

Math 70 Quiz #7

1. Here are two ways to solve this equation:

- Clear the fractions by multiplying both sides by 4 (the LCD): $4(\frac{3}{4}x) = 4(\frac{1}{2}x + 5)$

$$4(\frac{3}{4})x = 4(\frac{1}{2})x + 4(5)$$

$$3x = 2x + 20$$

This equation is easier to solve than the original. $x = 20$ (Subtracting $2x$ from each side.)

- Solving without clearing the fractions.

Note that $\frac{3}{4} - \frac{1}{2} = \frac{3}{4} - \frac{2}{4} = \frac{1}{4}$.

So, we have that the equation is $\frac{1}{4}x = 5$ (Subtracting $\frac{1}{2}x$ from each side.)

To solve for x , you can multiply each side by 4 (or divide each side by $\frac{1}{4}$):

$$4(\frac{1}{4}x) = 4(5) \Rightarrow x = 20$$

Check: Left-side of the equation: $\frac{3}{4}(20) = 15$

Right-side of the equation: $\frac{1}{2}(20) + 5 = 10 + 5 = 15$

Each side is equal when $x = 20$. ✓

2. (a) Unknown: Number = x

Equation: $12 + 2x = 38$

Solving: $2x = 26$ (Subtracting 12 from both sides.)
 $x = 13$ (Dividing both sides by 2)

The number is 13.

(b) Unknown: Time spent biking = t

Equation: Distance Running + Distance Biking = 17

Since the distance covered by running is $5(2) = 10$ miles and the distance covered by biking is $14t$ (Distance = Rate·Time), the equation is

$$10 + 14t = 17$$

Solving: $14t = 7$ (Subtracting 10 from each side.)
 $t = \frac{7}{14} = \frac{1}{2}$ or 0.5 hours

So, $t = \frac{1}{2} = 0.5$ hours. You spent half an hour biking.