

**LESSON 131** .....

1. Restrictions:  $x \neq 0$ ; LCD =  $6x$   
 Multiply by the LCD, then solve for  $x$ .  
 $3x + x = 6$   
 $x = 3/2$  ✓
2. Restrictions:  $x \neq 0, -3$ ; LCD =  $2x(x + 3)$   
 Multiply by the LCD, then solve for  $x$ .  
 $2(x + 3) + 2x = x(x + 3)$   
 $x^2 - x - 6 = 0$   
 $(x + 2)(x - 3) = 0$   
 $x = -2, x = 3$  ✓
3.  $x$  = time together  
 $\frac{1}{2} + \frac{1}{3} = \frac{1}{x}$   
 Solve for  $x$ , and you get  $x = 6/5 = 1.2$ .  
 It will take 1.2 hours.
4.  $x$  = Laura's time alone  
 $x - 6$  = Brian's time alone  
 $\frac{1}{x} + \frac{1}{x - 6} = \frac{1}{4}$   
 Solve for  $x$ , and you get  $x = 2$  and  $x = 12$ .  
 $x - 6 > 0$ , so  $x = 12$ .  
 It will take 12 hours.
5.  $x$  = speed of the wind  
 $150 + x$  = speed of the plane with the wind  
 $150 - x$  = speed of the plane against the wind  
 $\frac{360}{150 + x} = \frac{240}{150 - x}$   
 Solve for  $x$ , and you get  $x = 30$ .  
 The speed of the wind is 30 mph.
6.  $x$  = time together  
 $\frac{1}{30} + \frac{1}{45} = \frac{1}{x}$   
 Solve for  $x$ , and you get  $x = 18$ .  
 It will take 18 minutes.
7.  $x$  = time together  
 $\frac{1}{8} + \frac{1}{12} = \frac{1}{x}$   
 Solve for  $x$ , and you get  $x = 24/5 = 4.8$ .  
 It will take 4.8 hours.
8.  $x$  = Paul's time alone  
 $\frac{1}{6} + \frac{1}{x} = \frac{1}{4}$   
 Solve for  $x$ , and you get  $x = 12$ .  
 It will take 12 hours.

9.  $x$  = pipe B's time alone  
 $\frac{1}{4} + \frac{1}{x} = \frac{1}{2}$   
 Solve for  $x$ , and you get  $x = 4$ .  
 It will take 4 hours.
10.  $x$  = Liam's time alone  
 $3x$  = Henry's time alone  
 $\frac{1}{x} + \frac{1}{3x} = \frac{1}{6}$   
 Solve for  $x$ , and you get  $x = 8$ .  
 It will take 8 hours.
11.  $x$  = speed of the wind  
 $250 + x$  = speed of the plane with the wind  
 $250 - x$  = speed of the plane against the wind  
 $\frac{1100}{250 + x} = \frac{900}{250 - x}$   
 Solve for  $x$ , and you get  $x = 25$ .  
 The speed of the wind is 25 mph.
12.  $x$  = speed of the boat  
 $x + 2$  = speed of the boat with the current  
 $x - 2$  = speed of the boat against the current  
 $\frac{60}{x + 2} = \frac{48}{x - 2}$   
 Solve for  $x$ , and you get  $x = 18$ .  
 The speed of the boat is 18 km/h.