

# Examples of Linear Word Problems

|  |  |
|--|--|
| <p>Consecutive Numbers</p> <p><i>List of #'s is your final →</i></p> | <p>Always start with x</p> $\frac{X}{1} + \frac{X+1}{2} + \frac{X+2}{3} + \dots$ <p><b>Example:</b> The sum of 4 consecutive integers is 442. Find each integer.</p> $\frac{X}{1} + \frac{X+1}{2} + \frac{X+2}{3} + \frac{X+3}{4} = 442$ <p>109      110      111      112</p> <p><math>4X + 6 = 442</math><br/> <math>-6</math><br/> <math>4X = 436</math><br/> <math>4</math><br/> <math>X = 109</math></p>  |
| <p>Consecutive Even/Odd Integers</p>                                 | <p>Always start with x</p> $\frac{X}{2} + \frac{X+2}{4} + \frac{X+4}{6} + \dots \quad \text{OR} \quad \frac{X}{1} + \frac{X+2}{3} + \frac{X+4}{5} + \dots$ <p><i>they have a gap of 2 so add 2 each time</i></p> <p><b>Example:</b> The sum of three consecutive odd numbers is 333.</p> $\frac{X}{1} + \frac{X+2}{3} + \frac{X+4}{5} = 333$ <p>109      111      113</p> <p><math>3X + 6 = 333</math><br/> <math>-6</math><br/> <math>3X = 327</math><br/> <math>X = 109</math></p> |
| <p>Is Less than</p>  | <p>When "is" is present use the inequality sign for less than "&lt;"</p> <p><b>Example:</b> The sum of 12 and twice a number is less than 50.</p> $2x + 12 < 50$ $\frac{2x}{2} < \frac{38}{2}$ $x < 19$  |
| <p>Less than</p>   | <p>Refers to subtraction</p> <p>"... less than a number" should be written as <math>x - \underline{\hspace{1cm}}</math><br/>         "a number less than ..." should be written as <math>x - \underline{\hspace{1cm}}</math></p> <p><b>Example:</b> 12 less than twice a number is 60.</p> $2x - 12 = 60$ $2x = 72$ $x = 36$   |

## Examples of Linear Word Problems

|                          |  |
|--------------------------|--|
| <p>No more than</p>      | <p><math>\leq</math></p> <p><b>Example:</b> The <u>product of seven</u> and <u>a number increased by 10</u> is <u>no more than 140</u>.</p> $7(x+10) \leq 140$ $7x + 70 \leq 140 \quad 7x \leq 70 \quad x + 10 \leq 20 \quad \boxed{x \leq 10}$  |
| <p><math>\geq</math></p> | <p>At least<br/>Greater than or equal<br/>No less than</p> <p><b>Example:</b> The sum of three times a number and five is at least 20.</p> $3x + 5 \geq 20$ $3x \geq 15 \quad \boxed{x \geq 5}$  |
| <p>=</p>                 | <p>is same amount<br/>same as equals<br/>as much as results</p> <p><b>Example:</b> <u>The product of a number and five</u> <u>is equal to</u> <u>the product of the same number and four decreased by 12</u>.</p> $5x = 4x - 12$ $\boxed{x = -12}$   |
| <p>Average</p>           | <p>Find the sum of your items (usually plus x)<br/>Divide by the total number of items you have</p> <p><b>Example:</b> Jimmy's first <u>5 unit test grades</u> were <u>90, 74, 82, 68, and 76</u>. <u>Is it possible for Jimmy to have a B test average (B is an 80)?</u> <u>If so, what would he need to make on his next test?</u></p> $\frac{90 + 74 + 82 + 68 + 76 + x}{6} \geq 80$ $390 + x \geq 480$ $\boxed{x \geq 90}$ |