

**TEXT: CORD**

**Unit Number and Title: WORKING WITH EQUATIONS (A bridge unit from 15 to 16)**

**Lab Title**

**TILT OR BALANCE**

**Summary:**

The activities in this lesson will give students opportunities to explore the algebra concepts of variable, constant, expressions and equations. and isolation of a variable using “balance” to solve equations.

Write, interpret, and use mathematical expressions, equations, and formulas to represent and solve problems that correspond to given situations.

**Materials:**

- Math journals
- Balance scale
- Small wooden blocks of various masses or weights
- Balance or Tilt Worksheet

**Background For Teachers:**

*Variables, expressions, and equations* are important concepts in the study of algebra. For this activity, students should know and use the correct terms. A *constant* is a quantity that stays the same. A *variable* is a quantity that can change. An *expression* is like a phrase, it has no equal sign. An *equation* is a mathematical statement that says two expressions are equal to each other.

**Intended Learning Outcomes:**

1. Become mathematical problem solvers.
2. Reason mathematically.
3. Use rules for rearranging equations

**Instructional Procedures:**

Use a balance scale and small wooden blocks to demonstrate if the scale is balanced or if it is not. Model several different situations so the students know what happens to the side that weighs more, the side that weighs less, and when the amounts are equal. Have students write what happened in their math journals.

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## STEPS

1. Explain to students that like the balance scale, equations need to be balanced, or equal.
2. Students write the definitions of *variable*, *constant*, *expression*, and *equation* in their journals.
3. Review with students how to use rules solve equations. Lesson plans for this are in the CORD 15-16 Bridge manual on pages 8-11 in the student book.
4. Draw a scale on the overhead using an expression on each side. Ask the students if the scale shows the correct balance. If not, how should we fix it? Should one side be lower than the other?
5. Give a few more examples to the class.
6. Students complete the Balance or Tilt Worksheet
7. Discuss the worksheet as a class.
8. Students write a paragraph explaining the steps they use to solve equations in their math journals.

## Extensions:

- Add the words constant, variable, expression and equation to your spelling and vocabulary units.
- Students brainstorm a list of variables and constants found in space:

*Variables:* age of stars, distance between stars

*Constants:* speed of light, distance light travels in one year, the size of each planet.

- Create word problems that represent given equations using variables. From given word problems, students write equations using variables.

## Family Connections

- Students make up three different equations to take home and have a family member solve. Explain to the family member how to solve the equation, if needed.
- Students make a list of five variables and five constants that they find in or around their home.

*Example:* Number of people in family is a constant, number of hours they do chores each day is a variable.

## Assessment Plan:

- Class discussion.
- Balance or Tilt Worksheet
- *Balance or Tilt?* Worksheet and the paragraph and definitions in their math journal.

Name \_\_\_\_\_

## Balance or Tilt?

1. Find the values of the expressions on each side of the scale. Is the scale balanced or is it tilted? If the scale does not balance, write which side will tilt down. Explain your answer.

$$x = 5$$



$$s = 4$$



$$n = 4$$

$$s = 1$$



2. Find the variables that balance the scales.

$s =$  \_\_\_\_\_



$n =$  \_\_\_\_\_



$f =$  \_\_\_\_\_



$x =$  \_\_\_\_\_

