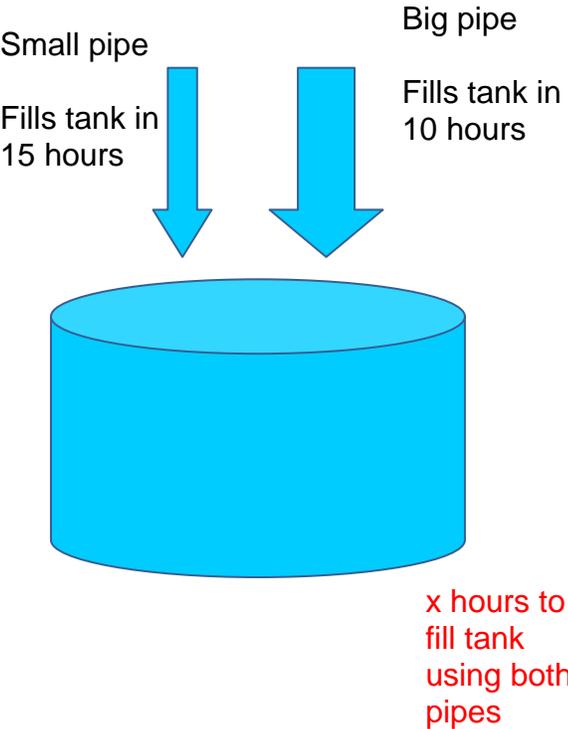


Instructions	Example
<p>1. Carefully read the problem, note what numerical data is given, and what is being asked for.</p>	<p>One pipe can fill a tank in 15 hours, and a larger pipe can fill the same tank in 10 hours. If both pipes are used simultaneously, how many hours will it take to fill this tank?</p>
<p>2. Make a sketch, drawing, or picture of the described situation, and put all the given data from the problem on the drawing. Look for what the problem's question is. In other words, what do they want to know? In this example, they want to know how long will it take to do this total work. Let x = that which they are asking for. Let x = the time required to fill the tank.</p>	
<p>3. Write down any numerical relationships that the problem gives you. In this case, rate of work for small pipe is 15 hours to fill one tank, and for large pipe rate is 10 hours to fill one tank. Or, one per 15 and one per 10.</p>	<p><i>Small rate - $\frac{1}{15}$ 1 tank per 15 hrs</i></p> <p><i>Large rate - $\frac{1}{10}$ 1 tank per 10 hrs</i></p>

<p>4. Look for other information (numbers, formula, etc.) that you can use to relate all the items. In this case, the work rate formula.</p>	<p>Work rate times Time = Total Work</p> <p>Small pipe alone – (1 tank/15 hours)(15 hours)= 1 tank Large pipe alone – (1 tank/10 hours)(10 hours)= 1 tank Both pipes together - (rate of large)(time)+(rate of small)(time) = Total</p>
<p>5. Write that formula using the givens and unknowns. Use the fact that the sum of the parts of the task completed must equal 1 in order to write an equation.</p>	<p>(rate of large)(time)+(rate of small)(time) = Total</p> $\left(\frac{1}{10}\right)(x) + \left(\frac{1}{15}\right)(x) = 1 \text{ tank filled}$
<p>6. Solve for x:</p> <p>Multiply both sides by 30, the least common multiple of 10 and 15. Then, collect terms; finally, divide both sides by 5.</p>	$\left(\frac{1}{10}\right)(x) + \left(\frac{1}{15}\right)(x) = 1 \text{ tank filled}$ $(30)\frac{1}{10}x + (30)\frac{1}{15}x = 1(30)$ $3x + 2x = 30$ $5x = 30$ $x = 6$
<p>Answer: With both pipes working together, it takes 6 hours to fill the tank.</p>	