# VIDYA SHREE ACADEMY SR. SEC. SCHOOL <br> An English Medium Co.Ed. School | Science \& Commerce 

Subject: Maths
Class: 9 $^{\text {th }}$
Topic: Holiday Assignment

## Compulsory for all:

1. Write the degree of each of the following polynomials:
(i) $5 x^{3}+7 x^{2}-2 x$
(ii) $2-7 x^{2}+6 x$
(iii) $5-y^{2}$
(iv) $x^{6}+8 x^{2}$
(v) $9+z-8 z^{2}+5 z^{3}$
2. Classify the following as linear, quadratic and cubic polynomials:
(i) $x^{2}+x$
(ii) $x-x^{3}$
(iii) $y+y^{2}+4$
(iv) $1+x$
(vi) $r^{2}$
(vii) $7 x^{3}$
3. Find the remainder obtained on dividing $p(x)=x^{3}+1$ by $g(x)=x+1$.
4. Divide the polynomial $3 x^{4}-4 x^{3}-3 x-1$ by $x-1$.
5. Find the remainder when $x^{4}+x^{3}-2 x^{2}+x+1$ is divided by $x-1$.
6. check $(x-1)$ is factor of following polynomial:
a. $p(x)=2+x+2 x^{2}-x^{3}$
b. $p(x)=(x-1)(x+1)$

Use the Factor Theorem to determine whether $g(x)$ is a factor of $p(x)$ in each of the following cases:
7. $p(x)=x^{3}-4 x^{2}+x+6, \quad g(x)=x-3$
8. $p(x)=4 x^{3}-3 x^{2}+x-4, \quad g(x)=x-1$

Factorise :
9. $6 x^{2}+5 x-6$
$10 . x^{3}+13 x^{2}+32 x+20$
11. $x^{3}-3 x^{2}-9 x-5$
$12.4 x^{2}+9 y^{2}+16 z^{2}+12 x y-24 y z-16 x z$
$13.49 a^{2}+70 a b+25 b^{2}$
Use the Factor Theorem to determine whether $g(x)$ is a factor of $p(x)$ in each of the following cases:

$$
\begin{array}{ll}
\text { 14. } p(x)=2 x^{3}+x^{2}-2 x-1, & g(x)=x+1 \\
\text { 15. } p(x)=x^{3}+3 x^{2}+3 x+1, & g(x)=x+2
\end{array}
$$

Find the following products using appropriate identities:
16. $(x+3)(x+3)$
17. $(x-3)(x+5)$
18. $(3-2 x)(3+2 x)$
$19.104 \times 96$
20. $(2 x-y+z)^{2}$

Write the following cubes in expanded form:
21. $(2 a-3 b)^{3}$
22. $\left[\frac{3 x}{2}+1\right]^{3}$

Verify :
23. $x^{3}+y^{3}=(x+y)\left(x^{2}-x y+y^{2}\right)$
24. $x^{3}-y^{3}=(x-y)\left(x^{2}+x y+y^{2}\right)$
27. Locate the points $(5,0),(0,5),(2,5),(5,2),(-3,5),(-3,-5),(5,-3)$ and $(6,1)$ in the Cartesian plane.
28. Plot the following ordered pairs $(x, y)$ of numbers as points in the Cartesian plane. Use the scale $1 \mathrm{~cm}=1$ unit on the axes.

| $\boldsymbol{x}$ | -3 | 0 | -1 | 4 | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\boldsymbol{y}$ | 7 | -3.5 | -3 | 4 | -3 |

25.The cost of a notebook is twice the cost of a pen. Write a linear equation in two variables to represent this statement. (Take the cost of a notebook to be Rs. $x$ and that of a pen to be Rs. $y$ ).
26. Find two solutions for each of the following equations:
(i) $4 x+3 y=12$
(ii) $2 x+5 y=0$
(iii) $3 y+4=0$
29. Write four solutions for each of the following equations:
(i) $2 x+y=7$
(ii) $\pi x+y=9$
(iii) $x=4 y$
27.Check which of the following are solutions of the equation $x-2 y=4$ and which are not:
(i) $(0,2)$
(ii) $(2,0)$
(iii) $(4,0)$
28. Find the value of $k$, if $x=2, y=1$ is a solution of the equation $2 x+3 y=k$.
29.If the point $(3,4)$ lies on the graph of the equation $3 y=a x+7$, find the value of $a$.
Draw the graph of (Q1-Q5)
30. $x+y=7$.
31. $x+y=4$
32. The taxi fare in a city is as follows: For the first kilometer, the fare is ' 8 and for the subsequent distance it is ` 5 per km. Taking the distance covered as $x \mathrm{~km}$ and total fare as Rs $y$, write a linear equation for this information, and draw its graph.
33.In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius:
$\mathrm{F}=\left(\frac{9}{5}\right) \mathrm{C}+32$
(i) Draw the graph of the linear equation above using Celsius for $x$-axis and Fahrenheit for $y$-axis.
(ii) If the temperature is $30^{\circ} \mathrm{C}$, what is the temperature in Fahrenheit?
(iii) If the temperature is $95^{\circ} \mathrm{F}$, what is the temperature in Celsius?
34.Yamini and Fatima, two students of Class IX of a school, together contributed Rs. 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data. (You may take their contributions as Rs. $x$ and Rs.y.) Draw the graph of the same.
35.


Fig. 3.11
See Fig. 3.11 and complete the following statements:

1. The abscissa and the ordinate of the point $B$ are $\qquad$ and $\qquad$ respectively. Hence, the coordinates of B are (_ _ _ _ ).
2. The $x$-coordinate and the $y$-coordinate of the point M are $\qquad$ and $\qquad$ -, respectively. Hence, the coordinates of $M$ are (_ _ _ _ ).
3. The $x$-coordinate and the $y$-coordinate of the point $L$ are $\qquad$ and $\qquad$ respectively. Hence, the coordinates of $L$ are ( _ _ _ _ ).
4. The $x$-coordinate and the $y$-coordinate of the point $S$ are $\qquad$ and $\qquad$ respectively. Hence, the coordinates of $S$ are (_ _, _ _).

## Activity: (Total three activity)

## Compulsory for all:

1. Prepare a chart on drawing sheet showing Bar Graph of following data of blood group:
$A, B, O, O, A B, O, A, O, B, A, O, B, A, O, O$,
$A, A B, O, A, A, O, O, A B, B, A, O, B, A, B, O$. (Reference Chapter-14 NCERT: Statistics)

## Do any two

2. Prepare a chart on drawing sheet mentioning all eight Algebraic Identities (Reference Chapter-2 NCERT: Polynomials)
3. Prepare a chart on drawing sheet showing graphical representation of following linear equation (any two):
a) $x=5$
b) $y=-4$
c) $x-y=0$
d) $x+y=0$
(Reference Chapter-4 NCERT: Linear Equations in Two Variables)
4. Prepare a chart on drawing sheet mentioning the points $(5,0),(0,5),(2,5)$, $(5,2),(-3,5),(-3,-5),(5,-3)$ and $(6,1)$ in the Cartesian plane. (Reference Chapter-3 NCERT: Coordinate Geometry)
5. Write Euclid's Axioms and Postulate on drawing sheet in proper tabular form.
(Reference Chapter-5 NCERT: Introduction Euclid's Geometry)
