

Mathematics

Group: _____ Class: _____

Student Learning Worksheet



Algebraic

Group Identity

Group Member Name:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Learning Objective

- Students are able to identify the concepts of variables, constants, terms, coefficients, like terms, and unlike terms.
- Students are able to identify and determine the results of the properties of operations (commutative, associative, and distributive) in algebraic expressions.

Instruction for Using the Worksheet

- Read the following worksheet carefully.
- Complete the activities following the steps listed
- Discuss with your group member, if you don't understand, ask your teacher.

Activity 1

Orientation



Let's think and discuss!

Imagine the following situation:

At the school cafeteria, you buy some bread and drinks. The price of one loaf of bread is unknown, so you call it r . The price of one drink is also unknown, so you call it m .

Today you buy 2 loaves of bread and 3 drinks.

1. If the prices of bread and drinks are not yet known, how can you write down the total price of your purchase?

Write it down using symbols that you make yourself!

Answer: _____

2. Why did you use that symbol (letter) to represent the price?

Answer: _____

3. What if the price of the drink is already known, for example, Rp5,000? What changes?

Answer: _____



Why do we often use letters such as x or r in mathematics? Are their values always the same, or can they change? And why are there numbers in front of them that also affect the result? Discuss this, as this may be where the secret of algebra lies.

Activity 2

Discovery



Look at the following table and complete it:

Algebraic form	What is known?	What is unknown?	Symbols or numbers	Element name
$5x$	Number of items is 5	The value of each item is unknown.	5 and x	_____
$3y + 7$	7 is known for sure	The price of each "y" is unknown.	3, y, dan 7	_____
$2p + 4p + 6$	There are several similar things that add up.	_____	_____	_____



Discuss the questions below:

1. Which part can change in value?
2. Which part always remains the same?
3. What do the numbers in front of the letters mean?

Answer:



Instructions:

- The part whose value can change is called a variable.
- The part whose value remains constant is called a constant.
- The number that indicates the number of variables is called the coefficient.

Conclusion:

Activity 3

Application

1. Write the algebraic expression that represents the following situation:

- a. Dika bought 4 books at a price of b per book and 2 pencils at a price of p per pencil.

Answer: _____

- b. Rani has 3 packs of candy, each pack contains k pieces of candy, and she is given 5 additional pieces of candy.

Answer: _____

2. From the algebraic form you wrote, mention:

Variable: _____

Constant: _____

Coefficient: _____



Answer in your own words:

1. What is a variable in your own words?

Answer: _____

2. What is a constant?

Answer: _____

3. What is a coefficient?

Answer: _____

4. What is the relationship between these three concepts in algebraic form?

Answer: _____

Activity 3

Application



Scan the barcode below!

SCAN ME



Complete the table below!

Using the website above, check whether the answer is correct.

Question	Step 1	Step 2
$4x + (-3) = (-7)$	3	$x = (-1)$

Activity 4

Properties of Operations on Algebraic Forms

1. Commutative Property

Compare the results of the answer below if $x = 1$ and $y = 2$

$$2x + 3y = \dots \text{ and } 3y + 2x = \dots$$

What did you find?

Answer: _____

2. Associative Property

Compare the results from:

$$(x + y) + z \text{ and } x + (y + z)$$

Are the results different?

Answer: _____

3. Distributive Property

Calculate and compare:

$$2(x + 3) \text{ and } 2x + 6$$

What's your opinion?

Answer: _____



Conclusion:

Activity 5

Application

1. A store sells 3 types of pens. The price of each pen is $(x + 2)$ thousand rupiah. If you buy 4 pens, the algebraic expression for the total cost using the distributive property is

Answer: _____

2. The expression $(3a + 5b) + (2a + b)$ has the same result when the terms are rearranged because of the commutative property. An equivalent form is

Answer: _____

3. Given the property $(a + b) + c = a + (b + c)$, rewrite $(2x + 3y) + 5z$ using the associative property ...

Answer: _____

4. Apply the distributive property to $6(2y + 3)$. The result is ...

Answer: _____

5. Consider the transformation:

$$4a + 7b = 7b + 4a$$

This transformation uses the

Answer: _____

Activity 6

Conclusion and Reflection



Conclusion:

After studying today's material, write down your group's conclusions!



Reflection: