SETH M.R. JAIPURIA SCHOOLS BANARAS PARAO CAMPUS

SUBJECT – MATHEMATICS

CLASS – X(FORMULAE REVISION WORKSHEET)

Name: ………………… Sec: ……… Father's Whatsapp No. ……………………………..

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1. $\mathrm{HCF}(a, b) \times \mathrm{LCM}(a, b) = \cdots$..................................and $\mathrm{HCF}(a, b, c) \times \mathrm{LCM}(a, b, c) \neq a \times b \times c$

2. The exponent of the highest degree term is called the .... of the polynomial.

3. Constant Polynomial: $f(x) = a$, a is ....

4. Linear Polynomial: $f(x) = ax + b, a \neq \cdots$........................

5. Quadratic Polynomial: $f(x) = a \ldots\ldots\ldots\ldots.. + bx + c, a \neq 0$

6. Cubic Polynomial: $f(x) = ax^3 + bx^2 + cx + d, \ldots\ldots\ldots\ldots\ldots. \neq 0$

7. A real number ' a ' is a zero of the polynomial $f(x)$ if $f(a) = \cdots$.................................

8. A polynomial of degree ' n ' can have at most ' .... ' real zeros.

9. If α and β are the .... of the quadratic polynomial $f(x) = ax^2 + bx + c$, then

a) Sum of the Zeros $= \boldsymbol{\alpha} + \boldsymbol{\beta} = \cdots \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.$

b) Product of the Zeros $= \boldsymbol{\alpha\beta} = \cdots \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

10. Given the sum of the zeros and product of the zeros, the quadratic polynomial is

k$[x^2 - x($ .... $) + ($ .... $)]$;

$k[x^2 - x(\alpha + \beta) + \cdots \ldots\ldots\ldots\ldots\ldots..\ldots.]$

11. If α, β, γ are the zeroes of the cubic polynomial $f(x) = ax^3 + bx^2 + cx + d$, then

a) $\alpha + \beta + \gamma = \cdots \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$

b) $\alpha\beta + \beta\gamma + \gamma\alpha =$ -------------------------

c) $\alpha\beta\gamma =$------------------------------

12. $a_1x + b_1y + c_1 = 0; a_2x + b_2y + c_2 = 0$, Graphically the two straight lines are,

a) Intersecting lines, if ....

b) .... lines, if $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

c) .... lines, if $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (The equations are dependent linear equations)

13. $a_1x + b_1y + c_1 = 0; a_2x + b_2y + c_2 = 0$
a) Consistent and have unique solution if: ....

b) Consistent and have infinite number of solutions if: ....

c) Inconsistent and no unique solution if: ....

14. Solving a Quadratic Equation by Formulae: The real roots of the Quadratic Equation $\boldsymbol{ax + bx + c = 0}$ are given by ....; $b^2 - 4ac \geq 0$.

15. Nature of the roots of the Quadratic Equation depends on $D =$.................................., which is the Discriminant.

16. The Quadratic Equation $\boldsymbol{ax^2 + bx + c = 0}$ has

(i) two distinct real roots, if $b^2 - 4ac >$ ....

(ii) two real and .... roots (coincident roots), if $b^2 - 4ac = 0$

(iii)no .... roots, if $b^2 - 4ac < 0$

17. The n^{th} term of an A.P with a as the first term and d as the common difference is given by,

$$a_n = a + \cdots \dots\dots\dots\dots\dots\dots.. d{:}\ (a_{10} = a + 9d; a_{16} = a + 15d)$$

18. Sum to n terms of an A.P is denoted as Sn.
$S_n = n/2[2a + \cdots \dots\dots\dots\dots\dots\dots\dots..]$ or $n/2[a + l]$ where l is the last term.

19. a) Any point on the x-axis will be of the form (........, ...)

b) Any point on the y-axis will be of the form (... ... , ...)

