Integers: Addition and Subtraction

Reporting Category   Computation and Estimation

Topic   Modeling addition, subtraction, multiplication, and division of integers

Primary SOL   7.3   The student will
   a) model addition, subtraction, multiplication, and division of integers; and
   b) add, subtract, multiply, and divide integers.

Materials
- Red and yellow chips (small squares of red and yellow construction paper can be used) or other manipulative
- Graphic Organizer (attached)
- Integer Addition activity sheet (attached)
- Integer Subtraction activity sheet (attached)
- Red and yellow colored pencils

Vocabulary
integer (earlier grades)

absolute value (7.1)

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)
1. Give each student an Integer Addition activity sheet and some red and yellow chips. Establish that the red chips will represent negative numbers and the yellow chips will represent positive numbers. Help all students understand that one yellow chip and one red chip put together represent a value of zero.
2. Use the chips to model how to solve the first problem on the Integer Addition activity sheet. Have students use their chips and their activity sheets to complete the same steps. Next, model how to represent the chips in pictorial form. Have students draw the same representation.
3. Place students in groups of two, and ask them to finish the activity sheet.
4. When students have completed the activity, give each student a blank graphic organizer. Ask students if they see any patterns in the problems. As they recognize the rules in the algorithm for addition of integers, list them on the board. A graphic organizer may be used to represent the algorithm.
5. Give students additional problems for practice.
6. Give each student an Integer Subtraction activity sheet and some red and yellow chips. Establish that the red chips will represent negative numbers; the yellow chips will represent positive numbers. Help all students understand that one yellow chip and one red chip put together represent a value of zero. Zero pairs will have to be added for students to complete the problems.

7. Use the chips to model how to solve the first problem on the Integer Subtraction activity sheet. Have students use their chips and their activity sheets to complete the same steps. Next, model how to represent the chips in pictorial form. Have students draw the same representation.

8. Place students in groups of two, and ask them to finish the activity sheet.

9. When students have completed the activity, give each student a blank graphic organizer. Ask students if they see any patterns in the problems. As they recognize the rules in the algorithm for subtraction of integers, list them on the board. A graphic organizer may be used to represent the algorithm.

10. Give students additional problems for practice.

Assessment
- **Questions**
  o How do you add two integers if they have the same sign?
  o How do you add two integers if they have different signs?
  o How do you subtract integers?
- **Journal/Writing Prompts**
  o Describe to a friend how to add integers.
  o Create a practical problem involving addition with integers. Explain how to solve the problem.
 o Create a practical problem involving subtraction with integers. Explain how to solve the problem.

Extensions and Connections (for all students)
- Use the newspaper or an Internet search to find examples of addition and subtraction of integers.
- Place students in small groups, and have them use decks of cards and play War. Black cards are positive; red cards are negative. Each student flips two cards and finds the sum. The student with the higher sum wins the round.

Strategies for Differentiation
- Use a number line to determine the sum or difference. Create a large number line on the floor with tape. Students can walk the number line to solve the problem.
- Relate the problems to practical situations such as money, temperatures, altitude, elevator and floors of a building, etc.
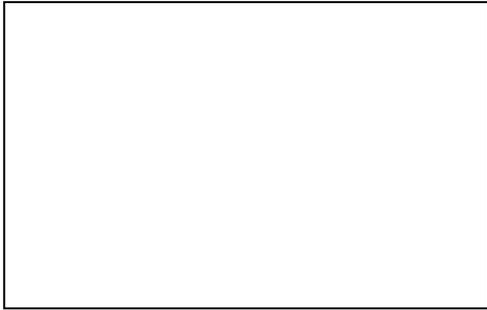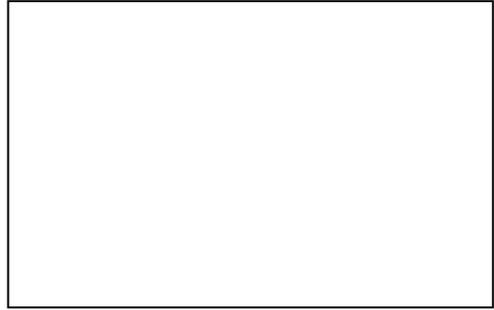
Graphic Organizer
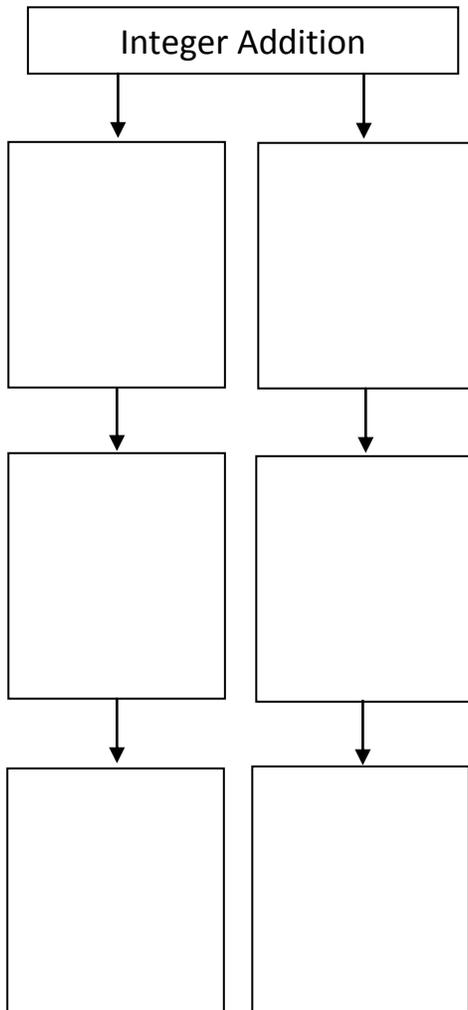
Integer Addition

