Operations with Integers - Addition

STRAND: **Computation and Estimation**

STRAND CONCEPT: **Rational Number – Estimation and Operations**

SOL 6.6a

Remediation Plan Summary

Students add integers, using manipulatives.
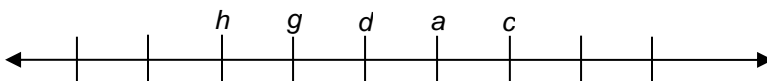
Common Misconceptions

- Students may ignore the signs and just add the integers.
- Student may think that adding two negative numbers results in a positive answer.

Materials

- 2-color counters or Algebra tiles
- Modeling Integers recording sheet
- Adding Integers recording sheet
- Compare and Contrast activity sheet

Introductory Activity

Write the following number line on the board.

Write the following statements on the board, and ask the students to insert < or > into each of them to make it true:

    a __ d ($a > d$)
    h __ g ($h < g$)
    c __ d ($c > d$)
    a __ c ($a < c$)

Ask students to defend their answers

Plan for Instruction

1. Introduce and display 2-color counters or Algebra tiles to the students. *What do you notice about the counters? What do you think the different colors represent?* Explain that the yellow side of the counter represents $+1$ and the red side of the counter represent -1. Display one yellow counter and one red counter. *What do we call these two numbers?* (additive inverses)

2. Distribute the "Modeling Integers" recording sheet and 2-color counters or Algebra tiles to students. Model the first example together by asking students how they would model one. Most students will put down one counter. Ask if there is another way to

model 1. Hopefully a student will recognize that if you add a zero pair that the sum is 0. If not, you may need to lead students to make this connection.

3. Have students continue working on the handout. Once they are finished, ask them to compare their answers with a partner. Allow several students to share their answers with the class.

4. Ask students to model the following expressions. Check student models and ask a student what the sum is to each problem. Students will be able to answer some of the problems without the tiles, but it is important for them to understand how to model. The focus of this activity is to teach students to make *zero pairs* to simplify the expressions.

    $$5+3 \qquad -5+(3) \qquad 5+(-3) \qquad -5+3$$

    What do you notice about the models and sums for these problems?

    Continue giving students problems to model and simplify until they are comfortable with the concept of *zero pairs* and adding integers using counters.

5. Handout the "Adding Integers" recording sheet. Students will be modeling the expressions using the tiles and then recording them on the recording sheet. Some of the problems will give the students the model and ask them to write the expression represented. Monitor students as they work, answering questions and addressing any misconceptions. Once all students have finished, have students share their solutions using a document camera or allowing them to share their models.

6. Display the following practical problem. Ask students to use the tiles to represent this situation.

    In football, a team must gain 10 yards to get a first down. The home team gained 6 yards on the first play, lost 3 yards on the second play, and gained 8 yards on the third play. Write an addition sentence that could be used to find the total change in yardage, and determine whether the team got a first down.

    Ask a student share their model with the class. Ensure that the students answer the question in the problem about the first down.

Pulling It All Together (Reflection)

Students will complete the "Compare and Contrast" activity sheet.

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

Virginia Department of Education 2018

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Modeling Integers

KEY

◯ = 1   ● = -1

Directions: Model each number 3 different ways.

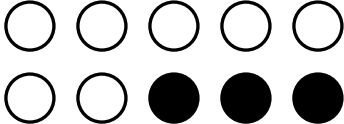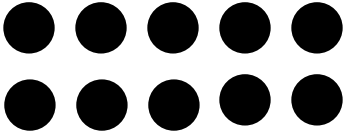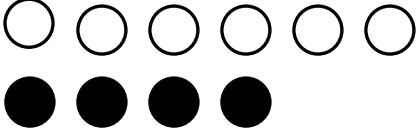| 1	-3	0

Name: _____

KEY

○ = 1   ● = -1

Adding Integers

Directions: Fill in the all of the empty boxes. You will need to either write a number sentence based on the given model and sum, model a number sentence with counters and find the sum after modeling.

Number sentence	Model with counters	Sum
-8 + 6		
	○ ○ ○ ○ ○ ○ ○ ● ● ●	**4**
-4 + 1		
	● ● ● ● ● ● ● ● ● ●	-10
-4 + 7		
2 + (-5)		
	○ ○ ○ ○ ○ ○ ● ● ● ●	

Name: _____

Compare and Contrast!

Compare and contrast the two Addition Sentences. How are they alike? How are they different?

$$3 + (-4)$$

$$4 + (-3)$$

How are they alike?

How are they different??