

Q1. Determine whether the following expressions are polynomials or not. In the space provided, put a tick(✓) if the given expression is a polynomial, and cross out(X), if not:

- | Expression | (✓/X) |
|--------------------------------------|-------|
| a. \sqrt{xy} | _____ |
| b. $\frac{1}{a^2b}$ | _____ |
| c. $\sqrt{2}xy + \sqrt{5}x^2$ | _____ |
| d. $\frac{2}{3}p^2 + \sqrt[3]{3}q^2$ | _____ |

Q2. Find the degree of the following polynomials and classify them as linear, constant, quadratic or cubic polynomial:

Polynomial	Degree of the polynomial	Type of polynomial
a. -23	_____	_____
b. $3p^3 + p^2 - 7p$	_____	_____
c. $5a^2 - 3a + 8$	_____	_____
d. $2x + 9$	_____	_____

Q3. Fill in the blanks by choosing the correct option given alongside each statement:

- 54 is a constant polynomial of degree _____. (one/zero)
- $21a^2$ is an example of a _____. (binomial/monomial)
- A polynomial of degree _____ is a quadratic polynomial. (two/four)
- -5 _____ a polynomial. (is/is not)

Q4. Find the following:

- a. literal coefficient of p^2 in $2p^2q^3$: _____
b. numerical coefficient of ab^2 in $-12a^2b^3$: _____
c. numerical coefficient of x^2 in x^2 : _____
d. literal coefficient of p^2q in $25p^2q^3r$: _____

Q5. Determine whether the following pairs are like terms or not. Write Yes/No in the space provided.

- | Expression | Pair of like terms? (Yes/No) |
|---|------------------------------|
| a. $5abc, 5xyz$ | _____ |
| b. $2x^2y^2z^2, -\frac{1}{\sqrt{3}}x^2y^2z^2$ | _____ |
| c. $\frac{x}{2}, \frac{y}{2}$ | _____ |
| d. $12a^2bc, -4a^2bc$ | _____ |

Q6. Subtract $5x^2 + 3x - 2$ from the sum of $\frac{x^2}{3} + 3x - 4$ and $5x^2 + \frac{2}{3}x - 1$.

Answer: _____

Q7. What should be added to $\{2x^2 + (5x - \overline{2x + 5})\}$ to get $4x^2$?

Answer: _____

Q8. Multiply the following:

- a. $(-y^2 - 2y + 2)$ and $(-3y^2 - 3y + 1)$.

Answer: _____

- b. $(1.5x + 0.2y)$ and $(0.3x + 0.5y)$

Answer: _____

Q9. Divide and find whether $2y^2 - 3$ is a factor of $(6y^5 - 9y^3 + 8y^2 - 12)$ or not and fill in the blanks:

Quotient : _____

Remainder: _____

So, $2y^2 - 3$ _____ a factor of $6y^5 - 9y^3 + 8y^2 - 12$. (is/is not)

Q10. Divide $6p^4 + p^3 - 36p^2$ by $2p^2 + 5p$ and fill in the blanks to prove the division algorithm:

$$(2p^2 + 5p) \times (\text{_____}) + (\text{_____}) = 6p^4 + p^3 - 36p^2$$

Answers

1. a. ✗; b. ✗; c. ✓; d. ✓

2.

Polynomial	Degree of the polynomial	Type of polynomial
-23	0	Constant polynomial
$3p^3 + p^2 - 7p$	3	Cubic polynomial
$5a^2 - 3a + 8$	2	Quadratic polynomial
$2x + 9$	1	Linear polynomial

3. a. zero; b. monomial; c. two; d. is

4. a. q^3 ; b. -12 ; c. 1; d. q^2r

5. a. No; b. Yes; c. No; d. Yes

6. $\frac{x^2}{3} + \frac{2}{3}x - 3$

7. $2x^2 - 3x + 5$

8. a. $3y^4 + 9y^3 - y^2 - 8y + 2$; b. $0.45x^2 + 0.81xy + 0.1y^2$

9. Quotient = $3y^3 + 4$; Remainder = 0; $2y^2 - 3$ is a factor of $(6y^5 - 9y^3 + 8y^2 - 12)$

10. $(2p^2 + 5p) \times (3p^2 - 7p) + (-p^2) = 6p^4 + p^3 - 36p^2$