20. A is (x_1, y_1) and B is (x_2, y_2) Distance AB $= \sqrt{- - - - - - - - - - - - - - -}$

21. Distance of a point $\mathrm{A(x, y)}$ from the origin $\mathrm{O = OA} = \sqrt{\dots\dots\dots\dots\dots\dots\dots\dots\dots.}$

22. Distance of a point $\boldsymbol{P(x, y)}$ from the .... is $|\boldsymbol{y}|$ units.

23. Distance of a point $\boldsymbol{P(x, y)}$ from the .... is $|\boldsymbol{x}|$ units.

24. Section Formulae: $\mathrm{P(x, y)} =$ ....

25. MID - POINT FORMULA:

If $P(x, y)$ is the midpoint of the line joining $A(x_1, y_1)$ and $B(x_2, y_2)$ then $\boldsymbol{P(x, y)} = (\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2})$
26. Mean of Grouped Data:

a) Mean by Assumed Mean Method:

$\bar{x} = a + \cdots \ldots \ldots \ldots \ldots \ldots..$; a = Assumed Mean ; $di = \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$....

b). Mean by Step Deviation Method: $\bar{x} = a +$ [................................] $u_i = x_i - a/h$

25. Mode of Grouped Data: Mode $= l + [(\ldots \ldots \ldots \ldots \ldots \ldots..) \times h]$

26. Median for grouped Data: Median $= l + [\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \times h]$

27. Empirical Relationship between Mean, Median and Mode: **3 Median** = **…………………..** +2 **………………**

28. CUBOID:

l = length b = breadth h = height

a. TSA of the Cuboid $= \mathbf{2}(\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots)$ ***sq units***

b. CSA of the Cuboid $= \mathbf{2h}(\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots.)$***sq. units***

c. Volume of the Cuboid $= \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ ***cubic units***

d. Diagonal of the Cuboid $= \sqrt{\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots.}$

29. CUBE: If a = side of the Cube

a. TSA of the Cube $= \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ sq. units

b. CSA of the Cube $= \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$.... sq. units

c. Volume of the Cube $= \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots.$ ***cu. units***

d. Diagonal of the Cube $= \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ units

30. CYLINDER: If r = radius h = height

a. CSA of the Cylinder $= \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ sq units

b. TSA of the cylinder $= 2\pi r(\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots..)$ sq units

c. Volume of the cylinder $= \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots.$ cubic units

31. CONE: If r = radius of the base h = vertical height l = slant height

a. CSA of the Cone= ... ... sq. units

b. TSA of the Cone $= \pi r($... ... ...$)$ sq. units

c. Volume of the cone $= \cdots$ ... ... cu units

d. Relation between r, h, l is $l^2 = \cdots$ ... ...

32. SPHERE: If r = radius of the sphere

a. Surface Area (TSA = CSA) of the Sphere $= \cdots$ ... ... sq. units

b. Volume of the Sphere $= \cdots$ ... ... cu units

33. HEMISPHERE: If r = radius of the sphere

a. CSA of the Hemisphere $= \cdots$ ... ... sq. units

b. TSA of the Hemisphere $= \cdots$ ... ... $sq.\ units$

c. Volume of the Hemisphere $= \cdots$ ... ... **cu.** $units$

34. HOLLOW CYLINDER:

R is the radius of the outer circle;

r is the radius of the inner circle;

h = height of the cylinder

a. CSA of the Hollow Cylinder $= 2\pi Rh + \cdots$ ... ... $= 2\pi h($... ... ...$)$ sq. $units$

b. Area of the top and bottom of the Hollow Cylinder $= 2($... ... ...$) = 2\pi$ (... ... ...) sq. units

c. TSA of the Hollow Cylinder $= 2\pi h($... ... ...$) + 2\pi($... ... ...$)$ sq. units

d. Volume of the material of the Hollow Cylinder $= \pi R^2 h - \pi r^2 h = \pi h($... ... ...$)$ cu. units

e. Perimeter (Circumference) of a circle $P = 2\pi r$ or ... ...

f. Area of a Circle $A = \cdots$ ... ...

g. Distance travelled by a wheel in one revolution is equal to its circumference.

h. Length of an arc of a sector of angle θ is $l =$...

i. Perimeter of a sector P =... where .... is length of arc.

j. Area of a sector of angle θ is $\boldsymbol{A} =$...

k. Area of a sector is $\boldsymbol{A} =$ ....

