Ashwani Gupta

Mb: 9810817270.
Mb: 9811091238

Email: ashwanigupta50@yahoo.com
Website: www.AshwaniGuptaMaths.Weebly.com

Class IX

Subject- Mathematics

Semester -1

Time: 3-3$\frac{1}{2}$ hrs. **MM: 80**

GENERAL INSTRUCTIONS:

1. *All questions are compulsory.*
2. *The question paper consists of thirty four questions divided into four sections A, B, C & D. Section A comprises of ten questions of 01 marks each, Section B comprises of eight questions of 02 marks each, Section C comprises of ten questions of 03 marks each and section D comprises of six questions of 04 marks each.*
3. *All questions in section A are multiple choice questions where you are to select one correct option out of given four.*
4. *There is no overall choice. However internal choice has been provided in one question of 02 marks each, three questions of 03 marks each and two questions of 04 mark each. You have to attempt only one of the alternatives in all such questions.*
5. *Use of calculators is not permitted.*

Section – 'A' (carry one mark each)

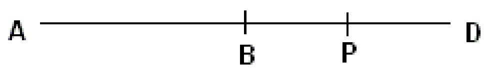
1. Which of the following number is a natural number?
   1. -2 **2.** -1 **3.** 0 **4.** 1
2. Degree of polynomial $5x^3+\sqrt{2}x+\frac{1}{2}x^5-7$ is:
   (a) 1 (b) 3
   c) 0 (d) 5

Ashwani Gupta

Email: ashwanigupta50@yahoo.com
Website: www.AshwaniGuptaMaths.Weebly.com

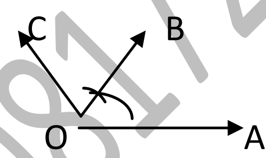
Mb: 9810817270.
Mb: 9811091238

3. In the figure given below, AB = BD. If BP = PD, which of the following relationship is true?



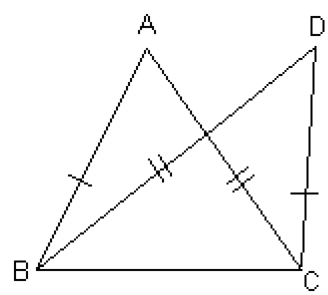
1. AB = 2BD **2.** AP = 3PD **3.** AB = PD **4.** AD = 4AB

4. In the given fig, adjacent angles are:



(a) $\angle COA$ & $\angle BOA$
(b) $\angle COA$ & $\angle BOC$
(c) $\angle AOB$ & $\angle BOC$
(d) none of these

5. In the figure given below, AB = CD and AC = BD. Choose the correct relationship.



1. AB = AC **2.** $\angle A = \angle D$
3. $\triangle ABC \cong \triangle DBC$ **4.** $\triangle BAC \cong \triangle DBC$

6. If $p(x) = (x-1)(x+2)$, then we say:

(a) $(x-1) is\ a\ factor\ of\ p(x)$ (b) $p(x) is\ divisible\ by\ (x-1)$

(c) $(x+2) is\ a\ factor\ of\ p(x)$ (d) $p(x) is\ divisible\ by\ (x+2)$

"Chase Excellence- Success Will Follow"

Ashwani Gupta

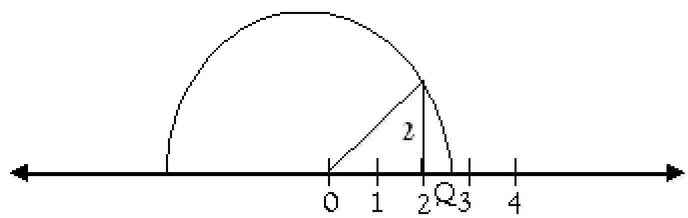
Mb: 9810817270.

