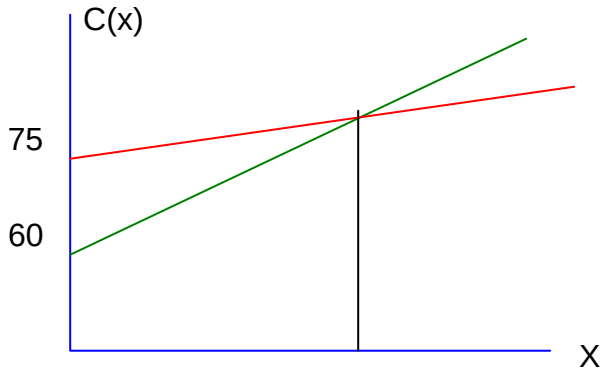
Instructions	Example
1. Carefully read the problem, note what numerical data is given, and what is being asked for.	One machine has a fixed daily cost of **$75** and a variable cost of **$3** per item produced; whereas a second machine has a fixed daily cost of **$60** and a variable cost of **$4.50** per item produced. At what number of items will the cost of running these two machines be the same?
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 at what production item number will the cost be the same. Let x = that which they are asking for. Let x = the production item number.	 Red line is the $75 fixed production line. Green line is the $60 fixed production line.
3. Write down any numerical relationships that the problem gives you. In this case, the fixed and variable costs.	One line is $75 fixed with a variable cost of $3 per item produced. Second line is $60 fixed with a variable cost of $4.50 per item produced.

4. Look for other information (numbers, formula, etc.) that you can use to relate all the items.	Think of the equation of these two lines. Remember y = mx + b, and look at these two cost functions. One case, b = 75 and m = 3 Other case, b = 60 and m = 4.50
5. Write those equations using the givens and unknowns. Substitute C for y since we are dealing with cost.	$C = 3x + 75$ $C = 4.50x + 60$
6. Solve for x: Recognize that this problem involves two linear equations with two unknowns (C and x); solve to get the intersection point, either graphically or by substitution. *Substitution is used in this example.*	$3x + 75 = 4.50x + 60$ $3x - 3x + 75 = 4.50x - 3x + 60$ $75 = 1.50x + 60$ $75 - 60 = 1.50x + 60 - 60$ $15 = 1.50x$ $\frac{15}{1.50} = \frac{1.50x}{1.50}$ $10 = x$
Answer: **When the *10th* item is produced, the cost of running the two machines is the same.**	