

Worksheet Evaluating Expressions Questions and Answers PDF

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Part 1: Building a Foundation

What is an algebraic expression?

Hint: Think about the components that make up an algebraic expression.

- A) A combination of numbers and operations
- B) A combination of numbers, variables, and operations ✓
- C) A sentence with numbers and words
- D) A graph of a function

■ An algebraic expression is a combination of numbers, variables, and operations.

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| An algebraic expression is a combination of numbers, variables, and operations.

Which of the following are components of an expression? (Select all that apply)

Hint: Consider the elements that can be found in an expression.

- A) Variables ✓
- B) Coefficients ✓
- C) Exponents ✓
- D) Sentences

| Components of an expression include variables, coefficients, and exponents.

Which of the following are components of an expression? (Select all that apply)

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- A) Coefficients ✓
- A) Exponents ✓
- A) Sentences

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| Components of an expression include variables, coefficients, and exponents.

Explain the role of a variable in an algebraic expression.

Hint: Think about how variables represent unknown values.

A variable represents an unknown value that can change within an expression.

Explain the role of a variable in an algebraic expression.

Hint: Think about how variables are used to represent unknown values.

A variable represents an unknown value that can change, allowing expressions to generalize mathematical relationships.

Explain the role of a variable in an algebraic expression.

Hint: Think about how variables represent unknown values.

A variable represents an unknown value that can change within an expression.

Which of the following expressions is a numerical expression?

Hint: Look for expressions that do not contain variables.

A) $3x + 5$

- B) $7 + 4$ ✓
- C) $2y - 3z$
- D) $x^2 + 6$

■ A numerical expression consists only of numbers and operations, without any variables.

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■ A numerical expression consists only of numbers and operations.

Part 2: Comprehension and Application

If $x = 3$, what is the value of the expression $2x + 4$?

Hint: Substitute the value of x into the expression.

- A) 6
- B) 8 ✓
- C) 10
- D) 12

■ By substituting $x = 3$ into the expression, you can calculate the value.

If $x = 3$, what is the value of the expression $2x + 4$?

Hint: Substitute x with 3 and calculate.

- A) 6
- A) 8
- A) 10 ✓
- A) 12

■ The value of the expression is 10 when $x = 3$.

If $x = 3$, what is the value of the expression $2x + 4$?

Hint: Substitute the value of x into the expression.

- A) 6
- B) 8
- C) 10 ✓
- D) 12

■ Substituting $x = 3$ gives $2(3) + 4 = 10$.

Which of the following statements are true about the expression $4a + 3b$? (Select all that apply)

Hint: Consider the properties of the expression.

- A) It is a numerical expression.
- B) It contains two variables. ✓
- C) The coefficient of a is 4. ✓
- D) The constant term is 3.

■ The expression contains two variables and has a coefficient of 4 for a .

Which of the following statements are true about the expression $4a + 3b$? (Select all that apply)

Hint: Analyze the components of the expression.

- A) It is a numerical expression.
- A) It contains two variables. ✓
- A) The coefficient of a is 4. ✓
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The expression contains two variables and has a coefficient of 4 for a.

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The expression contains two variables and has a coefficient of 4 for a.

Describe how the distributive property can be used to simplify the expression $3(x + 2)$.

Hint: Think about how to distribute the 3 across the terms in the parentheses.

The distributive property allows you to multiply each term inside the parentheses by 3.

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The distributive property allows you to multiply each term inside the parentheses by 3, resulting in $3x + 6$.

Describe how the distributive property can be used to simplify the expression $3(x + 2)$.

Hint: Think about how to distribute the 3 across the terms in the parentheses.

The distributive property allows you to multiply each term inside the parentheses by 3.

Evaluate the expression $5y - 2$ when $y = 4$.

Hint: Substitute the value of y into the expression.

- A) 18
- B) 20 ✓
- C) 22
- D) 24

By substituting $y = 4$ into the expression, you can find the value.

Evaluate the expression $5y - 2$ when $y = 4$.

Hint: Substitute y with 4 and calculate.

- A) 18 ✓
- A) 20
- A) 22
- A) 24

The value of the expression is 18 when $y = 4$.

Evaluate the expression $5y - 2$ when $y = 4$.

Hint: Substitute the value of y into the expression.

- A) 18 ✓
- B) 20
- C) 22

D) 24

Substituting $y = 4$ gives $5(4) - 2 = 18$.

Which of the following expressions are equivalent to $2(x + 3)$? (Select all that apply)

Hint: Consider how to distribute the 2 across the terms in the parentheses.

A) $2x + 6$ ✓

B) $2x + 3$

C) $x + 6$

D) $2x + 3x$

The equivalent expressions will result from distributing the 2 to both terms inside the parentheses.

Which of the following expressions are equivalent to $2(x + 3)$? (Select all that apply)

Hint: Consider how to distribute the 2 across the terms in the parentheses.

A) $2x + 6$ ✓

A) $2x + 3$

A) $x + 6$

A) $2x + 3x$

The equivalent expressions are those that simplify to the same result as $2(x + 3)$.

Which of the following expressions are equivalent to $2(x + 3)$? (Select all that apply)

Hint: Consider how to distribute the 2 across the terms in the parentheses.

A) $2x + 6$ ✓

B) $2x + 3$

C) $x + 6$

D) $2x + 3x$

Equivalent expressions include those that simplify to the same result.

Solve for z in the expression $3z + 7 = 19$.

Hint: Isolate z by performing inverse operations.

To solve for z, subtract 7 from both sides and then divide by 3.

Solve for z in the expression $3z + 7 = 19$.

Hint: Isolate z on one side of the equation.

To solve for z, subtract 7 from both sides and then divide by 3.

Solve for z in the expression $3z + 7 = 19$.

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To solve for z, subtract 7 from both sides and then divide by 3.

Part 3: Analysis, Evaluation, and Creation

Which of the following expressions correctly applies the order of operations to $3 + 4 * 2$?

Hint: Remember to perform multiplication before addition.

- A) 14
- B) 11 ✓
- C) 16
- D) 10

■ The correct application of the order of operations results in 11.

Which of the following expressions correctly applies the order of operations to $3 + 4 * 2$?

Hint: Remember to perform multiplication before addition.

- A) 14
- A) 11 ✓
- A) 16
- A) 10

■ The correct answer is 11, as multiplication is performed before addition.

Which of the following expressions correctly applies the order of operations to $3 + 4 * 2$?

Hint: Remember to perform multiplication before addition.

- A) 14
- B) 11 ✓
- C) 16
- D) 10

■ The correct application of the order of operations gives $3 + 8 = 11$.

Analyze the expression $6(a - 2) + 3a$. Which of the following are true? (Select all that apply)

Hint: Consider how to simplify the expression.

- A) The expression can be simplified to $9a - 12$. ✓
- B) The expression can be simplified to $6a - 12 + 3a$. ✓
- C) The expression contains a distributive property. ✓
- D) The expression has a constant term of -12 . ✓

| The expression can be simplified using the distributive property and contains a constant term.

Analyze the expression $6(a - 2) + 3a$. Which of the following are true? (Select all that apply)

Hint: Consider how to simplify the expression.

- A) The expression can be simplified to $9a - 12$. ✓**
- A) The expression can be simplified to $6a - 12 + 3a$. ✓**
- A) The expression contains a distributive property. ✓**
- A) The expression has a constant term of -12 .

| The expression can be simplified and contains a distributive property.

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- C) The expression contains a distributive property. ✓**
- D) The expression has a constant term of -12 .

| The expression can be simplified and contains a distributive property.

Break down the expression $4(x + 5) - 2x$ and explain each step of simplification.

Hint: Think about distributing and combining like terms.

| **Distribute 4 to both terms in the parentheses, then combine like terms with $-2x$.**

Break down the expression $4(x + 5) - 2x$ and explain each step of simplification.

Hint: Think about distributing and combining like terms.

To simplify, distribute 4 and then combine like terms.

Break down the expression $4(x + 5) - 2x$ and explain each step of simplification.

Hint: Think about how to distribute and combine like terms.

Distributing gives $4x + 20 - 2x$, which simplifies to $2x + 20$.

Which expression represents the same value as $2(x + 3) - x$ when $x = 5$?

Hint: Substitute the value of x into the expression.

- A) 10
- B) 11 ✓
- C) 12
- D) 13

By substituting $x = 5$, you can find the equivalent expression.

Which expression represents the same value as $2(x + 3) - x$ when $x = 5$?

Hint: Substitute x with 5 and evaluate.

- A) 10
- A) 11
- A) 12 ✓
- A) 13

The expression evaluates to 12 when $x = 5$.

Which expression represents the same value as $2(x + 3) - x$ when $x = 5$?

Hint: Substitute $x = 5$ into the expression.

- A) 10
 B) 11 ✓
 C) 12
 D) 13

Substituting $x = 5$ gives $2(5 + 3) - 5 = 11$.

Create an expression equivalent to $3(x + 4) - 2x$ and identify which of the following are correct transformations. (Select all that apply)

Hint: Consider how to distribute and combine like terms.

- A) $x + 12$
 B) $3x + 12 - 2x$ ✓
 C) $x + 12$
 D) $3x + 4 - 2x$

The equivalent expression will result from distributing and combining like terms.

Create an expression equivalent to $3(x + 4) - 2x$ and identify which of the following are correct transformations. (Select all that apply)

Hint: Consider how to distribute and combine like terms.

- A) $x + 12$
 A) $3x + 12 - 2x$ ✓
 A) $x + 12$
 A) $3x + 4 - 2x$ ✓

The equivalent expressions will simplify to the same result.

Create an expression equivalent to $3(x + 4) - 2x$ and identify which of the following are correct transformations. (Select all that apply)

Hint: Consider how to distribute and combine like terms.

- A) $x + 12$

- B) $3x + 12 - 2x$ ✓
- C) $x + 12$
- D) $3x + 4 - 2x$

Equivalent expressions can be formed by distributing and combining like terms.

Design an expression that represents the total cost of buying x apples at \$2 each and y bananas at \$1.50 each. Explain your reasoning.

Hint: Think about how to represent costs in an expression.

The expression would be $2x + 1.5y$, representing the total cost based on the quantity of apples and bananas.

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Design an expression that represents the total cost of buying x apples at \$2 each and y bananas at \$1.50 each. Explain your reasoning.

Hint: Think about how to represent costs in an expression.

The expression is $2x + 1.5y$, representing the total cost of apples and bananas.

Evaluate the expression $5(x - 2) + 3y$ for $x = 4$ and $y = 2$. Show your work and explain each step.

Hint: Substitute the values of x and y into the expression.

1. What is the first step in evaluating the expression?

Substitute $x = 4$ and $y = 2$ into the expression.

2. What do you do after substituting the values?

Simplify the expression step by step.

3. What is the final result?

The final result after simplification.

Substituting the values and simplifying will yield the final result.