

GRADE 7 MATHEMATICS

Algebraic Expressions

Complete Printable Worksheet Pack

Includes	6 Practice Worksheets + 6 Answer Keys
Skills	Terms • Like Terms • Simplifying • Expanding • Substitution • Algebraic Reasoning
Level	Grade 7 / International Curriculum Friendly
Format	A4 • Print Ready

Worksheet 1 — Terms, Coefficients & Like Terms

Name: _____ Date: _____

1. Identify the coefficient and variable in $7x$.
2. Identify the constant term in $5a + 12$.
3. How many terms are in $4p - 3q + 9$?
4. Simplify: $6x + 4x$.
5. Simplify: $9a - 3a + 5$.
6. Simplify: $7m + 2 - 4m + 9$.
7. Simplify: $5x + 3y - 2x + 7y$.
8. Write an expression for: 8 more than twice n .
9. A rectangle has length $(x + 4)$ cm and width x cm. Write an expression for its perimeter.
10. Simplify: $3p + 5 - 2p + 7 + 4p$.

Show your working clearly. Simplify fully where possible.

Answer Key — Worksheet 1

Check your method as well as your final answer.

1. Coefficient 7; variable x .

2. 12.

3. 3 terms.

4. $10x$.

5. $6a + 5$.

6. $3m + 11$.

7. $3x + 10y$.

8. $2n + 8$.

9. $P = 4x + 8$ cm.

10. $5p + 12$.

Worksheet 2 — Simplifying Algebraic Expressions

Name: _____ Date: _____

1. Simplify: $8x + 5x - 3$.
2. Simplify: $12a - 7a + 4a$.
3. Simplify: $6y + 4 - 2y + 9$.
4. Simplify: $10m - 3 + 2m + 8 - 5m$.
5. Simplify: $4p + 3q - p + 5q$.
6. Simplify: $7r - 2s + 4r + 6s$.
7. Simplify: $9x + 4 - 3x + 2 - x$.
8. Simplify: $5a - 2b + 7 - 3a + 6b - 2$.
9. Simplify: $3(2x + 5) + 4x$.
10. Simplify: $5(2y - 3) - 2y + 7$.

Show your working clearly. Simplify fully where possible.

Answer Key — Worksheet 2

Check your method as well as your final answer.

1. $13x - 3$.

2. $9a$.

3. $4y + 13$.

4. $7m + 5$.

5. $3p + 8q$.

6. $11r + 4s$.

7. $5x + 6$.

8. $2a + 4b + 5$.

9. $10x + 15$.

10. $8y - 8$.

Worksheet 3 — Expanding Brackets

Name: _____ Date: _____

1. Expand: $3(x + 4)$.
2. Expand: $5(a - 2)$.
3. Expand: $7(2m + 3)$.
4. Expand: $4(3p - 5)$.
5. Expand and simplify: $2(x + 6) + 3x$.
6. Expand and simplify: $5(2a - 1) + 3a$.
7. Expand and simplify: $3(4y + 2) - 2y$.
8. Expand and simplify: $6(2m - 3) + 4(m + 1)$.
9. A square has side $(x + 3)$ cm. Write an expanded expression for its perimeter.
10. A rectangle has length $(2x + 1)$ cm and width $(x + 4)$ cm. Write an expanded expression for its perimeter.

Show your working clearly. Simplify fully where possible.

Answer Key — Worksheet 3

Check your method as well as your final answer.

1. $3x + 12$.

2. $5a - 10$.

3. $14m + 21$.

4. $12p - 20$.

5. $5x + 12$.

6. $13a - 5$.

7. $10y + 6$.

8. $16m - 14$.

9. $4x + 12$ cm.

10. $6x + 10$ cm.

