UNDERSTANDING WRITTEN EXPRESSIONS

An expression is defined as a mathematical symbol or group of symbols that represent a value. Throughout this study guide, we have seen many different kinds of variables, operations, and numbers. Each of the following examples are expressions:

- \( x \)
- \( 6y \)
- \( 6x + 3 \)

Some questions on the ATI TEAS will test your understanding of translating word problems into expressions and equations. You use variables to represent unknown quantities.

For example:
- Twice a number: \( 2x \)
- Half the girls: \( \frac{1}{2}g \)
- Three less than the total number: \( t - 3 \)

UNDERSTANDING WRITTEN EQUATIONS

An equation is defined as multiple expressions combined with an equal sign.

For example:

- \( x = 100 \)
- \( x + 2 = 20 \)
- \( 4x(2 - 4) = 20 \)

Some written equations will require the applicant to translate word problems into equations to solve. Like in written expressions, we use variables to represent unknown quantities.

Here are some examples of sentences and written equations:

- There are 6 times as many boys as girls: \( b = 6g \)
- Taylor paid $120 for 4 shirts and 2 pairs of pants: \( 4s + 2p = 120 \)

UNDERSTANDING WRITTEN INEQUALITIES

An inequality is defined as multiple expressions combined with an inequality symbol such as \(<\), \(>\), \(\leq\), and \(\geq\).

For example:

- \( x \geq 100 \)
- \( x + 20 > 40 \)
- \( 4x(2 - y) < 60 \)
Understanding Written Inequalities

Some written equations will require the applicant to translate word problems into inequality equations to solve. Use variables to represent unknown quantities.

Here are some examples of sentences and written inequalities:

Taylor paid less than $120 for 4 shirts and 2 pairs of pants: $4s + 2p \leq 120$

Understanding Algebra Word Problems

In order to correctly solve algebra word problems, you must put all of these learned skills together. Be sure to take your time and write your equations or inequalities correctly.

For example: Jennifer and Calvin collect figurines. Together they have a total of 46 figurines. If Jennifer has 12 more figurines than Calvin, how many figurines does Calvin have in his collection?

Let $j =$ the number of figurines Jennifer has and $c =$ the number of figurines Calvin has. Now you can write the equation as:

$c + j = 46$ and $c = j + 12$.

Next, you can substitute the $c$ in the first equation with $c = j + 12$.

$j + 12 + j = 46$

Subtract 12 from each side.

$2j + 12 = 46$

Divide 2 from both sides.

$j = 17$

Finish the equation and solve for $J$.

$17 + 12 = 29$

The final answer the equation is Calvin has 17 figurines.