

Algebra II

5-8

Word Problems

1) $\frac{5}{16}$ of $\frac{4}{5}$ of the number is 15. 60

Let $x =$ the number

$$\frac{5}{16} \cdot \frac{4}{5} \cdot x = 15$$

$$\frac{1}{4}x = 15$$

$$x = 60$$

$$\{60\}$$

- 5) Pump A can unload the *Lunar Petro* in 30 h and pump B can unload it in 24 h. Because of an approaching storm, both pumps were used. How long did they take to empty the ship?

One - Job

$$\frac{\text{time together}}{\text{time alone}} + \frac{\text{together}}{\text{alone}} = 1$$

Let $x =$ time together 13hr 20min

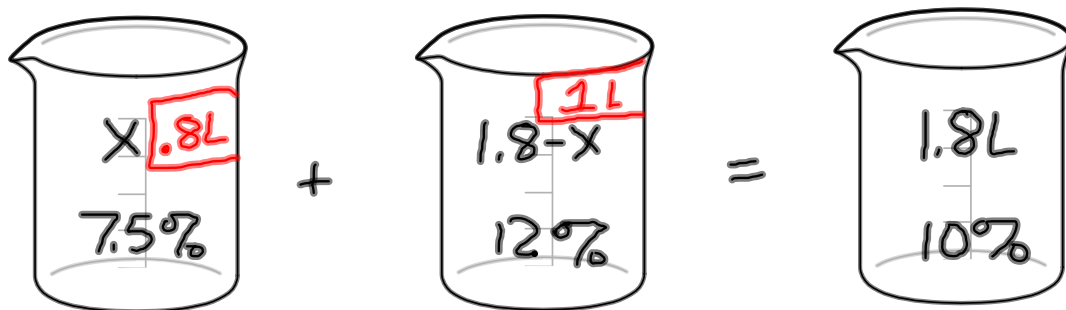
$$\left(\frac{x}{30} + \frac{x}{24} = 1 \right) 120$$

$$4x + 5x = 120$$

$$9x = 120$$

$$x = \frac{120}{9} = 13\frac{1}{3} = 13\text{hrs } 20\text{ min}$$

- 13) A pharmacist wishes to make 1.8 L of a 10% solution of boric acid by mixing 7.5% and 12% solutions. How much of each type of solution should be used?



Let x = amt of 7.5%

$$.075x + .12(1.8 - x) = .10(1.8)$$

$$.075x + .216 - .12x = .18$$

$$-.045x = -.036$$

$$x = \frac{.036}{.045} = \frac{4}{5} = .8$$

- 19) A commercial jet can fly from San Francisco to Dallas in 3 h. A private jet can make the same trip in $3\frac{1}{2}$ h. If the two planes leave San Francisco at noon, after how many hours is the private jet twice as far from Dallas as the commercial jet?

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