TOPIC 7

LESSON 7.2a
Into The Unknown

6.EE.2   6.EE.2a
6.EE.2b 6.EE.2c

Objective Introduction to Algebraic Expressions

Warm-Up

In the school cafeteria, soft pretzels sell for $1.25 each. Determine how much money the cafeteria earns in each situation.

1. On Monday, the cafeteria sold 14 soft pretzels.

2. On Wednesday, the cafeteria sold 35 soft pretzels.

3. On Thursday, the cafeteria sold 50 soft pretzels.

Do You Speak Math?

Rewrite each statement using symbols.

1. fourteen more than six

2. six more than fourteen

3. seven less than thirteen

4. thirteen less than seven

5. twenty-three subtracted from thirty

6. thirty subtracted from twenty-three

7. the quotient of twelve divided by four

8. the quotient of four divided by twelve

9. one-fourth of twenty-eight

10. two to the seventh power

11. seven squared

Writing Expressions with Variables

Consider the quantity that changes as you think about the situations in Question 1.

1. A school lunch costs $1.85 for each student. For each situation, write a numeric expression to determine how much money is collected. Then evaluate the expression.

a. Fifty-five students purchase a school lunch.

b. One hundred twenty-six students purchase a school lunch.

c. Two hundred thirteen students purchase a school lunch.

d. One thousand five hundred twelve students purchase a school lunch.

2. Write a sentence to describe how you can determine the amount of money collected for any number of students buying school lunches.

In Question 1 there is one quantity that changes or varies—the number of students who bought school lunches. In mathematics, letters are often used to represent quantities that vary. These letters are called variables, and they help you write algebraic expressions to represent situations. An algebraic expression is an expression that has at least one variable.

3. Write an algebraic expression to represent the total amount of money collected for any number of students buying school lunches.

A number that is multiplied by a variable in an algebraic expression is called a coefficient.

4. Identify a coefficient in the expression you wrote in Question 3.

5. The cost to rent a skating rink is $215 for a two-hour party. The cost will be shared equally among all the people who attend the party. For each number of attendees, write a numeric expression to determine how much each person will pay. Then evaluate the expression.

a. 25 attendees   b. 81 attendees

c. 108 attendees

d. Write an algebraic expression to represent how much each person will pay to attend the skate party.

6. Jimmy has three 300-minute international calling cards.
a. Complete the table to determine how many minutes are left on each card after each call.

Minutes on Card	Duration of Call	Minutes Left on Card
300	33 min	
300	57 min	
300	1 h 17 min	

b. Write an algebraic expression that represents the number of minutes remaining after each call on each card.

7. Write an algebraic expression to represent each situation. Identify the coefficient(s).

a. Ben is selling tickets to the school play. How many will he have left if he starts with t tickets and sells 125 tickets?

b. A plane descends to $\frac{5}{6}$ of its cruising altitude, a. What is its new altitude?

c. A cube has an edge length of s.

i. What is the volume of the cube?

ii. What is the surface area of the cube?

d. Used paperback books cost $6.25 each with an additional shipping and handling cost of $8.75. What is the cost of x books?

e. Chairs cost $35, and sofas cost $75. How much does it cost to purchase x chairs and y sofas?

8. Write an algebraic expression to represent each word expression.

a. the quotient of a number n divided by 7

b. 5 more than c c. m less than 9

d. one-fourth of a number n

e. fourteen less than three times a number n

f. six times a number n subtracted from 21

g. one-fourth of a number n minus 6

h. ten times the square of a number w divided by 12

Let's play Expression Explosion! You teacher is going to hand out cards. Your goal is to identify the written or algebraic expression that corresponds to your card.

Record your pair of matching algebraic and written expressions.

1. How can you be sure that you have found the correct match?

$\frac{n}{4}$	$m - 7$	$x \cdot x^2$
$5(m + 4)$	$\frac{4}{k}$	$7 - a$
$c + \frac{1}{2}$	$\frac{m + 4}{5}$	$\frac{1}{2}j$
$\frac{y}{y}$	$7d$	$\frac{g}{5} + 4$
$5d + 4$	$\frac{b}{5}$	$2z$

Add 4 to any number and then divide by 5.	Multiply any number by 2.	Divide 4 by any number.
Subtract 7 from any number.	Multiply any number by 5 and then add 4.	Divide any number by itself.
Add $\frac{1}{2}$ to any number.	Multiply any number by $\frac{1}{2}$.	Multiply any number by itself squared.
Divide any number by 4.	Add 4 to any number and then multiply by 5.	Multiply any number by 7.
Divide any number by 5 and then add 4.	Subtract any number from 7.	Divide any number by 5.

Homework HW

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Objective   Introduction to Algebraic Expressions

Review

Evaluate each numeric expression.

1. $56 \div 8 + 3 \cdot 6$

2. $9 \cdot 8 - 29 + 30 \div 15 - 15$

Determine which is the better buy.

3. $12.99 for 42 ounces or $2.99 for 10 ounces

4. 3 pounds for $5.00 or $1.50 per pound

Determine at least two equivalent ratios for each given ratio.

5. $\dfrac{2 \text{ eggs}}{5 \text{ cups of milk}}$

6. $\dfrac{20 \text{ red}}{12 \text{ blue}}$