Translate Algebraic Expressions Answer Key

3. Copy and complete these identities –
   a. $27 \times 12 + 13 \times 12 = \_\_\_ \times 12 = \_\_\_$
   b. $6.4 \times 14.7 + 3.6 \times 14.7 = \_\_\_ \times 14.7 = \_\_\_$
   c. $2 \times a + \_\_\_ \times a + 3 \times b + \_\_\_ \times b = 9a + 15b$
4. Work out these when $a = 3$ and $b = 5$.
   a. $3 + 5b$ b. $7 - 8b$ c. $2a(3 - 2b)$
5. Work out these expressions –
   a. $5 + (b^3 - a)$, when $a = 2$, $b = 3$.
   b. $(a + b)^2 - c$.
6. Work out this $10d^3 - 6c$, when $c = 3$ and $d = 2$.
7. Simplify –
   a. $3y^6 \times 5z \times 4y^2 \times 5z$.
   b. $20c^5 \div 5c^2$.
8. Multiply out –
   a. $9(7x - 2) + 8x(3 + x + 2y)$
   b. $5(2 - 3x) - 4(x - 2)$.

WORKSHEET 2
CP2 (MATHEMATICS ALGEBRA

1. Write an expression for –
   a. m less than square of n.
   b. Multiply m by 5 and then divide by 3.
2. Decide whether these are an expression or an identity. –
   a. $3x + 4 = x + 1 + 2x + 3$
   b. $3x + 4 + 2x + 9$
   c. $3x + 4 = 2x + 9$
3. Copy and complete this table –

n	1	3	4		9			
2n							24	60
n^2				49		121		

4. Work out these expressions.

Translate algebraic expressions answer key is a vital resource for students and educators alike, providing clarity and understanding in the realm of mathematics. Algebraic expressions form the foundation of algebra, a significant branch of mathematics that deals with symbols and the rules for manipulating these symbols. This article aims to delve into the intricacies of translating algebraic expressions, providing a comprehensive answer key and examples to help learners grasp this essential skill.

Understanding Algebraic Expressions

Algebraic expressions are combinations of numbers, variables, and operators (such as addition, subtraction, multiplication, and division). The primary goal of translating algebraic expressions is to convert verbal phrases into mathematical language, which is essential for problem-solving in algebra.

For example, the phrase "three times a number" can be translated into the algebraic expression 3x, where x represents the unknown number.

Components of Algebraic Expressions

To effectively translate verbal expressions into algebraic forms, it is crucial to understand the components involved:

1. Variables: Symbols (usually letters) that represent unknown values. For instance, in the expression 2x + 5, x is the variable.
2. Constants: Fixed values that do not change. For example, in the expression 2x + 5, the number 5 is a constant.
3. Operators: Symbols that indicate mathematical operations. The most common operators are:
- Addition (+)
- Subtraction (−)
- Multiplication (× or)
- Division (÷ or /)

Translating Verbal Phrases into Algebraic Expressions

The process of translating verbal phrases into algebraic expressions involves recognizing keywords and phrases that signify mathematical operations. Below are some common phrases and their corresponding algebraic expressions:

Keywords for Operations

- Addition:
- "sum of" → +
- "increased by" → +
- "more than" → +

- Subtraction:
- "difference of" → −
- "decreased by" → −
- "less than" → −

- Multiplication:
- "product of" → ×
- "times" → ×
- "of" (when used in context) → ×

- Division:
- "quotient of" → ÷
- "divided by" → ÷
- "per" → ÷

Common Translations

Here are some common verbal phrases and their algebraic translations:

1. "The sum of x and 10" translates to x + 10.
2. "Five less than a number y" translates to y - 5.
3. "Twice the value of z" translates to 2z.
4. "The product of 4 and a number n" translates to 4n.
5. "The quotient of a number m and 3" translates to m/3.
6. "The difference between 15 and a number x" translates to 15 - x.

Practice Problems and Answer Key

To reinforce learning, students can practice translating various verbal expressions into algebraic expressions. Below are some practice problems, followed by their solutions in the answer key.

Practice Problems

Translate the following verbal expressions into algebraic expressions:

1. The sum of a number a and 12.
2. Eight more than twice a number b.
3. The difference of 20 and a number c.
4. The product of 7 and a number d decreased by 4.
5. The quotient of a number e and 5 increased by 10.
6. Three times the sum of a number f and 6.

Answer Key

Here is the answer key for the practice problems:

1. a + 12
2. 2b + 8
3. 20 - c
4. 7d - 4
5. (e/5) + 10
6. 3(f + 6)

Tips for Effective Translation

Translating algebraic expressions can be challenging at first, but with practice and the right strategies, students can improve their skills. Here are some tips to aid in the translation process:

- **Familiarize with Keywords:** Make a list of common keywords associated with each operation. This will serve as a reference when translating.
- **Break Down the Problem:** If a verbal expression is complex, break it down into smaller parts. Translate each part separately before combining them.
- **Practice Regularly:** The more you practice, the more fluent you will become in translating expressions. Use worksheets, online resources, or create your own problems.
- **Check Your Work:** After translating an expression, double-check to ensure that it accurately reflects the verbal phrase.
- **Seek Help When Needed:** If you're struggling, don't hesitate to ask a teacher or tutor for clarification and guidance.

Conclusion

In conclusion, mastering the skill of translating algebraic expressions is fundamental for success in algebra and higher-level mathematics. The ability to convert verbal phrases into mathematical expressions enhances problem-solving capabilities and deepens understanding of algebraic concepts. By utilizing the provided keywords, practicing with various problems, and referring to the answer key, students can build a strong foundation in this crucial area of mathematics. With persistence and practice, anyone can become proficient in translating algebraic expressions, paving the way for future academic achievements in mathematics.

Frequently Asked Questions

What is the purpose of translating algebraic expressions?

The purpose is to convert verbal statements into mathematical symbols, making it easier to solve problems.

How do you translate the phrase 'twice a number' into an algebraic expression?

It can be translated as '2x', where x represents the unknown number.

What is the algebraic expression for 'the sum of a number and 5'?

The expression is 'x + 5', where x is the unknown number.

How can '3 less than a number' be expressed algebraically?

It can be expressed as 'x - 3', where x is the number.

What does 'the product of 4 and a number' translate to in algebraic terms?

It translates to '4x', where x is the unknown number.

Translate 'the quotient of a number and 2' into an algebraic expression.

It is expressed as 'x / 2', where x is the number.

What is the algebraic expression for 'the difference between a number and 10'?

The expression is 'x - 10', where x is the number.

How do you represent 'a number increased by 7' in algebra?

It is represented as 'x + 7', where x is the unknown number.

What does 'half of a number' translate to in algebraic form?

It translates to 'x / 2', where x is the unknown number.

How can '5 times a number decreased by 3' be expressed algebraically?

It can be expressed as '5x - 3', where x is the number.

Translate Algebraic Expressions Answer Key

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