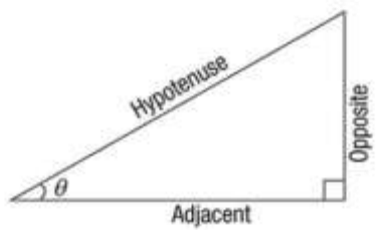
l. Area of the major sector $= \cdots \dots \dots \dots \dots \dots \dots \dots \dots \dots .$ $-$ Area of minor sector

m. Area of the minor segment ACB = Area of the minor sector OACBO - Area of the triangle AOB.

i). Area of triangle AOB if angle AOB is θ is $\pi r^2 \sin\frac{\theta}{2} \dots \dots$ ..(Can be used if the angle is $60°, 90°, 120°$)

ii). Area of Major segment $= \boldsymbol{\pi} r^2$ $-$ Area of minor segment

35. TRIGONOMETRY:



$\sin\theta = \dfrac{\text{opposite}}{\dots\dots\dots\dots}$ $\quad$ $\text{cosec } \theta = \dfrac{\dots\dots\dots\dots}{\text{opposite}}$

$\cos\theta = \dfrac{\dots\dots\dots\dots}{\text{hypotenuse}}$ $\quad$ $\sec \theta = \dfrac{\text{hypotenuse}}{\dots\dots\dots\dots}$

$\tan\theta = \dfrac{\text{opposite}}{\dots\dots\dots\dots}$ $\quad$ $\cot \theta = \dfrac{\text{adjacent}}{\dots\dots\dots\dots}$

$\text{cosec}\theta = \dfrac{1}{\dots\dots\dots\dots\dots\dots\dots\dots}$; $\sec\theta = \dfrac{1}{\dots\dots\dots\dots\dots\dots\dots\dots\dots}$; $\dots\dots\dots\dots\dots\dots = \dfrac{1}{\tan \theta}$; $\cot \theta = \dfrac{\cos \theta}{\dots\dots\dots\dots\dots\dots\dots}$

Write the following theorems.

Theorem – 1(Circles):

Theorem – 2(Circles):

Thales Theorem:

Converse of Thales Theorem:

Fundamental Theorem of Arithmetic:

θ	0°	30°	45°	60°	90°
$\sin\ \theta$	0				1
$\cos\ \theta$	1	$\frac{\sqrt{3}}{2}$			
$\tan\ \theta$				$\sqrt{3}$	Not defined
$\sec\ \theta$	1	$\frac{2}{\sqrt{3}}$			
$\mathrm{cosec}\theta$				$\frac{2}{\sqrt{3}}$	1
$\cot\ \theta$				$\frac{1}{\sqrt{3}}$	0

36. - TRIGONOMETRIC IDENTITIES:

a) $\sin^2\theta + \cdots \ldots \ldots \ldots \ldots . = 1$ $\quad$ $\ldots \ldots \ldots \ldots \ldots = 1 - \sin^2\ \theta$ $\quad$ $\sin^2\theta = 1 - \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$

b) $\ldots \ldots \ldots \ldots . + \tan^2\ \theta = \sec^2\ \theta$ $\quad$ $\tan^2\theta = \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . . -1$ $\quad$ $1 = \sec^2\ \theta - \tan^2\ \theta$

c) $\ldots \ldots \ldots . + \cot^2\ \theta = \mathrm{cosec}^2\ \theta$ $\quad$ $\cot^2\ \theta = \mathrm{cosec}^2\ \theta - 1$ $\quad$ $1 = \cdots \ldots \ldots \ldots \ldots . - \cot^2\ \theta$