



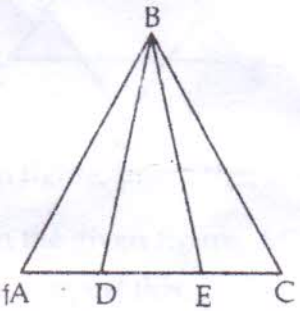
28 4



In given figure, ΔABC is right angled at C and M is the middle point of hypotenuse AB.C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to B. Show that (i) $\Delta AMC \cong \Delta BMD$ and (ii) $\angle DBC = 90°$.

29 Prove that two triangle are congruent if two angles and the included side of one triangle is equal to two angles and the included side of the other triangle. 4

30 4



In figure, $AB = BC$ and $AD = EC$, then show that $\Delta ABE \cong \Delta CBD$.

31 Show that in a right angled triangle the hypotenuse is the longest side. 4