

## Linear Relationships

### Grade Eight Linear Relationships HLC

Understand linear relationships using contexts, tables, graphs and equations. Make connections among representations of linear relationships.

September

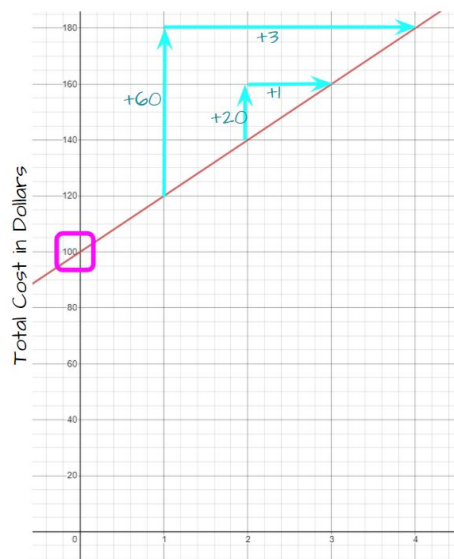
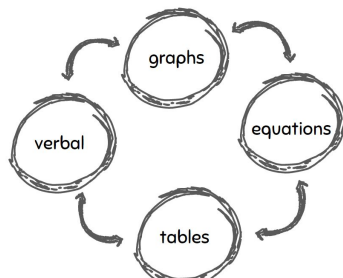
## Grade Eight (LR) Learning Progressions

June

Students must use visual representations to build understanding along this trajectory and interact with a variety of linear contexts.

**\*\*Be VERY cautious of introducing algorithms before conceptual understanding is SOLID\*\***

**Critical Strategies:** Finding the rate of change between two quantities (x and y) and the vertical intercept or initial value

Verbal (in context)	Tables	Graphs	Equations												
<p>At Monster Ski Mountain, the cost for a Bash Badge is \$100. Once you purchase a badge, you then pay \$20 for each day you ski.</p> <p><b>Initial Value</b> (Starting cost/out of pocket) = \$100</p> <p><b>Rate of Change</b>= \$20 for every ticket you purchase. (an increase of \$20 for every 1 ticket)</p> <p><b>*Note:</b> the vocabulary <b>"initial value"</b> &amp; <b>"rate of change"</b> comes directly from Common Core</p>	<p><b>Initial Value</b> of 100 (when x is 0, y is 100)</p> <table><thead><tr><th># of tickets (x)</th><th>Total Cost in dollars (y)</th></tr></thead><tbody><tr><td>0</td><td>100</td></tr><tr><td>1</td><td>120</td></tr><tr><td>2</td><td>140</td></tr><tr><td>5</td><td>200</td></tr><tr><td>12</td><td>240</td></tr></tbody></table> <p><math>\Delta x = +4</math>      <math>\Delta y = +80</math></p> <p><b>Rate of Change</b> An increase of 80 for every 4 x's = an increase of 20 for every 1 x</p> $\frac{\Delta y}{\Delta x} = \frac{80}{4} = \frac{20}{1}$	# of tickets (x)	Total Cost in dollars (y)	0	100	1	120	2	140	5	200	12	240	<p><b>Initial Value</b> of 100 is found when x=0, <b>on the y-axis</b></p>  <p><b>Rate of Change</b> For every 3 x's, y increases by 60 so... <b>For every 1 x, y increases by 20</b></p>	<p>Even when x is 0, you still will have to pay \$100 so your <b>Initial Value</b> is 100</p> $y = 20x + 100$ <p>For every 1x, y increases by 20 ... So your <b>Rate of Change</b> is 20</p> 
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