**Class X Maths**

1. **Euclid’s division lemma : Given positive integers a and b ,there exists unique integers q and r satisfying a= b q + r , 0 ≤ r <b.**
2. **Fundamental theorem of Arithmetic : Every composite number can be expressed as a product of primes.**
3. **In rational number** $\frac{p}{q}$ **,q is always in form of 2n5m ( for terminating decimal representation).**
4. **HCF (a,b) x LCM (a,b) = a x b. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***
5. **Zeroes of a polynomial : k is zero of polynomial P(x) if P(k) = 0.**
6. **Sum of zeroes α+β = -**$\frac{b}{a} , $**product of zeroes α x β =** $\frac{c}{a} $ **for polynomial ax2+ bx + c= x2 – (α +β)x + αβ**
7. **For cubic polynomial , ax3 + bx2+cx + d α + β +γ =- -**$\frac{b}{a} $**, αβ+βγ+γα =** $\frac{c}{a}$ **, αβγ =** $-\frac{d}{a}$ **\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***
8. **For a1 x + b1y +c1=0 and For a2 x + b2y +c2 =0 , unique solution :** $\frac{a\_{1}}{a\_{2}} \ne \frac{b\_{1}}{b\_{2}}$ **graph : two intersecting lines no solution :** $\frac{a\_{1}}{a\_{2}}=\frac{b\_{1}}{b\_{2}}\ne \frac{c\_{1}}{c\_{2}}$ **parallel lines infinite solution :** $\frac{a\_{1}}{a\_{2}}=\frac{b\_{1}}{b\_{2}}=\frac{c\_{1}}{c\_{2}}$ **coincident lines**
9. **Elimination method to solve equations \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***
10. **ax2+ bx + c = 0 root are real if D = b2 – 4ac** $\geq $**0 roots are equal if D = b2 – 4ac = 0 , x =** $\frac{-b \pm \sqrt{D}}{2a}$ **\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***
11. **General term an = a + (n-1)d where a= first term , d = common difference Sn =** $\frac{n}{2}\left[2a+\left(n-1\right)d\right]= \frac{n}{2} \left[a+l\right]$ **A.P. : a , a+d , a+2d , ……….. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***
12. **Similarity rules of two triangles: (i) SSS (ii) SAS (iii) AA**
13. **Theorem: (i) The ratio of the areas of two similar triangles is equal to the squares of the ratio of their corresponding sides.**
14. **(ii) [BPT] If a line is drawn parallel to one side of a triangle ,it cuts other two sides in the same ratio.**
15. **(iii) Pythagoras theorem : In right triangle , the square of the hypotenuse is equal to the sum of the squares of the other two sides. (iv) Converse of Pythagoras theorem : In a triangle , if square of one side is equal to the sum of the squares of the other two sides , then the angle opposite the first side is a right angle**

**Coordinate geometry**



**Trigonometric ratios**

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**Circles**

**Theorems (i) The tangent at any point of a circle is perpendicular to the radius through the point of contact.**

**(ii) The length of tangents drawn from an external point to a circle are equal.**

**Area related to circle (i)Area of the sector =** $\frac{θ}{360°}πr^{2}$ **(ii) length of arc =** $\frac{θ}{360°}2πr^{}$

 **(iii) Area of minor segment =** $\frac{θ}{360°}πr^{2}- \frac{1}{2}r^{2} sinθ. $

**Surface area and volume**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **CSA** | **TSA** | **Volume** |
| **Cube** | **4a2** | **6a2** | **a3** |
| **Cuboid** | **2h(l+b)** | **2(lb +bh + hl)** | **Lbh** |
| **Cylinder**  | **2**$πrh$ | **2**$πrh+2πr^{2}$ | $$πr^{2}h$$ |
| **Cone** | $$πrl$$ | $$πrl+πr^{2}$$ | $$\frac{1}{3}πr^{2}h$$ |
| **Sphere** | **-** | $$4πr^{2}$$ | $$\frac{4}{3}πr^{3}$$ |
| **Hemisphere** | $$2πr^{2}$$ | $$3πr^{2}$$ | $$\frac{2}{3}πr^{3}$$ |

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**Statistics**

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**\* Mode = 3Median – 2Mean**

**\* more than ogive : plot points (lower limit , corresponding cumulative freuency)**

**\* less than ogive : plot points (upper limit , corresponding cumulative freuency)**

**Probability**

 **P(E) =** $\frac{Number of outcomes favourable to E}{Number of all possible outcomes of experiment}$

 **Sum of probabilities of all events is always 1 in an experiment , 0**$\leq P(E)\leq 1$ **, P(E) + P (Not E) = 1**