

**SHOW ALL WORK!**

1. Solve.

$$6(x-1)+4=3(7x+1)$$

$$6x-6+4=21x+3$$

$$6x-2=21x+3$$

$$-5=15x$$

$$-\frac{1}{3}=x$$

2. Solve.

$$-7(x-3)+4x=3(7-x)$$

$$-7x+21+4x=21-3x$$

$$-3x+21=21-3x$$

$$0=0 \quad \text{TRUE}$$

$\mathbb{R}$

all real numbers

3. Solve.

$$12\left(\frac{x}{3}+\frac{3x}{4}\right)=(2)12$$

$$4x+9x=24$$

$$13x=24$$

$$x=\frac{24}{13}$$

$$x \approx 1.85$$

4. Solve.

$$10\left(\frac{4x-3}{5}-6\right)=\left(\frac{x}{2}\right)10$$

$$2(4x-3)-60=5x$$

$$8x-6-60=5x$$

$$8x-66=5x$$

$$3x=66$$

$$x=22$$

5. Solve for  $r$ .

$$A=\pi r^2$$

$$\frac{A}{\pi}=r^2$$

$$\sqrt{\frac{A}{\pi}}=r$$

6. Solve for  $C$ .

$$f=\frac{9}{5}C+32$$

$$f-32=\frac{9}{5}C$$

$$\frac{5}{9}(f-32)=C$$

7. Find a number such that 66 more than one-half the number is twice the number

$$\frac{1}{2}x \rightarrow \frac{1}{2} \cdot \frac{x}{1}$$

$$\frac{x}{2} + 66 = 2x$$

$$x + 132 = 4x$$

$$132 = 3x$$

$$44 = x$$

8. The sum of two consecutive *natural numbers* is 525. Find the numbers

$$x + (x+1) = 525$$

$$2x + 1 = 525$$

$$2x = 524$$

$$x = 262$$

$$x + 1 = 263$$

9. How much pure antifreeze must be added to 12 gallons of 20% antifreeze to make a 40% antifreeze solution?

	# of Gal	% Antifreeze	Total Antifreeze
Orig. Sol.	12	20	240
Antifreeze	x	100	100x
New Sol.	12 + x	40	40(12 + x)

$$240 + 100x = 480 + 40x$$

$$60x = 240$$

$$x = 4 \text{ gallons}$$