Integer Addition

Name _____ **Date** _____

Use red and yellow chips to solve each problem. In the box draw a picture of your solution.

6 + 2 = _____

−5 + 3 =_____

−3 + −4 = _____

−2 + 5 = _____

9 + −4 = _____

3 + −7 = _____
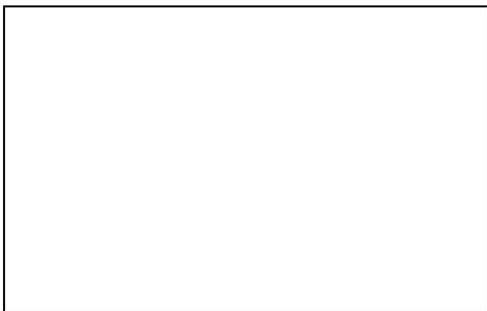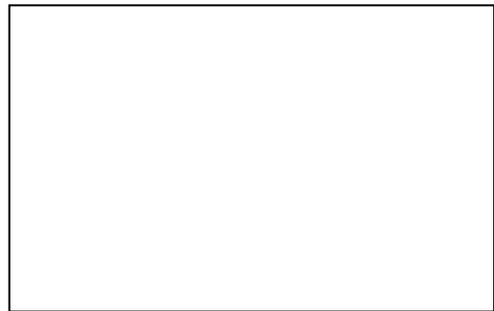
Graphic Organizer

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┌─────────────────────────┐
│    Integer Subtraction   │
└─────────────────────────┘
        │             │
        ▼             ▼
   ┌────────┐    ┌────────┐
   │        │    │        │
   │        │    │        │
   └────────┘    └────────┘
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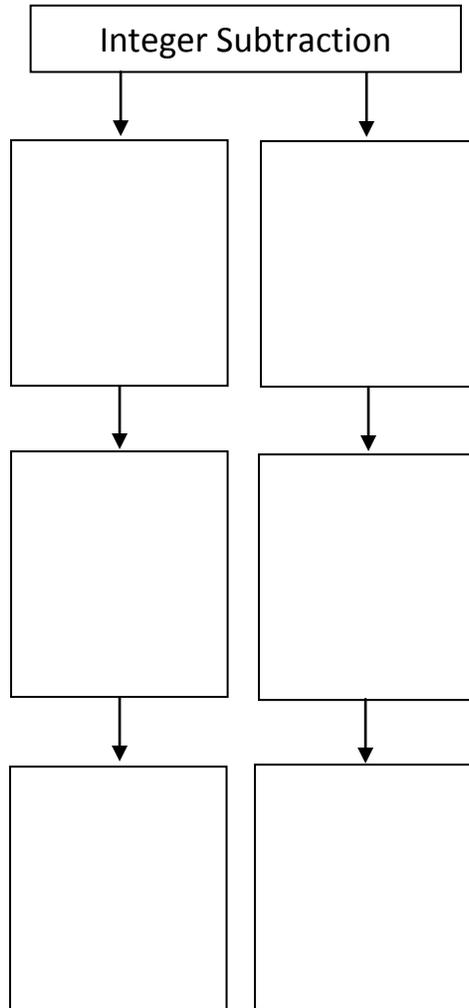
Integer Subtraction

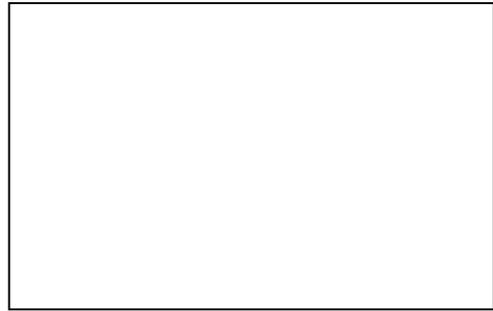**Name** _____ **Date** _____

Use red and yellow chips to solve each problem. In the box draw a picture of your solution.

8 − 2 = _____

1 − (−5) = _____

−7 − (−3) = _____

−4 − 3 = _____

6 − (−4) = _____

−2 − 6 = _____