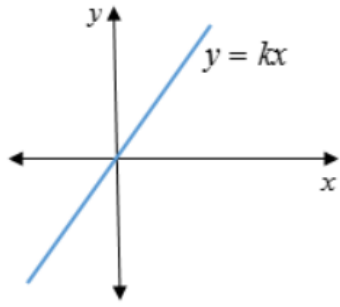
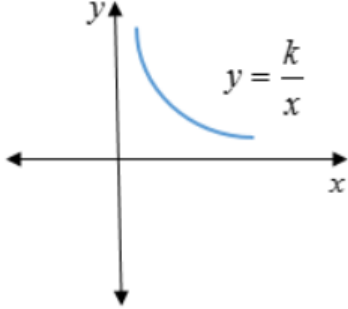
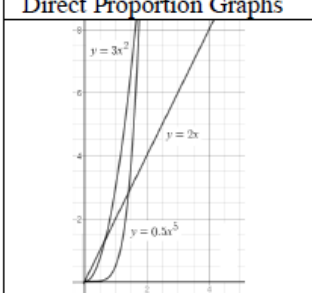


## Topic: Proportion

Topic/Skill	Definition/Tips	Example
<p>1. Direct Proportion</p>	<p>If two quantities are in direct proportion, <b>as one increases, the other increases by the same percentage.</b></p> <p>If <math>y</math> is directly proportional to <math>x</math>, this can be written as <math>y \propto x</math></p> <p>An equation of the form <math>y = kx</math> represents direct proportion, where <math>k</math> is <b>the constant of proportionality.</b></p>	
<p>2. Inverse Proportion</p>	<p>If two quantities are inversely proportional, <b>as one increases, the other decreases by the same percentage.</b></p> <p>If <math>y</math> is inversely proportional to <math>x</math>, this can be written as <math>y \propto \frac{1}{x}</math></p> <p>An equation of the form <math>y = \frac{k}{x}</math> represents inverse proportion.</p>	
<p>3. Using proportionality formulae</p>	<p><b>Direct:</b> <math>y = kx</math> or <math>y \propto x</math></p> <p><b>Inverse:</b> <math>y = \frac{k}{x}</math> or <math>y \propto \frac{1}{x}</math></p> <ol style="list-style-type: none"> <li><b>Solve to find <math>k</math></b> using the pair of values in the question.</li> <li><b>Rewrite the equation</b> using the <math>k</math> you have just found.</li> <li><b>Substitute the other given value</b> from the question in to the equation to <b>find the missing value.</b></li> </ol>	<p><math>p</math> is directly proportional to <math>q</math>. When <math>p = 12</math>, <math>q = 4</math>. Find <math>p</math> when <math>q = 20</math>.</p> <ol style="list-style-type: none"> <li><math>p = kq</math> <math>12 = k \times 4</math> so <math>k = 3</math></li> <li><math>p = 3q</math></li> <li><math>p = 3 \times 20 = 60</math>, so <math>p = 60</math></li> </ol>
<p>4. Direct Proportion with powers</p>	<p>Graphs showing <b>direct proportion</b> can be written in the form <math>y = kx^n</math></p> <p>Direct proportion graphs will always start at the origin.</p>	<p style="text-align: center;"><b>Direct Proportion Graphs</b></p> 
<p>5. Inverse Proportion with powers</p>	<p>Graphs showing <b>inverse proportion</b> can be written in the form <math>y = \frac{k}{x^n}</math></p> <p>Inverse proportion graphs will never start at the origin.</p>	<p style="text-align: center;"><b>Inverse Proportion Graphs</b></p> 