**Lower Elementary:**

*Question:* A plane has 9 seats in each row. In the first row, there is a man sitting in the first seat, a woman in the second seat, and another man in the third seat. If this pattern repeats for the whole row, how many men are in the row?

**Upper Elementary:**

*Question:* A plane leaves New York at 10:30 am heading to California. If the flight is 5$\frac{1}{2}$ hours long, what time will it be in California when it lands? (New York is 3 hours ahead of California.)

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**Middle School:**

*Question:*  The ratio of child to adult passengers on a plane is 15:16. There is a total of 217 passengers on the flight. How many passengers are adults?

**Algebra and Up:**

*Question:* It takes 3 hours for a plane to travel 1,740 miles with the wind. Flying against the wind, the plane can travel 1,410 miles in the same amount of time. What is the speed of the plane in still air? What is the speed of the wind?

**Lower Elementary:**

*Question:* A plane has 9 seats in each row. In the first row, there is a man sitting in the first seat, a woman in the second seat, and another man in the third seat. If this pattern repeats for the whole row, how many men are in the row?

*Answer:* 6 men

*Solution:* Let’s write out the pattern and complete it for the whole row. M = man, W = woman. M, W, M, M, W, M, M, W, M

Counting the number of Ms, we find there are 6 men in the row.

**Upper Elementary:**

*Question:* A plane leaves New York at 10:30 am heading to California. If the flight is 5$\frac{1}{2}$ hours long, what time will it be in California when it lands? (New York is 3 hours ahead of California.)

*Answer:* 1:00 pm

*Solution:* One way to do this is to add 5 hours to 10:30 am. Since $\frac{1}{2}$ an hour is 30 minutes we add, 10:30 am + 5 hours + 30 minutes = 4:00 pm New York time. Since California is 3 hours behind New York it is, 4:00 pm − 3 hours = 1:00 pm in California when the plane lands.

**Middle School:**

*Question:*  The ratio of child to adult passengers on a plane is 15:16. There is a total of 217 passengers on the flight. How many passengers are adults?

*Answer:* 112 passengers are adults

*Solution:* Since we know the total number of passengers we need to find the ratio of adult passengers to total passengers. The ratio of child to adult is 15:16 making the ratio of adults to total number of passengers 16:31. Setting up the proportion, $\frac{16 adults}{31 children+adults}$ = $\frac{x adults}{217 children+adults}$ and solving for x, we get 112 adult passengers.

**Algebra and Up:**

*Question:* It takes 3 hours for a plane to travel 1,740 miles with the wind. Flying against the wind, the plane can travel 1,410 miles in the same amount of time. What is the speed of the plane in still air? What is the speed of the wind?

*Answer:* plane speed = 525 mph, wind speed = 55 mph

*Solution:* Using ***D*** = ***RT***, we can setup two equations. Let ***P*** = the speed of the plane in still air and W = the speed of the wind. Our equation with the wind is, 3(***P*** + ***W***) = 1,740 and against the wind is 3(***P*** − ***W***) = 1,410. Solving this system of equations

3 ***P*** + 3 ***W*** = 1,740

3 ***P*** − 3 ***W*** = 1,410

6 ***P*** = 3,150

we find ***P*** = 525 mph and ***W*** = 55mph.