



An English Medium Co.Ed. School | Science & Commerce W : www.vsajaipur.com | E : vsajaipur@gmail.com M. : +91 9460356652, 8058999828 Add. : 84, Krishna Vihar, Behind Narayan Niwas, Gopalpura Bypass, Jaipur - 302015 f /vsajaipur | Vsajaipur | /vsajaipur | /vsajaipur

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Subject: Maths

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Class: 9<sup>th</sup>
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Topic: Holiday Assignment

Compulsory for all:

1. Write the degree of each of the following polynomials:

(i) $5x^3 + 7x^2 - 2x$ (ii) $2 - 7x^2 + 6x$ (iii) $5 - y^2$ (iv) $x^6 + 8x^2$ (v) $9 + z - 8z^2 + 5z^3$

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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 + <i>x</i>	(vi) <i>r</i> ²	(vii) 7 <i>x</i> ³

- 3. Find the remainder obtained on dividing $p(x) = x^3 + 1$ by g(x) = x + 1.
- 4. Divide the polynomial $3x^4 4x^3 3x 1$ by x 1.
- 5. Find the remainder when $x^4 + x^3 2x^2 + x + 1$ is divided by x 1.

6. check (x-1) is factor of following polynomial:

a. $p(x) = 2 + x + 2x^2 - x^3$ 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.
$$p(x) = x^3 - 4x^2 + x + 6$$
, $g(x) = x - 3$
8. $p(x) = 4x^3 - 3x^2 + x - 4$, $g(x) = x - 1$

Factorise :

9.
$$6x^{2} + 5x - 6$$

 $10.x^{3} + 13x^{2} + 32x + 20$
 $11.x^{3} - 3x^{2} - 9x - 5$
 $12.4x^{2} + 9y^{2} + 16z^{2} + 12xy - 24yz - 16xz$
 $13.49a^{2} + 70ab + 25b^{2}$

Use the Factor Theorem to determine whether g(x) is a factor of p(x) in each of the following cases:

$$14.p(x) = 2x^{3} + x^{2} - 2x - 1, \quad g(x) = x + 1$$

$$15.p(x) = x^{3} + 3x^{2} + 3x + 1, \quad g(x) = x + 2$$

Find the following products using appropriate identities:

16.(x + 3) (x + 3) 17.(x - 3) (x + 5) 18.(3 - 2x) (3 + 2x) 19.104×96 $20.(2x - y + z)^{2}$

Write the following cubes in expanded form:

$$21.(2a - 3b)^{3}$$
$$22.\left[\frac{3x}{2} + 1\right]^{3}$$

Verify :

$$23.x^{3} + y^{3} = (x + y) (x^{2} - xy + y^{2})$$
$$24.x^{3} - y^{3} = (x - y) (x^{2} + xy + y^{2})$$

- 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 cm = 1 unit on the axes.

x	- 3	0	- 1	4	2
у	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)
$$4x + 3y = 12$$

(ii) $2x + 5y = 0$

(iii)
$$3y + 4 = 0$$

29. Write four solutions for each of the following equations:

(i) 2x + y = 7(ii) $\pi x + y = 9$ (iii) x = 4y

- 27.Check which of the following are solutions of the equation x 2y = 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 2x + 3y = k.

29. If the point (3, 4) lies on the graph of the equation 3y = ax + 7, find the value of a.

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Draw the graph of (Q1-Q5)
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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* 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:

$$F = \left(\frac{9}{5}\right)C + 32$$

(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°C, what is the temperature in Fahrenheit?
- (iii) If the temperature is 95°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.



Fig. 3.11

See Fig. 3.11 and complete the following statements:

35.

- The abscissa and the ordinate of the point B are _ _ _ and _ _ _, respectively. Hence, the coordinates of B are (_ _, _ _).
- The *x*-coordinate and the *y*-coordinate of the point M are _ _ _ and _ _ _, respectively. Hence, the coordinates of M are (_ _, _ _).
- The *x*-coordinate and the *y*-coordinate of the point L are _ _ _ and _ _ _, respectively. Hence, the coordinates of L are (_ _, _ _).
- The x-coordinate and the y-coordinate of the point S are _ _ _ and _ _ _, 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, AB, O, A, O, B, A, O, B, A, O, O, A, AB, O, A, A, O, O, AB, 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)