

Worksheet

1. Choose the correct answer.
 - a. The product of $(y + 7)(y - 9)$ is
 - i. $y^2 + 2y - 63$
 - ii. $y^2 - 2y - 63$
 - iii. $y^2 - 2y + 63$
 - iv. $y^2 + 2y + 63$
 - b. If $a - b = 7$ and $ab = 4$, then the value of $(a + b)^2$ is
 - i. 56
 - ii. 65
 - iii. 57
 - iv. 11
 - c. Which of the following is a perfect square trinomial?
 - i. $a^2 - 4ab + b^2$
 - ii. $a^2 - 2ab + b^2$
 - iii. $a^2 - 2ab - b^2$
 - iv. $a^2 + 2ab - b^2$
 - d. If $\left(x^2 + \frac{1}{x^2}\right) = 11$, then the value of $\left(x - \frac{1}{x}\right)^2$ is
 - i. 7
 - ii. 3
 - iii. -3
 - iv. 9
 - e. The missing term in the perfect square $4x^2 - 20xy + \boxed{?}$ is
 - i. y^2
 - ii. $5y^2$
 - iii. $25y^2$
 - iv. $2y^2$
2. State true or false.
 - a. $(a + b)(a - b) = a^2 + b^2$
 - b. $16x^2 - 40xy + 25y^2 = (4x + 5y)^2$
 - c. The coefficient of x in the expansion $(4x - 5)(4x + 5)$ is 0.
 - d. $(a + b)^2 = (a - b)^2 + 4ab$
 - e. $9x^2 + 6x + 1$ is a perfect square trinomial.
3. Simplify the following.
 - a. $(3a + 2b)^2$
 - b. $\left(\frac{p}{2q} + 4\right)^2$
4. Using the identity $a^2 - b^2 = (a + b)(a - b)$, find the value of the following.
 - a. $237^2 - 163^2$
 - b. $1.2^2 - 0.8^2$
5. Without actual multiplication, simplify the following squares.
 - a. 91^2
 - b. 997^2
 - c. 1004^2
 - d. 105^2
6. Expand the following.
 - a. $(2x + 3y)^2$
 - b. $(3m - 5n)^2$
 - c. $\left(\frac{3x}{2}\right)^2 - \left(\frac{y}{3}\right)^2$
7. Find the value of $a^2 + b^2$, if
 - a. $a + b = 8$ and $ab = 7$
 - b. $a - b = 5$ and $ab = 1$
8. Given $x^2 + \frac{1}{x^2} = 490$, find $\left(x - \frac{1}{x}\right)^2$.
9. Simplify:
 - a. $(4m - 3n)^2 + (4m + 3n)^2$
 - b. $(3p^2 + 4)^2 - (3p^2 - 4)^2$
 - c. $\left(\frac{3x}{4} + \frac{y}{3}\right)^2 + \left(\frac{3x}{4} - \frac{y}{3}\right)^2$

10. Simplify: $\frac{8.764 \times 8.764 - 1.236 \times 1.236}{8.764 - 1.236}$
11. Simplify: $\left(x + \frac{1}{x}\right)^2 - \left(x - \frac{1}{x}\right)^2$
12. Find the following squares:
- a. $(x - 4y)^2$ b. $\left(\frac{4}{9}x - \frac{2}{5}y\right)^2$
13. Using the identity $(a + b)(a - b) = a^2 - b^2$, find
 a. 104×96 b. 10.1×9.9 c. 1005×995
14. Simplify: $\left(1 - \frac{x}{2}\right)\left(1 + \frac{x^2}{4}\right)\left(1 + \frac{x^4}{16}\right)\left(1 + \frac{x}{2}\right)$
15. Using the identity $a^2 - b^2 = (a + b)(a - b)$, simplify the following.
 a. $(x^2 - 2y^3 + 5z)^2 - (x^2 + 2y^3 - 5z)^2$ b. $\left(y - \frac{x}{5} + 7z\right)^2 - \left(\frac{x}{5} - 7z + y\right)^2$
16. If $x + \frac{1}{x} = 5$, find the value of
 a. $x^2 + \frac{1}{x^2}$ b. $x^4 + \frac{1}{x^4}$

Answers to Worksheet

1. a. ii b. ii c. ii d. iv e. iii
2. a. False b. False c. True d. True e. True
3. a. $9a^2 + 4b^2 + 12ab$ b. $\frac{p^2}{4q^2} + 16 + \frac{4p}{q}$
4. a. 29600 b. 0.8
5. a. 8281 b. 994009 c. 1008016 d. 11025
6. a. $4x^2 + 12xy + 9y^2$ b. $9m^2 + 25n^2 - 30mn$
 c. $\left(\frac{3x}{2} - \frac{y}{3}\right)\left(\frac{3x}{2} + \frac{y}{3}\right)$
7. a. 50 b. 27 c. 488
8. a. $32m^2 + 18n^2$ b. $48p^2$ c. $\frac{9x^2}{8} + \frac{2y^2}{9}$
9. a. 10 b. 11.4
10. a. $x^2 - 8xy + 16y^2$ b. $\frac{16}{81}x^2 - \frac{16}{45}xy + \frac{4}{25}y^2$
11. a. 9984 b. 99.99 c. 999975 d. $1 - \frac{x^8}{256}$
12. a. $-8x^2y^3 + 20x^2z$ b. $28yz - \frac{4}{5}xy$ c. 16. a. 23 d. 527