



## Cherries Still Positive, Lemons Still Negative Activity Sheet



Names \_\_\_\_\_ and \_\_\_\_\_

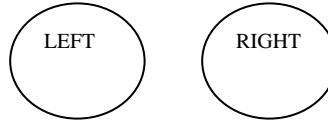
**MA.D.2.3.2- The student uses algebraic problem-solving strategies to solve real-world problems involving linear equations and inequalities.**

Remember:

- 1) 1 cherry head represents Positive 1 (+1)
- 2) 1 lemon head represents Negative 1 (-1)
- 3) 1 cherry head and 1 lemon head represent 0

### Solving Simple Addition Equations with Positive Integers

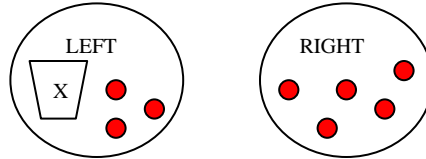
1. The two paper plates represent both sides of the equal sign, so write LEFT on one paper plate and RIGHT on the other.



2. The paper cup represents the variable  $x$ , so write  $X$  on the paper cup.



3. Place your paper cup on the paper plate labeled LEFT. Place 3 cherry heads beside the paper cup. Next, place 5 cherry heads on the paper plate labeled RIGHT.



Recall that equations are balanced; therefore, one side must equal the other side.

- a. How many cherry heads would it take to balance the left side with the right side? \_\_\_\_\_ Place them inside the paper cup.



- b. If the paper cup represents  $x$  and the cherry heads represents the integers 3 and 5, then it can be concluded that in order for the equation  $x + 3 = 5$  to be balanced,  $x$  must equal \_\_\_\_\_.

4. Place your paper cup on the paper plate labeled LEFT. Place 2 cherry heads beside the paper cup. Next, place 8 cherry heads on the paper plate labeled RIGHT.



- a. How many cherry heads would it take to balance the left side with the right side? \_\_\_\_\_ Place them inside the paper cup.

b. If the paper cup represents  $x$  and the cherry heads represents the integers 2 and 8, then it can be concluded that in order for the equation  $x + 2 = 8$  to be balanced,  $x$  must equal \_\_\_\_\_.

5. Use the same method to solve the following equations:

a.  $x + 1 = 9$        $x =$  \_\_\_\_\_      c.  $x + 4 = 10$        $x =$  \_\_\_\_\_  
b.  $x + 6 = 7$        $x =$  \_\_\_\_\_      d.  $x + 3 = 6$        $x =$  \_\_\_\_\_

### Solving Simple Addition Equations with Negative Integers

6. Place your paper cup on the paper plate labeled LEFT. Place 4 lemon heads beside the paper cup. Next, place 6 lemon heads on the paper plate labeled RIGHT.



a. How many lemon heads would it take to balance the left side with the right side? \_\_\_\_\_ Place them inside the paper cup.

b. If the paper cup represents  $x$  and the lemon heads represents the integers -4 and -6, then it can be concluded that in order for the equation  $x + -4 = -6$  to be balanced,  $x$  must equal \_\_\_\_\_.

7. Place your paper cup on the paper plate labeled LEFT. Place 5 cherry heads beside the paper cup. Next, place 9 cherry heads on the paper plate labeled RIGHT.



a. How many lemon heads would it take to balance the left side with the right side? \_\_\_\_\_ Place them inside the paper cup.

b. If the paper cup represents  $x$  and the lemon heads represents the integers -5 and -9, then it can be concluded that in order for the equation  $x + -5 = -9$  to be balanced,  $x$  must equal \_\_\_\_\_.

8. Use the same method to solve the following equations:

a.  $x + -2 = -10$        $x =$  \_\_\_\_\_      c.  $x + -6 = -9$        $x =$  \_\_\_\_\_  
b.  $x + -1 = -5$        $x =$  \_\_\_\_\_      d.  $x + -4 = -7$        $x =$  \_\_\_\_\_

### Solving Simple Addition Equations with Positive and Negative Integers

9. Place your paper cup on the paper plate labeled LEFT. Place 1 lemon head beside the paper cup. Next, place 2 cherry heads on the paper plate labeled RIGHT.



Notice that this situation is different because you have lemon heads on one side and cherry heads on the opposite. In the previous examples, you were dealing with one or the other.

Do you think these two sides can be balanced? If so, how? (Hint: Remember that 1 cherry head and 1 lemon head represent 0.)

If you stated that the two sides could be balanced by putting 3 cherry heads in the cup, then you are correct! Here's the reason why:

Since there are 2 cherry heads on the right, you start by adding 2 cherry heads to the left.



However, you cannot stop there. The two sides are not yet balanced because of the lemon head on the left. Recall that 1 cherry head and 1 lemon head represents 0. Therefore, if you add another cherry head to the left side, then that cherry head paired with the lemon head will represent 0, and both sides will have a value of 2.



So...

- a. How many cherry heads would it take to balance the left side with the right side? \_\_\_\_\_ Place them inside the paper cup.
- b. If the paper cup represents  $x$ , the lemon head represents  $-1$  and the cherry heads represent  $2$ , then it can be concluded that in order for the equation  $x + -1 = 2$  to be balanced,  $x$  must equal \_\_\_\_\_.

10. Place your paper cup on the paper plate labeled LEFT. Place 5 cherry heads beside the paper cup. Next, place 2 lemon heads on the paper plate labeled RIGHT.



Once again, this situation is different because you have lemon heads on one side and cherry heads on the opposite. However, you can follow the method in step #9 to balance the sides. And instead of adding cherry heads, you need to add **lemon** heads, right?

- a. How many lemon heads would it take to balance the left side with the right side? \_\_\_\_\_ Place them inside the paper cup.
- b. If the paper cup represents  $x$ , the cherry heads represents  $5$  and the lemon heads represent  $-2$ , then it can be concluded that in order for the equation  $x + 5 = -2$  to be balanced,  $x$  must equal \_\_\_\_\_.

11. Use this method to solve the following equations:

- a.  $x + 2 = -10$      $x =$  \_\_\_\_\_    c.  $x + -3 = 1$      $x =$  \_\_\_\_\_
- b.  $x + -1 = 6$      $x =$  \_\_\_\_\_    d.  $x + 5 = -4$      $x =$  \_\_\_\_\_

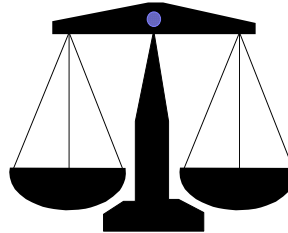
☺	Commendable	Acceptable	See Teacher
<p>Rubric for Cherries Still Positive, Lemons Still Negative</p>	<p>Works cooperatively with partner without problems</p> <p>Correctly solves all 4 equations in step 5</p> <p>Correctly solves all 4 equations in step 8</p> <p>Correctly solves all 4 equations in step 11</p>	<p>Works with partner with few problems</p> <p>Correctly solves 3 equations in step 5</p> <p>Correctly solves 3 equations in step 8</p> <p>Correctly solves 3 equations in step 11</p>	<p>Refuses to cooperate with partner</p> <p>Correctly solves 1-2 equations in step 5 or incorrectly solves all 4</p> <p>Correctly solves 1-2 equations in step 8 or incorrectly solves all 4</p> <p>Correctly solves 1-2 equations in step 11 or incorrectly solves all 4</p>

## Weighing Out Equations

### **A. A word to know...**

Variable-

### **B. Scales and Equations**



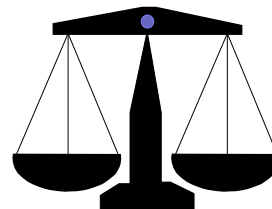
1. What are scales?
2. When are scales used in the "real world?"
3. Based on your discussion with your teacher, what do scales have in common with equations?

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