

Constant of Proportionality Notes

<p>What is a constant of proportionality?</p>	<p>The constant value of the ratio of two proportional quantities.</p> <p>Also is classified as the unit rate.</p>												
<p>How to identify the constant of proportionality?</p>	<p>You can identify the constant of proportionality in tables, graphs, equations and other proportional relationships.</p> <p>*Recall how to compute the unit rate. Use those same strategies to find the constant of proportionality.</p>												
<p>Example 1: Tables</p>	<p>Analyze the table.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 2px 10px;">number of pens (p)</td> <td style="padding: 2px 10px;">3</td> <td style="padding: 2px 10px;">5</td> <td style="padding: 2px 10px;">8</td> <td style="padding: 2px 10px;">10</td> <td style="padding: 2px 10px;">15</td> </tr> <tr> <td style="padding: 2px 10px;">Cost (C)</td> <td style="padding: 2px 10px;">\$6</td> <td style="padding: 2px 10px;">\$10</td> <td style="padding: 2px 10px;">\$16</td> <td style="padding: 2px 10px;">\$20</td> <td style="padding: 2px 10px;">\$30</td> </tr> </table> <p>What is the cost of 1 pen?</p> <p>*The cost of 1 pen is \$2. 2 is the constant of proportionality because it is the constant value of the ratio between the number of pens and the cost.</p> <p>*The equation can be written as $C = 2p$, which represents the total cost (C) equals 2 dollars times the number of pens (p) purchased.</p>	number of pens (p)	3	5	8	10	15	Cost (C)	\$6	\$10	\$16	\$20	\$30
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<p>Example 2: Graphs</p>	<p>Using the graph, determine the constant of proportionality.</p> <div style="text-align: center; margin: 10px 0;"> </div> <p>To determine the constant of proportionality, find the unit rate. To find the unit rate, look where the Length is 1 unit.</p> <p>*4 is the constant of proportionality. If you follow the ratio, the constant is 4 because 1:4, 2:8, 3:12, and etc.</p>												
<p>Example 3: Equations</p>	<p>Since we know that proportional equations contain only multiplication or division, use the coefficient to identify the constant of proportionality.</p> <ol style="list-style-type: none"> 1. The amount of sales tax paid on an item is proportional to the cost of the item. If the sales tax rate 												

	<p>is 7%, then the amount of the sales tax (t) is .07 times the cost (c) of the item. The equation is $t = .07c$ can be used to determine the amount of sales tax. What is the constant of proportionality?</p> <p>*The constant is .07 or 7% since that is the coefficient of the equation.</p>
<p>Example 4: Verbal Descriptions</p>	<p>In probability, the chance to roll a 1 when rolling a number cube is $\frac{1}{6}$. In the long run, the number of times you get a 1 is proportional to the number of times you roll. If you roll 30 times, you would expect to roll a 1 five times. The constant is $\frac{1}{6}$ because it is the constant value of the ratio when comparing the number how many 1s are on a number cube (1:6).</p>