Worksheet 4 — Substitution & Evaluation

Name: _____ Date: _____

1. Find $3x + 5$ when $x = 4$.
2. Find $7a - 2$ when $a = 6$.
3. Find $4m + 3n$ when $m = 5$ and $n = 2$.
4. Find $2p^2 + 1$ when $p = 3$.
5. Find $5x - 2y$ when $x = 8$ and $y = 3$.
6. Find $3a^2 - 2a$ when $a = 5$.
7. Find $2r + 3s - 4$ when $r = 7$ and $s = 2$.
8. Find $4(x + 3)$ when $x = 6$.
9. The cost of a taxi is $C = 50 + 12d$, where d is distance in km. Find C for $d = 8$.
10. The area of a rectangle is $A = l \times w$. Find A when $l = (x + 2)$, $w = 5$ and $x = 7$.

Show your working clearly. Simplify fully where possible.

Answer Key — Worksheet 4

Check your method as well as your final answer.

1. 17.
2. 40.
3. 26.
4. 19.
5. 34.
6. 65.
7. 16.
8. 36.
9. \$146.
10. 45 square units.

Worksheet 5 — Algebra in Real Life & Reasoning

Name: _____ Date: _____

1. A number is increased by 9 and the result is 24. Write an equation using n .
2. A cinema ticket costs \$12 and a snack costs \$5. Write an expression for the cost of t tickets and one snack.
3. A square has side length $x + 2$. Write an expression for its area.
4. A phone plan charges \$20 plus \$3 per GB used. Write a formula for the cost C for g GB.
5. Using $C = 20 + 3g$, find C when $g = 7$.
6. A rectangle has length $3x$ and width $x + 2$. Write an expression for its perimeter.
7. Simplify the perimeter from Question 6.
8. A student says $4(x + 3) = 4x + 3$. Explain the error and give the correct expansion.
9. Which is larger when $x = 6$: $3x + 14$ or $2(x + 8)$? Show working.
10. Find a value of x for which $5x + 2 = 3x + 18$.

Show your working clearly. Simplify fully where possible.

Answer Key — Worksheet 5

Check your method as well as your final answer.

1. $n + 9 = 24$.

2. $12t + 5$.

3. $(x + 2)^2$, or $x^2 + 4x + 4$.

4. $C = 20 + 3g$.

5. \$41.

6. $P = 2[3x + (x+2)]$.

7. $P = 8x + 4$.

8. 4 must multiply both terms: $4x + 12$.

9. Both equal 32.

10. $x = 8$.

Worksheet 6 — Algebraic Expressions Challenge

Name: _____ Date: _____

1. Simplify: $4(2x - 3) + 3(x + 5) - 2x$.
2. Simplify: $7a - 2(3a - 4) + 5$.
3. If $x = -2$, find $3x^2 - 4x + 1$.
4. The expression $5n + 7$ represents the n th term of a sequence. Find the 10th term.
5. A rectangle has length $(2x + 3)$ and width $(x - 1)$. Find an expanded expression for its perimeter.
6. The sum of two consecutive integers is 51. Write an algebraic equation and find the integers.
7. A number is multiplied by 4, then 7 is subtracted. The result is 29. Find the number.
8. Simplify: $3(2x + 1) - 2(x - 4) + 5x$.
9. For $x = 4$, compare $A = 2(x + 7)$ and $B = 3x + 5$. Which is greater and by how much?
10. A rectangle has perimeter 50 cm. Its length is $(x + 5)$ cm and width is x cm. Find x and the dimensions.

Show your working clearly. Simplify fully where possible.

Answer Key — Worksheet 6

Check your method as well as your final answer.

1. $9x + 3$.

2. $a + 13$.

3. 21.

4. 57.

5. $P = 6x + 4$.

6. $n + (n+1) = 51$; 25 and 26.

7. $4n - 7 = 29$; $n = 9$.

8. $7x + 11$.

9. $A = 22$, $B = 17$; A is greater by 5.

10. $2[(x+5)+x]=50$, so $x=10$; dimensions 15 cm by 10 cm.