

## KEY CONCEPT OVERVIEW

In this final topic of Module 2, students are introduced to solving multi-step equations. Students extend their knowledge of rational numbers as they work with expressions and equations. They use tape diagrams to write and solve equations in real-world contexts, including balancing a checkbook. In the final lessons of Topic C, students continue building their knowledge of multi-step equations through the use of if-then moves. (See Sample Problems.)

You can expect to see homework that asks your child to do the following:

- Use tape diagrams to model a problem, given a real-world context.
- Use properties (e.g., the associative property) to write equivalent expressions.
- Evaluate an expression, given a value for one or more **variable(s)**.
- Write expressions and equations when given a real-world context.
- Identify errors when balancing checkbooks.
- Solve equations using if-then moves.

## SAMPLE PROBLEMS *(From Lessons 17 and 22)*

The family decided to stay in a motel for four nights. The motel charges a nightly fee plus \$60 in state taxes. If they spent \$400 on the motel, what was the nightly charge with no taxes included?

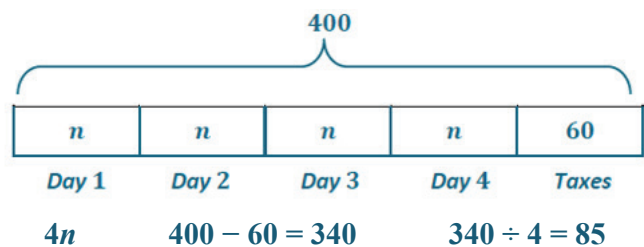
### *Algebraic Equation & Solution*

*Nightly charge:  $n$  dollars*

*Taxes: \$60*

$$\begin{aligned}
 4n + 60 &= 400 \\
 4n + 60 - 60 &= 400 - 60 \\
 4n + 0 &= 340 \\
 \left(\frac{1}{4}\right)4n &= 340\left(\frac{1}{4}\right) \\
 1n &= 85 \\
 n &= 85
 \end{aligned}$$

### *Tape Diagram:*



*One night costs \$85.*

Solve for  $x$ , show work as if-then moves.

$$5x + 4 = 19$$

**If:**  $5x + 4 = 19$

**Then:**  $5x + 4 - 4 = 19 - 4$      *Subtraction property of equality for the additive inverse of 4*

**SAMPLE PROBLEM** *(continued)*

|              |  |  |
|--------------|--|--|
| <b>If:</b>   | $5x + 0 = 15$                                  |  |
| <b>Then:</b> | $5x = 15$                                      | <b>Additive identity</b>   |
| <b>If:</b>   | $5x = 15$                                      |  |
| <b>Then:</b> | $\frac{1}{5}(5x) = \left(\frac{1}{5}\right)15$ | <b>Multiplication property of equality for the multiplicative inverse of 5</b> |
| <b>If:</b>   | $1x = 3$                                       |  |
| <b>Then:</b> | $x = 3$  | <b>Multiplicative identity</b>   |

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

**HOW YOU CAN HELP AT HOME**

You can help at home in many ways. Here are just a few tips to help you get started:

- Challenge your child to write word problems about real-world situations from her or his own life (e.g., money spent on lunch each week, time spent at sports practice each week, money earned from a regular babysitting or yardwork job). This practice will help your child recognize different parts of an equation when reading prompts in class.
- Play Bingo with your child; write and solve a few equations. Copy the equations onto notecards, one equation per card. Create your own Bingo boards with the solution to an equation in each square. (Make sure the boards are not identical to avoid a tie game.) Call out one equation at a time, and mark the matching solution on your board. The first to mark any five solutions in a row, horizontally, vertically, or diagonally yells, “BINGO!”
- In preparation for Module 3, continue to build your child’s fluency with operations with rational numbers. This may be done by playing games or by writing quick facts on flashcards and quizzing your child.

**TERMS**

**Variable:** A symbol, such as a letter, that is a placeholder for a number. For example,  $x$  is the variable in the expression  $3x$ .