Q1. Factorise and find for which of the following polynomials $(x + 2)$ is not a factor:

a. $x^2 - 3x - 10$

b. $x^2 + 3x + 2$

c. $x^2 - 4x + 4$

d. $x^2 + 4x + 4$

Answer: _____

Q2. Factorise the first polynomial in each of the rows given below. Determine whether the second polynomial is a factor of the first polynomial or not. Write the answer as Yes/No.

First Polynomial	Second Polynomial	Factorisation of the first Polynomial	Is the second polynomial a factor of the first polynomial? (Yes/No)
$2x^3y + 8xy + 8x^2y$	$x + 2$	_____	_____
$10x^3y - 15x^2y$	$2x + 3$	_____	_____
$2p^3 + 16p^2 + 32p$	$p + 4$	_____	_____

Q3. Factorise the following polynomials:

a. $p^2(2x + 3) + q^2(2x + 3) + r^2(2x + 3)$

     Factorisation of $p^2(2x + 3) + q^2(2x + 3) + r^2(2x + 3)$: _____

b. $4(2a^2 - b^2) + 5(2a^2 - b^2)$

     Factorisation of $4(2a^2 - b^2) + 5(2a^2 - b^2)$: _____

Q4. **Factorise the following by grouping the terms:**

   a. $2m - nm - 2n + 4$ = _____

   b. $a^2 - ab(1 - b) - b^3$ = _____

Q5. **Find the factors of the following:**

   a. $0.36(2x + 3y)^2 - 4$ = _____

   b. $36(m + n)^2 - 49(m - n)^2$ = _____

Q6. **Factorise the following polynomials:**

   a. $2x^2 + 7x + 6$ = _____

   b. $2a^2 - 5ab + 3b^2$ = _____

Q7. **Find the factors of the following polynomials and choose the correct option:**

$0.36x^2 - 0.81y^2$

   a. $(0.06x + 0.09y)(0.06x - 0.09y)$

   b. $(0.6x + 0.9y)(0.6x - 0.9y)$

   c. $(0.06x + 0.09y)^2$

   d. $(0.6x - 0.9y)^2$

   Answer: _____

Q8. **Factorise $(a + b)^2 + 17(a + b) + 72$, and write its factors.**

   Answer: _____

Q9. **Use the algebraic identities and factorise the following:**

   a. $\dfrac{a^2}{9} + \dfrac{2ab}{15} + \dfrac{b^2}{25}$

   Answer: _____

   b. $\dfrac{4}{x^2} - \dfrac{2y}{x} + \dfrac{y^2}{4}$

   Answer: _____

Q10. Find the factors of the following polynomials:

    a. $(4x - 3y)^2 + 7(4x - 3y) + 12$

    Answer: _____

    b. $3\left(1 + \dfrac{x}{5}\right)^2 + 13\left(1 + \dfrac{x}{5}\right) + 12$

    Answer: _____

Answers

1. (c)

2.

First Polynomial	Second Polynomial	Factorisation of the first Polynomial	Is the second polynomial a factor of the first polynomial? (Yes/No)
$2x^3y + 8xy + 8x^2y$	$x + 2$	$2xy(x + 2)(x + 2)$	Yes
$10x^3y - 15x^2y$	$2x + 3$	$5x^2y(2x - 3)$	No
$2p^3 + 16p^2 + 32p$	$p + 4$	$2p(p + 4)(p + 4)$	Yes

3. a. $(p^2 + q^2 + r^2)(2x + 3)$;   b. $9\left(\sqrt{2}\,a + b\right)\left(\sqrt{2}a - b\right)$

4. a. $(2 + m)(2 - n)$;   b. $(a + b^2)(a - b)$

5. a. $(1.2x + 1.8y + 2)(1.2x + 1.8y - 2)$;   b. $(13m - n)(13n - m)$

6. a. $(x + 2)(2x + 3)$;   b. $(2a - 3b)(a - b)$

7. (b)

8. $(a + b + 8)$, $(a + b + 9)$

9. a. $\left(\dfrac{a}{3} + \dfrac{b}{5}\right)^2$;   b. $\left(\dfrac{2}{x} - \dfrac{y}{2}\right)^2$

10. a. $(4x - 3y + 4)(4x - 3y + 3)$;   b. $\dfrac{1}{25}(x + 20)(3x + 35)$