SUMMATIVE ASSESSMENT – I, 2016-17 RRQOKMY

MATHEMATICS Class – IX

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

SECTION – A

1. If x = $\frac{1}{2\sqrt{7}}$ then find the value of $x^2 + \frac{x}{2\sqrt{7}} + 1$

2. Factorize $4x^2 - \frac{1}{y^2}$

3. Write ASA congruence rule for two triangles.

4. Find the measure of angle complementary to itself.

SECTION – B

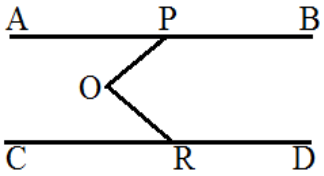
5. Add $2\sqrt{2} + 5\sqrt{3}$ and $\sqrt{2} - 3\sqrt{3}$. Is the sum a rational number or an irrational number?

Extra : 5a. Find the co-ordinates of the vertices of the square ABCD when its side is "a" and AB and AD lie on axes.

6. Find the value of a if x – 1 is factor of $2x^2 + ax + \sqrt{2}$

7. In fig , C is midpoint of AB and D is midpoint of AC show that AD = ¼ AB

8. In fig, AB II CD ,<APO = 35^0 and < ORD = 135^0 Find <POR



9. Two sisters Reena and Sheena are at equal distances from a jewellary box. If the jewellary box is considered at origin and position of Reena is (0, 7), then find the coordinates of position of Sheena when ordinate is zero. Show these points on coordinate axes.

10. The semi perimeter of triangle is 132 cm and product of the difference of semi perimeter and its respective sides is 13200. Find area of triangle

SECTION-C

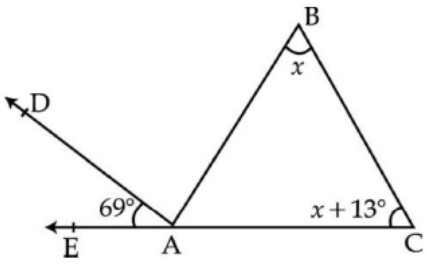
11. Locate $5\sqrt{2}$ on number line

12. if $2^x \left[\left(\frac{256}{81}\right)\right]^{\frac{1}{4}} = \frac{64}{9}$ find value of x

13.If $x^2 + y^2 = 68$ and $x - y = 6$ find $x^3 - y^3$

14. Simplify: $xy\left[x + y\left(\frac{1}{x} - \frac{1}{y}\right) + \frac{2x}{y}\right]$

15. In the given figure <CAB : <BAD = 1 : 2, find all the internal angles of ABC.



16. Show that $\frac{1}{3}$ and $\frac{4}{3}$ are zero of $9x^3 - 6x^2 - 11x + 4$. Also find the third zero of polynomial

17. AB is a line segment and l is its perpendicular bisector. If a point p lie on l. Show that p is equidistant from A and B

18. Prove that $x^4 + 2x^3 + 3x^2 - 38x + 32$ is exactly divisible by $x^2 - 3x + 2$

19. Find the perimeter of isosceles right triangle having an area $100cm^2$

20. The sides of a triangle are x, x + 1 and 2x + 1. Its area is $x\sqrt{10}$. Find the value of x

SECTION – D

21. Rationalize the denominator of the following: $\frac{3}{\sqrt{3}+\sqrt{5}-\sqrt{2}}$

22. Factories : $y^3 - 2y^2 - 29y - 42$ using factor theorem.

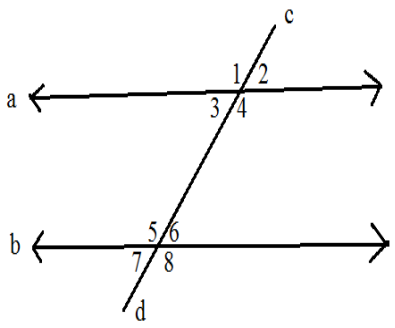
23. Find the value of a and b if $\frac{\sqrt{7}-1}{\sqrt{7}+1} - \frac{\sqrt{7}+1}{\sqrt{7}-1} = a + b\sqrt{7}$

24. Find what must be subtracted from $2x^4 - 4x^3 + 4x^2 - 4x + 3$ so that obtained polynomial is exactly divisible by $x^2 + x + 1$

25.if (x - 1) and (x + 2) are factor of $x^3 + 3x^2 - 3\alpha x + \beta$, then find α and β

26. If x and y are two positive real number such that $216x^3 - 343y^3 = 1385$ and $6x^2y - 7xy^2 = 10$, then find the value of 6x – 7x

27. Builder has made a layout of a colony so that lane 'a' is parallel to lane 'b'? In between "a" and "b" He also plans to leave green area as shown in the figure. What value is he showing by doing so? if measure of<1 = 120^0 . Find the measure of all angles.



Extra practice: Value based questions

27.b. For spreading the message "Save Girl Child Save Future" a rally was organized by some students of a school. They were given triangular cardboard piece PQR which they divided in to three part to make design and write slogan by drawing the angle bisector. PM of angle P and perpendicular PN to base QR.

Prove that : < MPN = $\frac{1}{2}$ ($< Q - < R$) where $< Q > < R$. What is the benefit of these type of rallies?

27.c. For spreading the message "Save Girl Child Save Future" a rally was organized by some students of a school. They were given triangular cardboard piece ABC which they divided in to two by drawing angle bisector OB and OC of base angle B and C to make a design and write slogan Prove that : < BOC = $90^0 - \frac{1}{2} < A$. What is the benefit of these type of rallies?

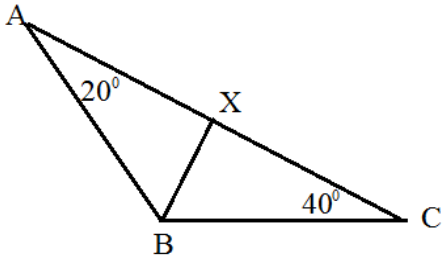
27.d. Residence Welfare Association planned to make a rectangular playground for children in their colony. What value are they exhibiting by doing so? What is the relation between all angles of rectangles? State the Euclid axiom used here. Also give any two other axioms.

28. ABC and BCD are two isosceles triangle with on the same base BC such that A and D lies on the opposite of BC. Show that AD is the perpendicular bisector of BC.

Extra: 28. b. ABC and BCD are two isosceles triangle with on the same base BC such that A and D lies on the same side of BC. AD is extended to meet BC at P Show that : (i) $\Delta ABD \cong \Delta ACD$ (ii) AP is the perpendicular bisector of BC

29. It is known that if a + b = 10 then a + b - c = 10 --- c. Write the Euclid's axiom that best illustrates this statement. Also give two more axioms other than the axiom used in the above situation.

30. In the figure of triangle ABC, <A = 20^0 and <C = 40^0. If the bisector of angle B meets AC at x. prove that CX > BX.



31. In the given figure, ABCD is a square and EF is parallel to diagonal BD. If EM = FM, prove that (i) DF = BE. (ii) AM bisects < BAD.