

HW. 6.7 #4

Together, it takes John & Deb 1 hr. 12 min to sort.
 Alone, John takes 1 more hr. than Deb. How long for
 Deb alone? [John's time = $x+1$, rate = $\frac{1}{x+1}$; Deb's time = x , rate = $\frac{1}{x}$]
 In hours! 1 hr 12 min = $1 \frac{12}{60} = 1 \frac{1}{5}$ hr = $\frac{6}{5}$ hr

| | | | |
|------|-----------------|-------------------------|------------------------------|
| John | $\frac{r}{x+1}$ | $\frac{t}{\frac{6}{5}}$ | $\frac{w}{\frac{6}{5(x+1)}}$ |
|------|-----------------|-------------------------|------------------------------|

| | | | |
|-----|---------------|---------------|----------------|
| Deb | $\frac{1}{x}$ | $\frac{6}{5}$ | $\frac{6}{5x}$ |
|-----|---------------|---------------|----------------|

LCD is $5(x+1)x$

$$\frac{6}{5(x+1)} + \frac{6}{5x} = 1$$

$$\frac{6 \cdot 5(x+1)(x)}{5(x+1)} + \frac{6 \cdot 5(x+1)(x)}{5x} = 1(5)(x+1)(x)$$

$$6x + 6(x+1) = 5x^2 + 5x$$

$$6x + 6x + 6 = 5x^2 + 5x \rightarrow$$

$$0 = 5x^2 - 7x - 6$$

$$0 = (5x + 3)(x - 2)$$

$$x = -\frac{3}{5}, 2$$

Deb's time = 2 hrs = 120 minutes

Using Minutes is harder, but can be done hard to get!

| | | | |
|------|------------------|----------------|-----------------------------|
| John | $\frac{r}{x+60}$ | $\frac{t}{72}$ | $\frac{w}{\frac{72}{x+60}}$ |
|------|------------------|----------------|-----------------------------|

| | | | |
|-----|---------------|-----------------|----------------|
| Deb | $\frac{1}{x}$ | $\frac{72}{72}$ | $\frac{72}{x}$ |
|-----|---------------|-----------------|----------------|

$$\frac{72}{x+60} + \frac{72}{x} = 1 \quad \text{LCD is } x(x+60)$$

$$72x + 72(x+60) = x^2 + 60x$$

$$0 = x^2 - 84x + 4320$$

$$\rightarrow 0 = (x-120)(x+36)$$

$$x = 120, -36$$

Deb's time is 120 min.

Factor 5
 1. 4320 \rightarrow diff 4319
 10. 432 \rightarrow
 20. 216 \rightarrow 196 } 84 is
 40. 108 \rightarrow 68 } between
 *36. 120 \rightarrow 84