26.09.14 EQQ08WD

SUMMATIVE ASSESSMENT – I, 2014
MATHEMATICS
Class – IX

Time Allowed: 3 hours **Maximum Marks: 90**

General Instructions:

1. All questions are **compulsory**.
2. The question paper consists of 31 questions divided into four sections A, B, C and D. Section-A comprises of 4 questions of 1 mark each; Section-B comprises of 6 questions of 2 marks each; Section-C comprises of 10 questions of 3 marks each and Section-D comprises of 11 questions of 4 marks each.
3. There is no overall choice in this question paper.
4. Use of calculator is not permitted.

SECTION-A

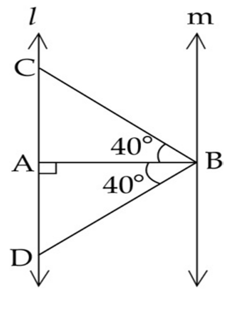
Question numbers **1** to **4** carry one mark each

1	Find the value of $\sqrt[4]{(36)^{-2}}$.	1
2	Factorise : $8y^3 - 125x^3$	1
3	Is Δ ABC possible, if $\angle A = 50°$, $\angle B = 130°$ and $\angle C = 40°$?	1
4	In which quadrant does the point (2, 3) lie ?	1

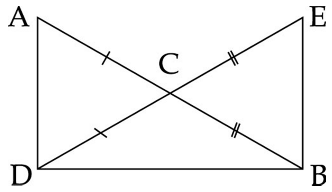
SECTION-B

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

5	Write $\frac{3}{13}$ in decimal form and state what kind of decimal expansion does it have ?	2
6	If $a + b = 10$ and $ab = 16$, then find $a^2 + b^2$.	2
7	In the figure, $l \| m$. If $\angle ABC = \angle ABD = 40°$ and $\angle A = 90°$, then prove that ΔBCD is isosceles.	2



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



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

10 Plot B(3, −4) on the graph paper. Also, plot reflections of B in x - axis and y - axis. 2

SECTION-C

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

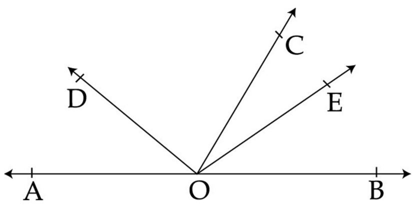
11 If $a = 3 - 2\sqrt{2}$, then find the value of $a^2 - \frac{1}{a^2}$. 3

12 Simplify : $27^{\frac{1}{3}}\left[27^{\frac{1}{3}} - 27^{\frac{2}{3}}\right]$. 3

13 Express -0.00875 in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$. 3

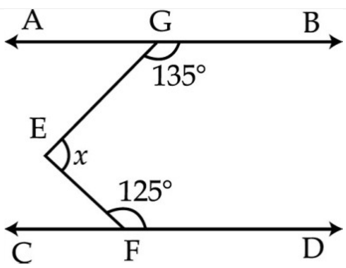
14 Find three irrational numbers between $\frac{5}{7}$ and $\frac{9}{11}$. 3

15 In the given figure, AOB is a straight line and ray OC stands on it. Bisectors of $\angle AOC$ and $\angle COB$ are OD and OE respectively. If $\angle DOC = x$, find $\angle COE$. 3

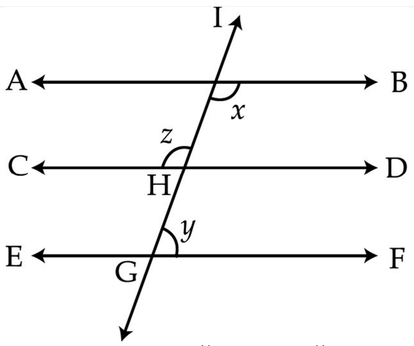
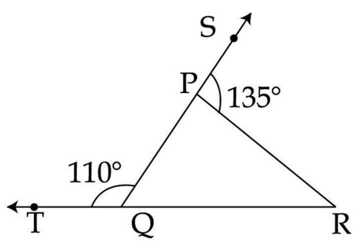


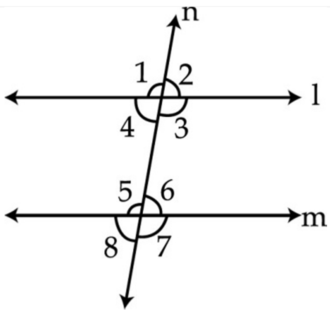
16 Prove that two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle. 3

17 3



In Figure, AB||CD, then find x.

18	 In figure, if AB$\|$CD, CD$\|$EF and $x:y = 5:4$, find z.	3
19	A field is in the shape of a trapezium whose parallel sides are 10 m and 25 m. If non – parallel sides are 13 m and 14 m, find the area of the field.	3
20	Find the area of a triangle whose sides are 5 cm, 12 cm and 13 cm. Also, find the shortest altitude.	3
	SECTION-D	
	Question numbers **21** to **31** carry four marks each.	
21	Simplify : $\frac{2}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{2}} - \frac{3}{\sqrt{5}+\sqrt{2}}$.	4
22	If $x = \frac{\sqrt{p+2q} + \sqrt{p-2q}}{\sqrt{p+2q} - \sqrt{p-2q}}$, then show that $q(x^2+1) = px$.	4
23	Factorise : $x^{12} - y^{12}$.	4
24	If $x = 4 - \sqrt{15}$, find the value of $\left(x + \frac{1}{x}\right)^2$.	4
25	Find the value of the polynomial $p(x) = x^4 - 4x^3 + 3x^2 - 1$ at $x = 1, -\frac{1}{3}, \frac{1}{2}$ and -2.	4
26	Factorise : $x^3 + 13x^2 + 32x + 20$	4
27	To protect poor people from cold weather, Ram Lal has given his land to make a Shelter home for them. What value is being exhibited by him ? In the given fig, sides QP and RQ of ΔPQR are produced to point S and T respectively. If $\angle PQT = 110°$ and $\angle SPR = 135°$, find $\angle PRQ$ 	4

	28	Show that in a right triangle the hypotenuse is the longest side.	4
	29	If ΔABC is an isosceles triangle with $AB = AC$, side BA is produced to D such that $AB = AD$. Prove that ΔBCD is a right triangle.	4
	30	 In figure if l‖m and $\angle 1 = (2x + y)°$; $\angle 4 = (x + 2y)°$ and $\angle 6 = (3y + 20)°$. Find $\angle 7$ and $\angle 8$.	4
	31	Show that the sum of the three altitudes of a triangle is less than the sum of the three sides of a triangle.	4