

Lesson 18: Writing and Evaluating Expressions—Addition and Subtraction

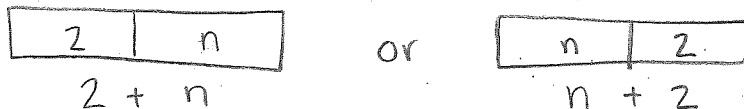
Classwork

Opening Exercise

How can we show a number increased by 2?

$$n + 2 \quad \text{or} \quad 2 + n$$

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.	Let J represent Josh's speed in meters/second.
Rufus's height (R)	Let R represent Rufus's height.	Let R represent Rufus's height in centimeters.
Milk sold (M)	Let M represent the amount of milk sold.	Let M represent the amount of milk sold in gallons.
Colleen's time in the 40-meter hurdles (C)	Let C represent Colleen's time.	Let C represent Colleen's time in seconds.
Sean's age (S)	Let S represent Sean's age.	Let S represent Sean's age in years.

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.	Let J represent the number of merit badges Josh has earned.
Rufus's trading cards (R)	Let R represent Rufus's trading cards.	Let R represent # of trading cards in Rufus's collection.
Milk money (M)	Let M represent the amount of milk money.	Let M represent the amount of milk money collected in dollars.

Example 2: Writing and Evaluating Addition and Subtraction Expressions

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
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 read 8 more books than Kristen in the first marking period. Write an expression for the number of books Abby read.	Let a represent the # of books Abby read in the first marking period.	$K + 8$	Kristen read 9 books in the first marking period.	$K + 8$ $9 + 8$ 17 Abby read 17 books in the first marking period.

Abby read 6 more books than Kristen in the second marking period. Write an expression for the number of books Kristen read.	Let a represent the # of books Abby read in the second marking period.	$a - 6$	Abby read 20 books in the second marking period.	$a - 6$ $20 - 6$ 14 Kristen read 14 books in the second marking period.
Daryl has been teaching for one year longer than Julie. Write an expression for the number of years that Daryl has been teaching.	Let j represent the # of years Julie has been teaching.	$j + 1$	Julie has been teaching for 28 years.	$j + 1$ $28 + 1$ 29 Daryl has been teaching for 29 years.
Ian scored 4 fewer goals than Julia in the first half of the season. Write an expression for the number of goals Ian scored.	Let j represent the number of goals Julie has been teaching.	$j - 4$	Julia scored 13 goals.	$j - 4$ $13 - 4$ 9 Ian scored 9 goals in the first half of the season.
Ian scored 3 fewer goals than Julia in the second half of the season. Write an expression for the number of goals Julia scored.	Let i represent the number of goals scored by Ian.	$i + 3$	Ian scored 8 goals.	$i + 3$ $8 + 3$ 11 Julia scored 11 goals in the second half of the season.
Johann visited Niagara Falls 3 times fewer than Arthur. Write an expression for the number of times Johann visited Niagara Falls.	Let f represent the number of times Arthur visited Niagara Falls.	$f - 3$	Arthur visited Niagara Falls 5 times.	$f - 3$ $5 - 3$ 2 Johann visited Niagara Falls twice.