

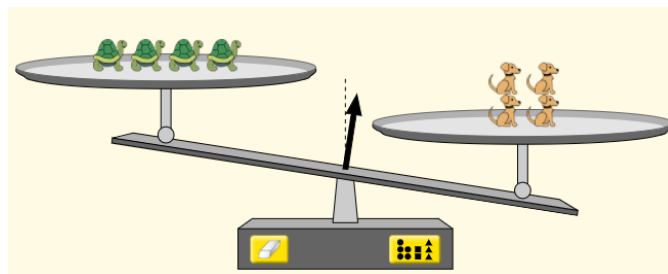
PhET Activity

Basics Screen

1. Find at least one way to balance the scales using the blue squares and red circles. Sketch out the balanced scales below.
2. Determine the equality between oranges and lemons. Sketch out the balanced scale below.
3. Determine ANY equality between ANY two coins. Repeat with different coins. Sketch your two below.



4. The scale model is one of many ways to think about equality. There are other methods and ideas of equality as well. Use the image here to answer the following questions.

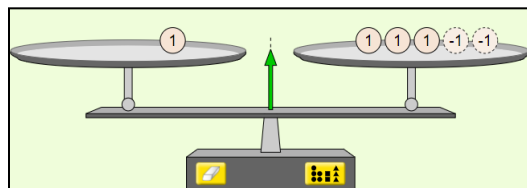
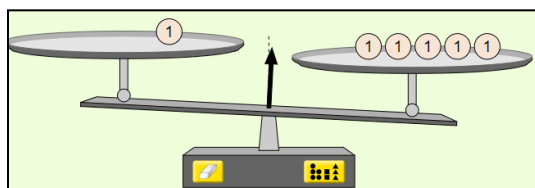


- Write two ways in which these two sets of animals are NOT equal.
- Write two ways in which these two sets of animals are equal.
- In your own words, write what equal means to you.

Variables Screen



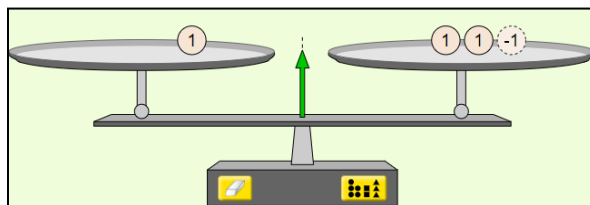
5. a) Compare and contrast the two images shown. Write your thoughts below.



- b) Find another example where two scales have the same number of items on them and do not have the same balance. Sketch your images below.

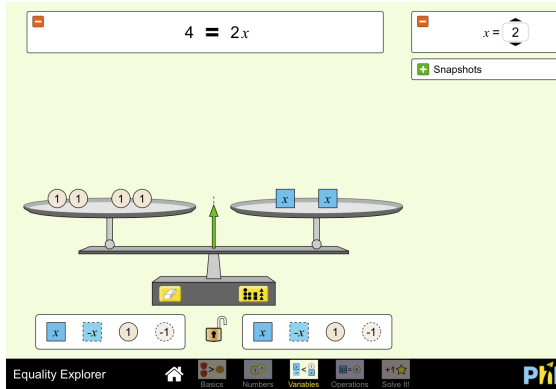


6. Why is the scale to the right showing equality?



Explore Screen

7. Create three examples of equality using different values of x . Record in the table. See the example listed. Include your sketches below.

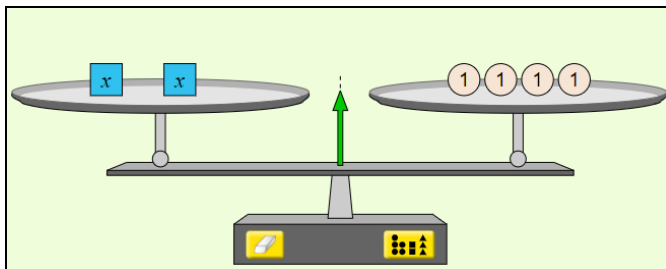
Value of x	Sketches
$x = 2$	

We can write an **equation** to show equivalence between two expressions. In the example, we see that two x boxes are equal to four units. We can describe this with the equation

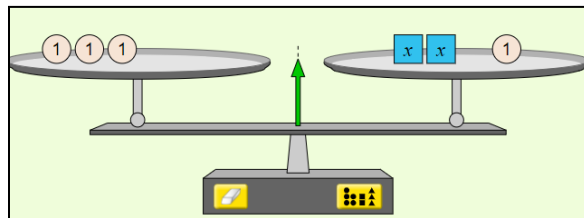
$$x+x = 1+1+1+1$$

OR

$$2x = 4$$

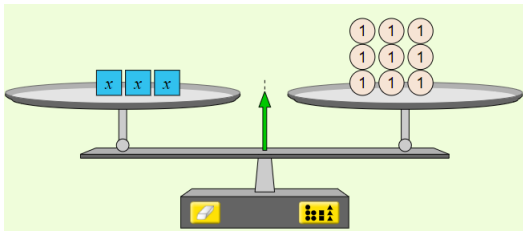
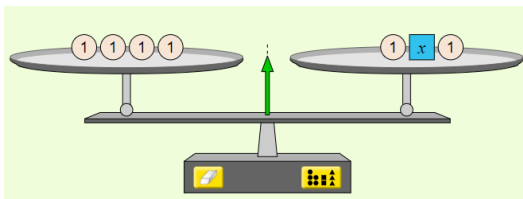
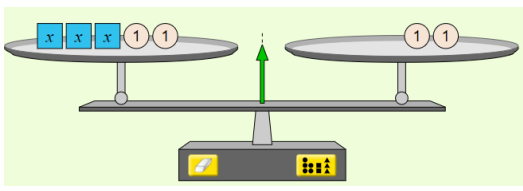
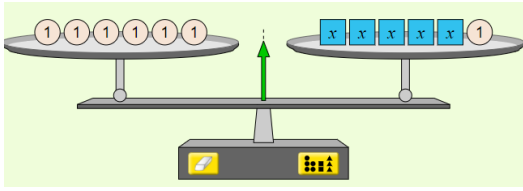


8. Write two equations for the scale shown.



9. Write an equation/inequality that models the scale and figure out the solution(s). **Do your best to not use the PhET simulation until after you have written the equation and tried to find a solution.**

Verify your solutions using the PhET simulation.

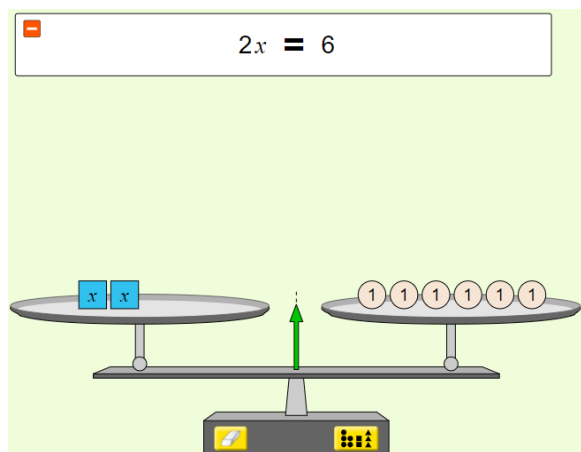
	Scale Model	Equation	Solution
a			
b			
c*			
d*			

* Students should be able to write the equation for 9c and 9d, but finding the solution for 9c and 9d can be skipped for Grade 6.



10. Without the PhET simulation, answer the following.

What is the value for x here?
How do you know?



Summary:

In this lesson we used a scale or balance model to help us solve equations.

Solving an equation using the scale/balance model requires you to do the same operation to both sides to keep the scale the same. When a scale is balanced, this represents equality. (and if the scale was unbalanced, this would represent an inequality).