CLASS 9 MATHEMATICS EXTRA QUESTIONS

Class 9 Mathematics Chapter 4 Exploring Algebraic Identities – Extra Questions with Answers

Extra practice questions for Class 9 Maths Chapter 4 (Exploring Algebraic Identities), beyond the textbook. These Class 9 Mathematics Chapter 4 important questions are handy for last-minute exam practice.

Contents

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Very Short Answer Questions (1 mark)

Q1. Expand $(x + 5)^2$ using the identity.
Ans: $x^2 + 10x + 25$.

Q2. Factorise $x^2 – 16$ using the difference of squares identity.
Ans: $(x + 4)(x – 4)$.

Q3. Expand $(a – 3)^2$.
Ans: $a^2 – 6a + 9$.

Q4. State the identity used to expand $(x + 2)(x + 5)$.
Ans: $(x + a)(x + b) = x^2 + (a+b)x + ab$.

Q5. Write the identity for $a^3 + b^3$ in factored form.
Ans: $a^3 + b^3 = (a + b)(a^2 – ab + b^2)$.

Short Answer Questions (2–3 marks)

Q6. Use a suitable identity to evaluate 998^2 without direct multiplication.
Ans: $998^2 = (1000 – 2)^2 = 1000^2 – 2×1000×2 + 2^2 = 1000000 – 4000 + 4 = 996004$.

Q7. Factorise $4x^2 – 9y^2$ using an identity, showing your working.
Ans: $4x^2 – 9y^2 = (2x)^2 – (3y)^2 = (2x + 3y)(2x – 3y)$, using the difference of squares identity.

Q8. Expand $(2x + 3y)^2$ using the standard identity, showing the substitution.
Ans: Using $(a+b)^2 = a^2+2ab+b^2$ with $a=2x$, $b=3y$: $(2x+3y)^2 = (2x)^2 + 2(2x)(3y) + (3y)^2 = 4x^2 + 12xy + 9y^2$.

Higher-Order Thinking / Application Questions

Q9. If $a + b = 10$ and $ab = 21$, find the value of $a^2 + b^2$ without finding a and b individually.
Ans: Using $(a+b)^2 = a^2 + 2ab + b^2$: $10^2 = a^2 + 2(21) + b^2$, so $100 = a^2 + b^2 + 42$, giving $a^2 + b^2 = 58$.

Q10. A square garden of side $(x + 4)$ metres has a square flower bed of side x metres removed from one corner. Using algebraic identities, find a simplified expression for the remaining garden area.
Ans: Total area = $(x+4)^2 = x^2 + 8x + 16$ (using the identity). Flower bed area = x^2. Remaining area = $(x^2 + 8x + 16) – x^2 = 8x + 16 = 8(x + 2)$ square metres.

Class 9 Mathematics Chapter 4 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the Class 9 Mathematics Chapter 4 Solutions and Class 9 Mathematics Chapter 4 Revision Notes.

See also: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4

Practice more: Chapter 1 | Chapter 2 | Chapter 3

Quick revision: Chapter 1 | Chapter 2 | Chapter 3