Lesson 18: Writing and Evaluating Expressions

Opening Exercise

How can we show a number increased by 2?

Can you prove this using a model?

Example 1: The Importance of Being Specific in Naming Variables

When naming variables in expressions, it is important to be very clear about what they represent. The units of measure must be included if something is measured.

Exercises 1–2

1. Read the variable in the table, and improve the description given, making it more specific.

Variable	Incomplete Description	Complete Description with Units
Joshua's speed (J)	Let J represent Joshua's speed.	
Rufus's height (R)	Let R represent Rufus's height.	
Milk sold (M)	Let M represent the amount of milk sold.	
Colleen's time in the *production bay* (C)	Let C represent Colleen's time.	
Sean's work hours (S)	Let S represent Sean's age.	

Write an expression for producing 3 times as many bumpers as Jackson.

2. Read each variable in the table, and improve the description given, making it more specific.

Variable	Incomplete Description	Complete Description with Units
Karolyn's CDs (K)	Let K represent Karolyn's CDs.	Let K represent the number of CDs Karolyn has.
Joshua's merit badges (J)	Let J represent Joshua's merit badges.	
Rufus's trading cards (R)	Let R represent Rufus's trading cards.	
Milk money (M)	Let M represent the amount of milk money.	

Example 2: Writing and Evaluating Addition and Subtraction Expressions

Read each story problem. Identify the unknown quantity, and write the expression that is described. Finally, evaluate your expression using the information given in column four.

Story Problem	Description with Units	Expression	Evaluate the Expression If:	Show Your Work and Evaluate
Gregg has two more dollars than his brother Jeff. Write an expression for the amount of money Gregg has.	Let j represent Jeff's money in dollars.	$j + 2$	Jeff has $12.	$j + 2$ $12 + 2$ 14 Gregg has $14.
Gregg has two more dollars than his brother Jeff. Write an expression for the amount of money Jeff has.	Let g represent Gregg's money in dollars.	$g - 2$	Gregg has $14.	$g - 2$ $14 - 2$ 12 Jeff has $12.
Abby saw 8 more patients than Kristen in the emergency room. Write an expression for the number of patients Abby saw.			Kristen saw 9 patients in the emergency room.	

Abby gave twice as many shots as Kristen in the ER. Write an expression for the number of shots Kristen gave.			Abby gave 8 shots in the ER.	
Daryl has been teaching for one year longer than Julie. Write an expression for the number of years that Daryl has been teaching.			Julie has been teaching for 28 years.	
Ian made 4 fewer salads than Julia in the first shift. Write an expression for the number of salads Ian made.			Julia made 13 salads.	
Ian made *twice as many* pizzas than Julia. Write an expression for the pizzas Julia made.			Ian made 6 pizzas.	
Johann visited Niagara Falls 3 times fewer than Arthur. Write an expression for the number of times Johann visited Niagara Falls.			Arthur visited Niagara Falls 5 times.	

Problem Set

1. Read each story problem. Identify the unknown quantity, and write the addition or subtraction expression that is described. Finally, evaluate your expression using the information given in column four.

Story Problem	Description with Units	Expression	Evaluate the Expression If:	Show Your Work and Evaluate
Sammy has two more classes than his brother Ethan.	Let e represent the number of classes Ethan has.	$e + 2$	Ethan has 7 classes.	$e + 2$ $7 + 2$ 9 Sammy has 9 classes.
Ella wrote 3 more articles than Anna for the company newsletter			Anna wrote $4\ articles$.	
Lisa has been working for 3 more years than Danika.			Danika has been dancing for 6 years.	
The New York Rangers scored $\frac{1}{3}\ as\ many\ goals$ as the Buffalo Sabres last night.			The Rangers scored 9 goals last night.	
George has 4 times as many vacation days as Dave.			George has 12 vacation days.	

2. If George had 20 vacation days, how could you figure out how many days Dave has?