Mb: 9811091238

Email: ashwanigupta50@yahoo.com

Website: www.AshwaniGuptaMaths.Weebly.com

7. Which of the following irrational numbers is represented by Q in the following diagram?

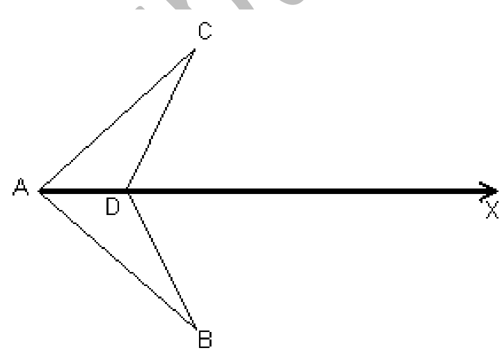


1 .2 $\sqrt{2}$ **2.** $\sqrt{3}$ **3.** $\sqrt{7}$ **4.** $\sqrt{11}$

8. If A = 2k, B = 2k, which of the following relationships is true?

1. A = B **2.** A = 2B **3.** B = 2A **4.** none of these

9. In the figure given below, AX bisects ∠A as well as ∠CDB.



Choose the correct relationship.

1. △ADC ≅ △ADB

2. △ADC ≅ △ABD

3. △CAD ≅ △ADB

4. △CAD ≅△ABD

“Chase Excellence- Success Will Follow”

Ashwani Gupta

Email: ashwanigupta50@yahoo.com
Website: www.AshwaniGuptaMaths.Weebly.com

Mb: 9810817270.
Mb: 9811091238

10. In $\triangle$PQR, PQ is the longest side of the triangle. Which of the following statements is definitely true?

1. $\angle R < \angle P$ **2.** $\angle P < \angle Q$

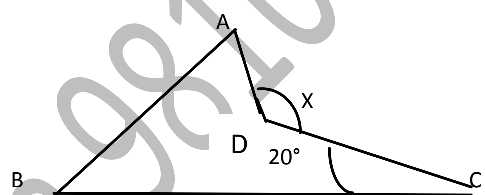
3. $\angle Q < \angle P$ **4.** $\angle P < \angle R$

Section – 'B' (carry two marks each)

Q11. If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$, $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, find $x^2 + xy + y^2$.

Q12.

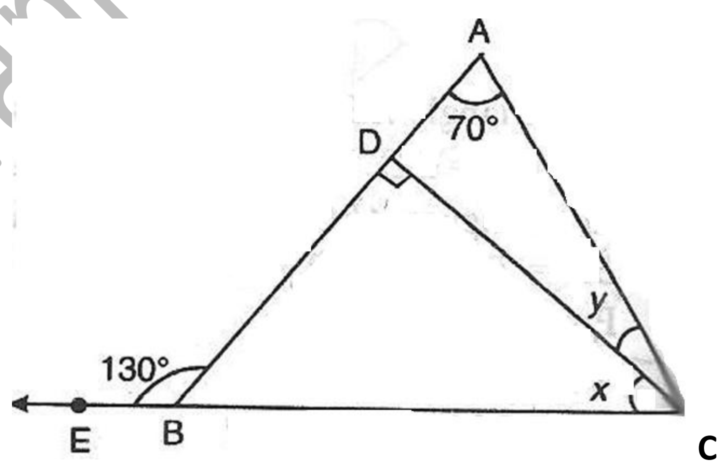
Find the value of x in adjoining figure.



Where $\angle$A=30° & $\angle$C=20° &$\angle B = 70°$

Or

In the fig. CD$\perp$AB, and $\angle ABE = 130°$ and $\angle BAC = 70°$. find x and y.



"Chase Excellence- Success Will Follow"

Ashwani Gupta

Email: ashwanigupta50@yahoo.com

Website: www.AshwaniGuptaMaths.Weebly.com

Mb: 9810817270.

Mb: 9811091238

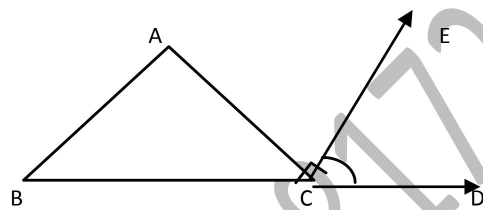
Q13. Prove that every line segment has one & only one end pt.

Q14. Factorize:

$(x-a)^3+(x-b)^3+(x-c)^3-3\,(x-a)\,(x-b)\,(x-c)$, when $\frac{a+b+c}{3}=x$.

Q15. Express in $\frac{p}{q}$: 3212.35353535……..

Q16. In fig:



AC ⊥ EG & ∠A:∠B:∠C= $3:2:1$.

Find the value of ∠ECD.

Q17. Show that all line segments drawn from a given point note on it, the perpendicular line segment is smallest.

Q18.

a) The perpendicular distances of the point from x & y axes are 3 & 2 respectively.

What are its co-ordinates?

b) Do the ordered pairs $(-4,3)$ & $(3,-4)$ represent the same point in the co-ordinate plane?

Section – 'C' (carry three marks each)

Q19. Rationalize the denominator:

$$\frac{\sqrt{2}}{\sqrt{2}+\sqrt{3}-\sqrt{5}}$$

Or

Simplify: $\frac{1}{2-\sqrt{3}}-\frac{1}{\sqrt{3}+\sqrt{2}}+\frac{1}{2-\sqrt{5}}$

Q20. Find the values of a and b if $\frac{\sqrt{7}-1}{\sqrt{7}+1}-\frac{\sqrt{7}+1}{\sqrt{7}-1}=a+b\sqrt{7}$

"Chase Excellence- Success Will Follow"

Or

If $x = 2+\sqrt{3}$, find the value of $\sqrt{x} + \sqrt{\frac{1}{x}}$

Q21. Represent $\sqrt{4.6}$ on the number line

Q22. Without actual division $2x^4-5x^3+2x^2-x+2$ is exactly divisible by x^2-3x+2.

Q23. Factorize: $\left(\frac{x}{2}+y+\frac{z}{3}\right)^3+\left(\frac{x}{3}-\frac{2y}{3}+z\right)^3+\left(-\frac{5x}{6}-\frac{y}{3}-\frac{4z}{3}\right)^3$

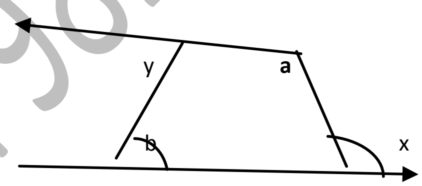
Or

Factorize:
$(a+b)^3 - 8(a-b)^3$

Q24. Construct a quadrilateral PQRS in which vertices P(3, 0) Q(7, 9) R(-6,9) and S(-2,0) in a Cartesian plane. Name the quadrilateral so formed.

Q25. In the adjoining fig:

Show that $x + y = a + b$.



Q26. ABCD is a square. E, F and G are mid points of side AB, BC and CD respectively. Prove that the triangles AEF and DGF are congruent.

Q27. ABCD is a quadrilateral in which AB=CD. Also there is a point O inside the quadrilateral such that OA =OD and OB=OC. Prove that BC||AD.

Q28. The perimeter of rt. Triangle is 12cm and its hypotenuse is of length 5cm. calculate the area by using Heron's Formula.

Section – 'D' (carry four marks each)

Q29. If $f(x) = x^4-2x^3+3x^2-ax+b$ is a polynomial such that when it is divided by $x-1$ & $x+1$, the remainders are respectively 5 & 19.

Or

Ashwani Gupta

Mb: 9810817270.

Mb: 9811091238

Email: ashwanigupta50@yahoo.com

Website: www.AshwaniGuptaMaths.Weebly.com

What must be added to $x^4+2x^3-2x^2+x-1$, so that the result is exactly divisible by x^2+2x-3?

Q30. : Using the factor theorem, factorize the polynomial which is given below: $x^4-2x^3-7x^2+8x+12$

Q31. Factorize: y^3+125

Q32. In a triangle PQR, PQ=PR. S and T are points on PQ and PR such that QT and RS are repectively the bisectors of $\angle PQR\ and \angle QRP$. Prove that $\Delta TQR \cong \Delta SRQ$

Or

Prove that if two angles of triangles are equal then the sides opp. to them are also equal

Q33. ABC is an isosceles triangle with AB=AC and the bisector of $\angle B\ and\ \angle C$ intersect each other at O. Prove that BO=CO and AO is the bisector of $\angle BAC$.

Q34.

In the fig if AC||DE find x: