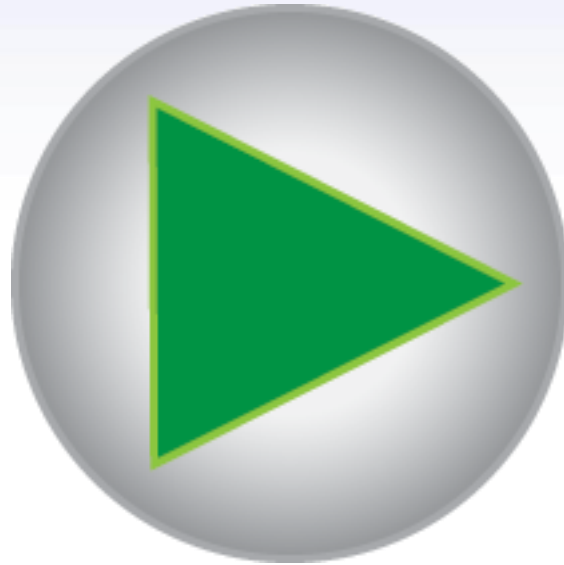


Check it out!



Read the scenario, write an equation that models the situation, and then use the equation to answer the questions that follow.

Two people can balance on a seesaw even if they are different weights. The balance will occur when the following equation, $w_1d_1 = w_2d_2$, is satisfied or true. In this equation, w_1 is the weight of the first person, d_1 is the distance the first person is from the center of the seesaw, w_2 is the weight of the second person, and d_2 is the distance the second person is from the center of the seesaw.

1. Eric and his little sister Amber enjoy playing on the seesaw at the playground. Amber weighs 65 pounds. Eric and Amber balance perfectly when Amber sits about 4 feet from the center and Eric sits about $2\frac{1}{2}$ feet from the center. About how much does Eric weigh?
2. Their little cousin Aleah joins them and sits right next to Amber. Can Eric balance the seesaw with both Amber and Aleah on one side, if Aleah weighs about the same as Amber? If so, where should he sit? If not, why not?



1. Eric and his little sister Amber enjoy playing on the seesaw at the playground. Amber weighs 65 pounds. Eric and Amber balance perfectly when Amber sits about 4 feet from the center and Eric sits about $2\frac{1}{2}$ feet from the center. About how much does Eric weigh?
 - First set up the equation.

- Given: $w_1 d_1 = w_2 d_2$
- $w_1 = \text{Amber's weight} = 65 \text{ pounds}$
- $d_1 = \text{Amber's distance} = 4 \text{ feet}$
- $w_2 = \text{Eric's weight} = x \text{ pounds}$
- $d_2 = \text{Eric's distance} = 2\frac{1}{2} \text{ feet} = 2.5 \text{ feet}$
- The unknown is Eric's weight.
- Now, make the substitutions.



Warm-Up

Creating Linear Inequalities in One Variable

$$w_1 d_1 = w_2 d_2$$

$$(65)(4) = (x)(2.5)$$

$$260 = 2.5x$$

$$x = 104$$

2.5.

Given equation

Substitute 65 for w_1 ,
4 for d_1 , x for w_2 , and
2.5 for d_2 .

Simplify.

Divide both sides by

- Interpret the solution.
- In this equation, x represented Eric's weight. Therefore, Eric weighs about 104 pounds.

2. Their little cousin Aleah joins them and sits right next to Amber. Can Eric balance the seesaw with both Amber and Aleah on one side, if Aleah weighs about the same as Amber? If so, where should he sit? If not, why not?

- Set up the equation using $w_1 d_1 = w_2 d_2$.
 - $w_1 =$ Amber and Aleah's combined weight = $2(65)$ pounds = 130 pounds
 - $d_1 =$ Amber and Aleah's distance = 4 feet
 - $w_2 =$ Eric's weight = 104 pounds
 - $d_2 =$ Eric's distance = x feet
- This time, the unknown is Eric's distance.



- Now, make the substitutions.

$$w_1 d_1 = w_2 d_2$$

$$(130)(4) = 104(x)$$

$$520 = 104x$$

$$x = 5$$

Given equation

Substitute 130 for w_1 , 4 for d_1 ,
104 for w_2 , and x for d_2 .

Simplify.

Divide both sides by 104.

- Interpret the solution.

- In this equation, x represented Eric's distance from the center of the seesaw. The question asks if it's possible for Eric to balance with Amber and Aleah. It's possible if each side of the seesaw extends at least 5 feet from the center, because Eric needs to sit at least 5 feet away from the center. If each side of the seesaw is shorter than 5 feet, then he cannot balance with his sister and his cousin. Therefore, if each side of the seesaw is 5 feet or longer, then Eric can balance the seesaw.



Warm-Up

Creating Linear Inequalities in One Variable