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Variables and Expressions

Addition

and
increased
more
more than
plus
sum
total

Subtraction

decreased
difference
less
less than
left
lower than
minus

* You cannot always subtract the numbers in the order that they appear in the problem.

Multiplication

Double
Half
Product
Times
Triple
Twice

Division

Divide into, by, or among
quotient

Variables and Expressions 1-1

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Vocabulary

1. **quantity**: anything that can be measured or counted.
2. **Variable**: a symbol, usually a letter, that represents the value(s) of a variable quantity.
3. **Algebraic Expression**: a mathematical phrase that includes one or more variables.
4. **Numerical Expression**: a mathematical phrase involving numbers and operation symbols, but no variables.
5. **coefficient**: a number multiplied by a variable; Ex: $4x$
↑
coefficient

Example 1: Writing Expressions with Addition and Subtraction

What is an algebraic expression for the word phrase?

<u>Word Phrase</u>	<u>Expression</u>
A. 32 more than a number n	$n + 32$
B. 58 less a number n	$58 - n$

Example 2: Writing Expressions with Multiplication and Division

A. 8 times a number n	$8 \cdot n, 8 \times n, 8n$
B. the quotient of a number, n , and 5	$n \div 5, \frac{n}{5}$

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Example 3: Writing Expressions with two operations
Word Phrase

- | | Expression |
|---|-------------------|
| A. 3 more than twice a number x | $2x + 3$ |
| B. 9 less than the quotient of 6 and a number x | $\frac{6}{x} - 9$ |
| C. the product of 4 and the sum of a number x and 7 | $4(x + 7)$ |

Example 4: Using Words for an Expression

Expression: $3x$ ← a number and a variable
 $3 \cdot x$ side by side indicate a product

Words: three times a number x

or

the product of 3 and a number x

Example 5: Writing a Rule to Describe a Pattern

The table below shows how the height above the floor of a house of cards depends on the number of levels. What is a rule for the height? Give the rule in words and as an algebraic expression.

# of levels	Height (in.)
2	$(3.5 \cdot 2) + 24$
3	$(3.5 \cdot 3) + 24$
4	$(3.5 \cdot 4) + 24$
n	?

Words: Multiply the number of levels by 3.5 and add 24.

Algebraic

Expression: $3.5n + 24$