

<http://harryzaims.com/121-all/videos/01-Homework-Videos/chapter-01/1-2-modeling-with-equations/>

\$1.2 \neq 9 \leftrightarrow \neq 39 in book
Half her prize to Gummint

~~She invested the rest as follows~~

$$\frac{1}{3} \text{ @ } 13\%$$

$$\frac{1}{6} \text{ @ } 14\%$$

Total return was \$4200

How much \$ in the prize.

Let x = Amt of prize money.

$$\text{Then } \left(\frac{1}{3}x\right)(.13) + \left(\frac{1}{6}x\right)(.14) = \$4200$$

↑ Amt invested
↑ Rate of return

↓ Amt earned

$$\frac{.13}{3}x + \frac{.14}{6}x = 4200$$

$$\left(\frac{.13}{3} + \frac{.14}{6}\right)x = 4200$$

$$\left(\frac{.13}{3} + \frac{.07}{3}\right)x = 4200$$

$$\frac{.20}{3}x = 4200$$

$$x = (4200)\left(\frac{3}{.20}\right) \cdot \frac{10}{10}$$

$$= \frac{(42000)(3)}{2}$$

$$= (21000)(3)$$

$$= 63,000$$

Check

$$\frac{63000}{3} = 21,000 \text{ invested @ } 13\%$$

$$\frac{63000}{6} = 10,500 \quad \dots \quad \dots \quad 14\%$$

$$(21000)(.13) + (10500)(.14)$$

1 job done = 1 job done
 Trent does it in 30 min
 Louisa 20 min
 How fast working together.

Shared
Work

$\frac{1}{30}$ of job done in 1 min.
 $\frac{1}{20}$

Let x = the amt of time it takes (in min.)

Then $\left(\frac{1}{30} \frac{\text{job done}}{1 \text{ min}}\right)(x \text{ min})$
 $+ \left(\frac{1}{20} \frac{\text{job done}}{1 \text{ min}}\right)(x \text{ min}) = 1 \text{ job done}$

The key
 $\frac{1}{30}$ of job
 done in
 1 minute!

$$\frac{1}{20}x + \frac{1}{30}x = 1$$

$$60 \left[\frac{x}{20} + \frac{x}{30} = 1 \right]$$

LCD:

$$\begin{array}{r} 2 \overline{)30} \\ 3 \overline{)15} \\ \hline 5 \end{array} \quad \begin{array}{r} 2 \overline{)20} \\ 2 \overline{)10} \\ \hline 5 \end{array}$$

$$\text{LCD} = 2 \cdot 2 \cdot 3 \cdot 5$$

$$\frac{3}{20}x + \frac{2}{30}x = 60$$

$$3x + 2x = 60$$

$$5x = 60$$

$x = 12$ min. working together.

$$\left(\frac{1}{20}\right)(12) + \left(\frac{1}{30}\right)(12)$$

$$= \left(\frac{12}{20}\right)\left(\frac{3}{3}\right) + \left(\frac{12}{30}\right)\left(\frac{2}{2}\right)$$

$$= \frac{36 + 24}{60} = \frac{60}{60} = 1 \text{ job done}$$

Sweet!