

Proportion Across Representations

Name: _____

Date: _____

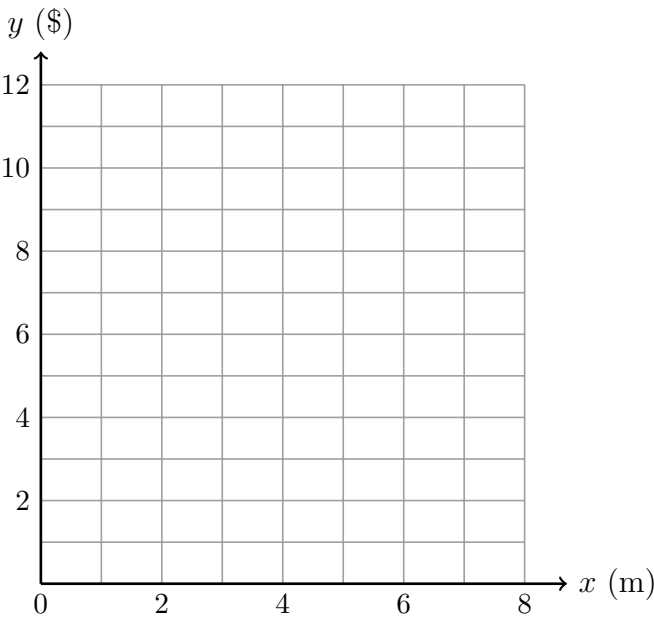
Study the reasoning. Ribbon costs $\frac{3}{2}$ dollars per meter with no fee. With x in meters and y in dollars, $y = \frac{3}{2}x$. For nonzero x , $y/x = \frac{3}{2}$; the graph also passes through $(0, 0)$.

Represent the same relationship

1. Complete the table and write the equation.

Length x (m)	0	2	4	6
Cost y (\$)		3		

2. Plot the four pairs and draw the line for $x \geq 0$.



3. Find the cost of 5 meters by scaling one table pair and by using the unit rate. Show both methods.

Proportion Across Representations

Test and transfer

4. A shop adds a \$2 fee: $y = \frac{3}{2}x + 2$. A learner calls it proportional because its graph is straight. Test y/x at $x = 2$ and $x = 4$. Explain.
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5. A map uses $\frac{3}{4}$ centimeter for 2 kilometers. Complete $k = \frac{3}{4} \div 2 = \square$ cm/km. Write $y = kx$ and find the map distance for 16 kilometers.

6. A \$48 jacket is discounted by 25%, then taxed at 5% of the discounted price. Find the final price. Why is this different from a single 20% discount?
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Think Like a Mathematician

Optional extension. Explain why your reasoning works.

7. A jacket costs \$39.60 after a 20% discount followed by a 10% tax on the discounted price. Find its original price and the actual single percent change. Would reversing the operations change the final price? Assume exact calculations without intermediate rounding.

8. A map uses $\frac{3}{4}$ centimeter for 2 kilometers. A copy is enlarged to 160% of its original linear size. Two towns are 9 cm apart on the copy. Find the real distance. Then the copy is reduced to 60% of its new size. Is it back to the original size? Find the final scale and justify.