

Creating Equations - Scenarios

STRAND: EQUALITY/SOLVING EQUATIONS

STRAND CONCEPT: Algebra, Patterns and Functions

SOL 5.19b

Remediation Plan Summary

Students first use situations that are relevant to them to create equations and then use scenario cards to create equations.

Common Misconceptions

- Students often believe a variable is a specific unknown. Students do not fully understand that a variable can represent multiple values, rather they believe it can only represent one fixed value.
- Students often think that an equal sign must always come after the problem. For example, $2 + y = 8$ rather than $8 = 2 + y$.
- Students often struggle when using a variable with subtraction, confusing $n - 9$ and $9 - n$ when written in words

Materials

Cookie Introductory Activity handout, Scenario cards, and Number, Variable and Symbol cards.(Copy the Scenario cards on a different color than the Number, Variable and Symbol cards), Recording Sheet

Introductory Activity

Hand each student a Cookie Introductory Activity handout and have them work independently to describe the picture. Once students are finished have them share their descriptions with another student. Conduct a whole class discussion on the different ways the picture could be represented.

Plan for Instruction

- To introduce the lesson, use the number of students in the classroom and create equations containing a variable For instance: $5 \text{ girls} + n \text{ boys} = 21 \text{ students}$, Have students create their own by expanding the context to favorite foods, colors worn today, etc.
- Once students have given several examples using their classmates, have students write equations to show the age of each of their family members as equal to the student's age. The student's age should appear in each equation. ($s + 3 = 11$, where s is sister's age and 11 is the student's age; $m - 25 = 11$, where m is mom's age and 11 is the student's age)
- Next present the scenario "I am twice as old as John. If I am 26, how old is John? Have students work with a partner to create an equation that could represent how to find Johns age. Discuss the student's findings whole class. Next present "I have 10 video games which is half as many as Julie. How many video games does Julie have? Have student pairs create an equation for this scenario. As you walk around and listen to student conversations, encourage students to represent it different ways (i.e. $1/2b=10$ or $b/2 = 10$). Whole class, have students discuss how the two equations are similar then have student pairs create different scenarios to share with the class.
- Once students have written several scenarios and equations, hand each pair or group of students a set of Scenario and Number, Variable, and Symbol cards.
- Have students first sort the cards and discuss how they sorted them.
- Next have students use the Number, Variable and Symbol cards to represent the equation that goes with each Scenario card and write each equation on the recording sheet.
- Have a whole class discussion on the different scenarios and equations.

AR Remediation Plan – Equality/Solving Equations

Pulling It All Together (Reflection).

Have students create a scenario for the following equations

1) $r + 8 = 15$

2) $3m = 9$

3) $8 - k = 2$

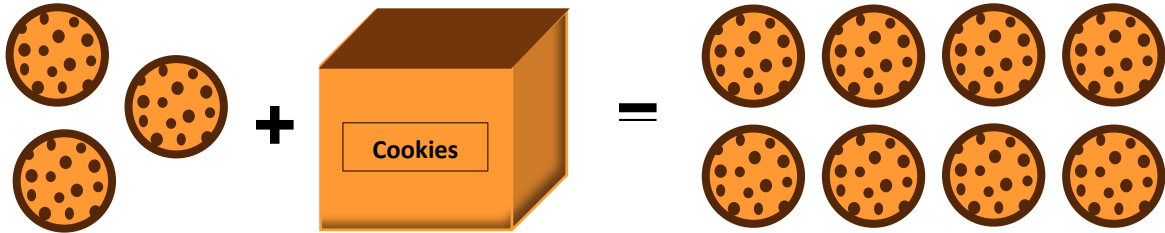
Note: The following pages are intended for classroom use for students as a visual aid to learning

Virginia Department of Education 2018

Note: The following pages are intended for classroom use for students as a visual aid to learning.

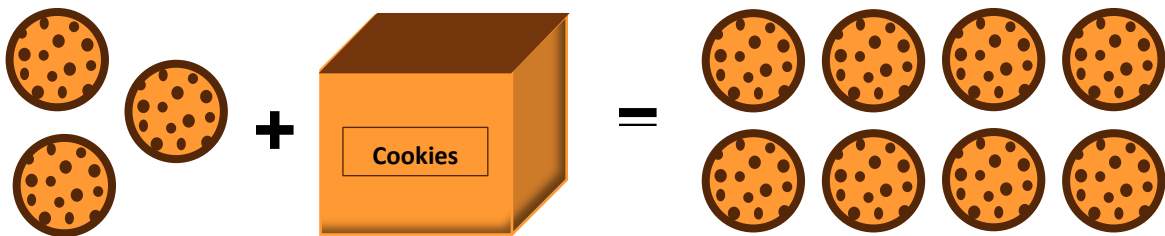
Cookie Introductory Activity

Use words, numbers and symbols to describe the picture as many ways as you can.



Cookie Introductory Activity

Use words, numbers and symbols to describe the picture as many ways as you can.



Number, Variable and Symbol Cards

| | | | |
|---|---|---------------|---------------|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 0 | $\frac{1}{2}$ | $\frac{1}{4}$ |
| 2 | + | • | n |
| – | x | = | ÷ |

Scenario Cards

| | | |
|--|--|--|
| 1. James has 6 fewer books than Elijah. James has 27 books. How many books does Elijah have? | 2. A number decreased by 9 is 1. | 3. I am half as old as Frank. If I am 13 years old, how old is Frank? |
| 4. A number increased by 5 equals 7. | 5. Blake bought 3 pizzas for \$25. How much did each pizza cost? | 6. A number divided into 4 equal parts is 5. |
| 7. Howard has twice as many marbles as Nick. Howard has 10 marbles. How many marbles does Nick have? | 8. The sum of 2 and a number equals 31. | 9. If I have 5 cookies and Sam has 4 more cookies than me. How many cookies does Sam have? |

Equation Recording Sheet

| Card Number | Equation |
|-------------|----------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |

Equation Recording Sheet

| Card Number | Equation |
|-------------|----------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |