

Boost Free Lessons - Year 7 Maths

Lesson 12: Variables

Name: _____ Grade: _____ Date: _____

Worked Example 1

Simplify $5a + 3a - 2a$

1. All three are **like terms**. Each one has exactly the same variable, a .
2. Add and subtract the coefficients (the numbers in front): $5 + 3 - 2 = 6$.
3. Keep the variable exactly as it was.

$= 6a$

Worked Example 2

Simplify $4x + 7y - x + 2y$

$$(4x - x) + (7y + 2y)$$

x terms (solid): $4x - x = 3x$

y terms (dashed): $7y + 2y = 9y$

1. Circle each group of like terms, and always take the sign that sits on the **left** of the term with it.
2. The x terms are $4x$ and $-x$. The y terms are $+7y$ and $+2y$.
3. Now evaluate each circle on its own: $4x - x = 3x$, and $7y + 2y = 9y$.
4. Remember that x on its own means $1x$, so $4x - x = 3x$.
5. x terms and y terms are unlike, so they cannot be combined any further.

$= 3x + 9y$

Remember: Like terms have exactly the same variable. $3x$ and $3y$ are **not** like terms, so they cannot be combined.



Question 1: Simplify the following.

1. $4m + 5m$

2. $9k - 3k$

3. $2p + p$

4. $8t - 8t$

5. $6a + 2a + a$

6. $12y - 5y + 3y$

7. $3b + 7b - 4b$

8. $10n - 2n - 5n$

9. $w + w + w + w$

10. $15c - 20c$



Question 2: Simplify the following.

1. $3x + 2y + 5x$

2. $7a + 4b - 2a$

3. $6m - 2n + 3n$

4. $5p + 3q - p - q$

5. $2x + 9 + 4x - 3$

6. $8h + 5 - 3h + 2$

7. $4c + 6d - 7c + d$

8. $10 + 3k - 4 - 8k$



Question 3: Answer the following questions.

1. A pen costs \$ p . Write an expression for the cost of 6 pens.
2. Sam is x years old. His sister is 3 years older than him. Write an expression for his sister's age.
3. Write an expression for the perimeter of a square with side length s .
4. Ava has n stickers. She gives away 5 and then buys 12 more. Write an expression for how many she has now, and simplify it.
5. Explain why the expression $4x + 3y$ cannot be simplified any further.





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Answers : Variables**Question 1**

- | | |
|---------|-----------|
| 1. $9m$ | 6. $10y$ |
| 2. $6k$ | 7. $6b$ |
| 3. $3p$ | 8. $3n$ |
| 4. 0 | 9. $4w$ |
| 5. $9a$ | 10. $-5c$ |

Question 2

- | | |
|--------------|---------------|
| 1. $8x + 2y$ | 5. $6x + 6$ |
| 2. $5a + 4b$ | 6. $5h + 7$ |
| 3. $6m + n$ | 7. $-3c + 7d$ |
| 4. $4p + 2q$ | 8. $6 - 5k$ |

Question 3

1. $6p$
2. $x + 3$
3. $4s$
4. $n - 5 + 12 = n + 7$
5. $4x$ and $3y$ are unlike terms. The letters x and y stand for different quantities, so they cannot be added together.

