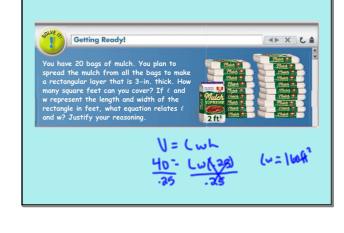
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Section 8-1 Inverse Variation

Students will be able to

- -recognize and use inverse variation
- -use joint and other variations



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In any rectangle with a given area, the longer the length of one side, the shorter the length of the adjacent side.

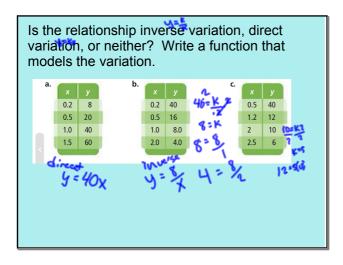
-If a product is constant, where it is positive, a decrease in the value of one factor must accompany an increase in the value of the other factor.

Remember we talked about direct variation, y = kx.

Inverse variation can be xy = k, y = k/x, or x = y/k.

When two variable vary inversely, as one variable increases, the other decreases proportionally.

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The general rule for inverse variation is:

$$y = \frac{k}{x} 8. -1 = \frac{k}{8}$$

Suppose y and x vary inversely, and x = 8, when y = -7. What is the function that models the inverse variation? What does the graph of it look like? What is y when x = 2?

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Combined Variation:

z varies jointly with x and y

z varies jointly with x and y

z varies directly with x and

inversely with the product wy

and inversely with w

z = kxy

z = kxy

z = kx

wy

Examples:

Geometry uses many formulas that represent variation.

-Simply like perimeter or area of a square -Difficult like volume of a cone, has three or more variables.

When one quantity varies with respect to two or more quantities, you have a combined variation.

When one quantity varies directly with two or more quantities it is a joint variation.

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Back to the opening problem. The number of bags of mulch you need varies jointly with the area to be mulched *a* in square feet and the depth of the mulch *d* in feet. If you need 10 bags to mulch 120 ft² to a depth of 3 in., how many bags do you need to mulch 200 ft² to a depth of 4 in.?

The volume of gas varies directly with its temperature and inversely with pressure. Volume is 100 m³ when the temperature is 150 K and the pressure is 15 lb/cm². What is the volume when the temp is 250 K and the pressure is 20 lb/cm².

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Hwk: pg 503 - 504 #6, 8, 14, 20, 22, 25, 26 - 28 all, 31 - 38 all

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