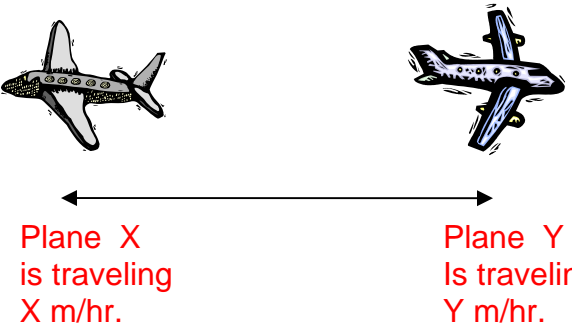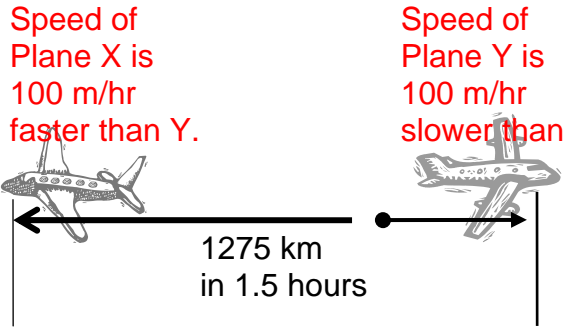| Instructions	Example
1. Carefully read the problem, note what numerical data is given, and what is being asked for.	Two airplanes depart from an airport simultaneously, one flying **100 km/hr** faster than the other. These planes travel in opposite directions, and after **1.5 hours** they are **1275 km** apart. Determine **the speed of each plane.**
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, the problem asks you to find the speed of each plane. Let x = the speed of one plane, and y = the speed of the other.	Plane X is traveling X m/hr. Plane Y Is traveling Y m/hr.
3. Write down any numerical relationships that the problem gives you: Distance apart is 1275 km, time traveled is 1.5 hrs, and one plane is traveling 100 m/hr. faster than the other. Let plane X be the faster plane.	Speed of Plane X is 100 m/hr faster than Y. Speed of Plane Y is 100 m/hr slower than X. 1275 km in 1.5 hours
4. Look for other information (numbers, formulas, etc.) that you can use to *relate* all the items. Distance = Rate • Time is the formula you need in this case.	Distance traveled = Rate (or *Speed*) times Time. 1275 km is the *total* of the distances (added together) that each plan travels. Travel time for each plane is the same, 1.5 hours; however, the planes' speeds *differ* by 100 km/hr.

5. Write the **DRT** formula and an equation showing the **difference** in the speeds of the two planes; fill in all givens and unknowns.	$D = R \cdot T$ 1275 km = plane X's distance plus plane Y's distance: $$D_{Total}\text{ (or 1275)} = D_x + D_y$$ Plane X's distance is its speed x times 1.5, and plane Y's distance is its speed y times 1.5: $$1275\text{ km} = (X)(1.5) + (Y)(1.5)$$ The difference in the planes' speeds can be expressed as: $$X - Y = 100$$
6. Solve for x and y: This problem involves two equations with two unknowns, so one method to solve it is by using substitution.	From above, the first equation is: $$1275 = 1.5X + 1.5Y$$ The second Equation is: $$X - Y = 100$$ On this equation, solve for X by adding Y to both sides: $$X - Y + Y = 100 + Y$$ $$X = 100 + Y$$ Substitute back into the first equation: $$1275 = 1.5(100 + Y) + 1.5Y$$ $$1275 = 150 + 1.5Y + 1.5Y$$ $$1275 = 150 + 3Y$$ $$1275 - 150 = 150 - 150 + 3Y$$ $$1125 = 3Y$$ $$\frac{1125}{3} = \frac{3Y}{3}$$ $$375 = Y$$ And then, back into the second equation: $$X = 100 + Y$$ $$X = 100 + 375$$ $$X = 475$$

Answer:
The faster plane (plane X) is flying 475 km/hr, and the slower plane (plane Y) is flying 375 km/hr.