

$$2. \quad -[6x - (4x + 8)] = 9 + (6x + 3)$$

$$-(6x - 4x - 8) = 6x + 12$$

$$-(2x - 8) = 6x + 12$$

$$-2x + 8 = 6x + 12$$

$$-4 = 8x$$

$$-\frac{1}{2} = -\frac{4}{8} = x$$

$$4. \quad 7 \left( \frac{2x-3}{7} + \frac{3}{7} \right) = \left( \frac{x}{7} \right) 7$$

$$\frac{\cancel{7}(2x-3)}{\cancel{7}} + \frac{3 \cdot \cancel{7}}{\cancel{7}} = \frac{-\cancel{7}x}{\cancel{7}}$$

$$2x - 3 + 3 = -x$$

$$2x = -x$$

$$3x = 0$$

$$x = \frac{0}{3} = 0$$

$$3.12 \left( \frac{8x}{3} - \frac{5x}{4} \right) = (-13) \cdot 12$$

$$\frac{4 \cancel{12} (8x)}{\cancel{3}} - \frac{\cancel{3} (5x)}{\cancel{4}} = -13 \cdot 12$$

$$32x - 15x = -156$$

$$17x = -156$$

$$x = \frac{-156}{17}$$

9. In the 2008 presidential election, Barack Obama and John McCain together received 538 electoral votes. Obama received 192 more votes than McCain. How many votes did each candidate receive?

$$B = \text{Obama} \quad M = \text{McCain}$$

$$M + B = 538$$

$$M + M + 192 = 538$$

$$2M + 192 = 538$$

$$2M = 346$$

$$M = 173$$

$$M + 192 = B$$

$$173 + 192 = B$$

$$365 = B$$

10. In 1995, the average cost of tuition and fees at private four-year universities in the United States was \$2811 for a full-time student. By 2005 it had risen approximately 95%. To the nearest dollar, what is the approximate cost in 2005?

$$(1995 \text{ Tuition}) = (2005 \text{ Tuition})$$

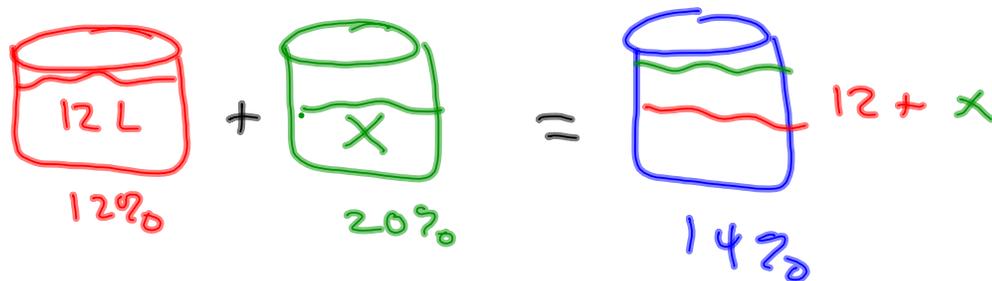
$$(1995 T) + 0.95(1995 T) = (2005 T)$$

$$(2811) + 0.95(2811) = T_{2005}$$

$$1.95(T_{1995}) = T_{2005}$$

\$5482

11. In chemistry class, 12L of a 12% alcohol solution must be mixed with a 20% solution to get a 14% solution. How many liters of the 20% solution are needed?



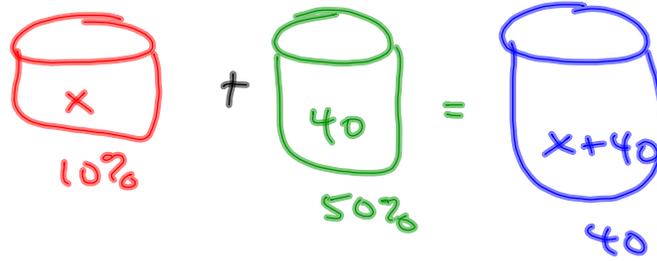
$$12\%(12) + 20\%(x) = 14\%(12+x)$$

$$144 + 20x = 168 + 14x$$

$$6x = 24$$

$$x = 4$$

12. How many liters of a 10% alcohol solution must be mixed with 40L of a 50% solution to get a 40% solution?



$$10x + 50(40) = 40(x+40)$$

$$10x + 2000 = 40x + 1600$$

$$400 = 30x$$

$$\frac{400}{30} = x$$

$$\frac{40}{3} = x$$

1. How many gallons of a 12% solution must be added to a 20% solution in order to produce 10 gallons of a 14% solution?"

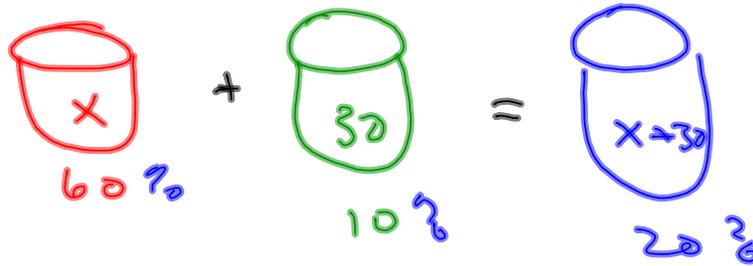


$$12x + 20(10-x) = 14(10)$$

$$x + y = 10$$

$$y = 10 - x$$

2. How many gallons of a 60% solution must be added to 30 gallons of a 10% solution in order to produce a 20% solution?



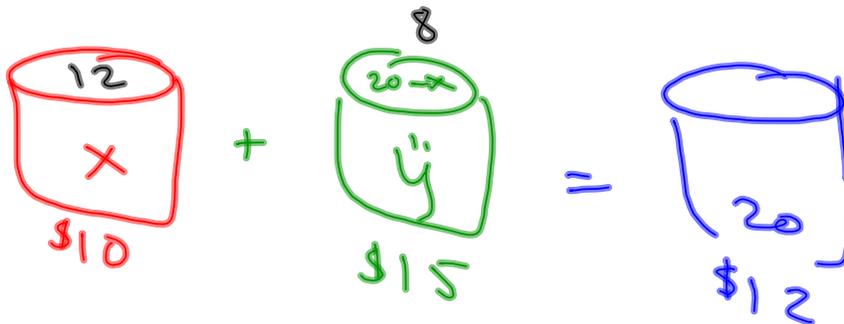
$$60x + 300 = 20(x + 30)$$

$$60x + 300 = 20x + 600$$

$$40x = 300$$

$$x = \frac{300}{40}$$

3. A lawn service wants to mix two types of grass seed. Fescue sells for \$10 per pound and Bluegrass sells for \$15 per pound. How many pounds of each type are needed to obtain 20 pounds of a mixture that would sell at \$12 per pound?



$$10x + 15(20 - x) = 12(20)$$

$$10x + 300 - 15x = 240$$

$$300 - 5x = 240$$

$$-5x = -60$$

$$x = 12$$

$$x + y = 20$$

$$y = 20 - x$$