



Algebraic Expression and Equation

Let's first have a review:

What is an algebraic equation? an algebraic expression?

An **algebraic equation** is a mathematical sentence with an **equal sign** (\equiv), which shows that two expressions on either side are equal.

An **algebraic expression** is a mathematical phrase that uses variables, numerals, and operation symbols.

Let's take a look at this example:

Elil buys 3 rolls of tissues for ₱30.00 each and 2 wipes for ₱45.00 each. He gives the cashier a ₱500.00 bill. Write an expression for the total cost he buys and an equation for the amount of change he will receive.

Let's take a look at this example:

Elil buys 3 rolls of tissues for ₱30.00 each and 2 wipes for ₱45.00 each.

He gives the cashier a ₱500.00 bill. Write an expression for the total cost he buys and an equation for the amount of change he will receive.

Let's use variable to represent the price of each item.
Let s be the price of each roll of tissues, which is ₱30.00.
 d be the price of each wipe, which is ₱45.00.
 t be the amount of change

Now translate the phrases:

3 rolls for ₱30.00 each
 $3s$

plus
+

2 wipes for ₱45.00 each
 $2d$

Algebraic expression: $3s + 2d$.

This represents the total cost of the 3 rolls of tissue for ₱30.00 each and 2 wipes for ₱45.00 each.

P500.00 minus the total cost of items is the amount of change

$$\underbrace{500} - \underbrace{3s + 2d} = \underbrace{t}$$

Algebraic equation: **$500 - (3s + 2d) = t$**

Let's try this problems

Example 1:

Jet is a newly hired nurse in a private hospital in Bacoar, Cavite. As a policy of the hospital, he should wear PPE (personal protective equipment). He was given a clothing allowance of P15,000.00. How much PPE can he buy using this amount? The prices of PPE depend on its brand.

Example 1:

Jet is a newly hired nurse in a private hospital in Bacoar, Cavite. As a policy of the hospital, he should wear PPE (personal protective equipment). He was given a clothing allowance of P15,000.00. How much PPE can he buy using this amount? The prices of PPE depend on its brand.

Look at the price list for common brands of Personal Protective Equipment (PPE).

BRAND	PRICE PER PPE	EQUATION	NUMBER OF PPE
Brand A	P1500.00	$P15,000 \div P1500 = n$	$N = 10$
Brand B	P1000.00	$P15,000 \div P1000 = n$	$N = 15$
Brand C	P750.00	$P15,000 \div P750 = n$	$N = 20$
Brand D	P500.00	$P15,000 \div P500 = n$	$N = 30$

Therefore, the number of PPE he can buy using **15,000.00 clothes allowance** depends on the **brand of PPE** he prefers.

Example 2;

Mr. and Mrs. Torres own a laundry shop. They had 123 customers this week. This is 13 fewer than last week since it is a pandemic. Write an algebraic equation for the number of customers they had last week. Let c be the number of customers they had last week.

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Translate:

13 fewer than the number of customers last week is 123



$$c - 13$$

$$= 123$$

Algebraic Equation: $c - 13 = 123$

Example 2:

Mr. and Mrs. Torres own a laundry shop. They had 123 customers this week. This is 13 fewer than last week since it is a pandemic. Write an algebraic equation for the number of customers they had last week. Let c be the number of customers they had last week.

Lets us solve the equation

$$c - 13 = 123$$

$$c - 13 + 13 = 123 - 13$$

$$c = 110$$

Adding the additive inverse of -13 , that is adding 13 on both sides to cancel out -13 . Since $-13 + 13 = 0$

Therefore, they had 110 customers last week.