

Course: MFM2P Gr. 10 AppliedLesson: 4 -3Unit: Linear EquationsTopic: Solving Multi - Step Equations

✚ *homework check:* Lesson 4 - 2✚ *note:* Solving Multi - Step Equations

To solve multi-step equations, we use many of the same processes previously learned, with the addition of a few others. For example, if there are variables on both sides of the equation, we must collect them before solving. When there are fractions, it is helpful to multiply both sides by the lowest common multiple of the denominators. For example, solve the following equations.

a)

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

$$5x - 15 + 4 = 2x + 6 - 2$$

$$5x - 11 = 2x + 4$$

$$5x - 2x = 4 + 11$$

$$3x = 15$$

$$\frac{3x}{3} = \frac{15}{3}$$

$$x = 5$$

b)

$$\frac{3m + 1}{5} = -4 \quad \text{LCM}(1, 5) = 5$$

$$5\left(\frac{3m + 1}{5}\right) = 5(-4)$$

$$3m + 1 = -20$$

$$3m = -20 - 1$$

$$3m = -21$$

$$\frac{3m}{3} = \frac{-21}{3}$$

$$m = -7$$

✚ *homework assignment:* Lesson 4 - 3

Lesson 4 – 3: Solving Multi-Step Equations**1. Solve each equation. Show your work in order to receive full marks.**

a) $3(x+5)=12$

b) $\frac{3x-5}{2}=11$

c) $\frac{2(x-4)}{3}=8$

d) $12=3(x-4)$

e) $\frac{3}{4}(x+2)=-3$

f) $\frac{4}{5}x-3=5$

g) $3x-2=2x+3$

h) $5x+6=4x-9$

2. Solve each equation in the space provided.

a) $3(x+6)=2(x-1)$

b) $2x-3(-1)=6-4x$

c) $1-(2+x)=x+5$

d) $3(2-x)=10+x$

e) $3(x+1)=5(x-3)$

f) $4(3x+5)=-2(6+3x)$

g) $\frac{2(x-3)}{3}=12$

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

3. Mr. White has \$300 in a savings account for which he uses the equation

$A = 300 + (0.005 \times 300)n$ to determine the amount of money A in dollars, after n years.

a) How much money is in Mr. White's account after 10 years?

b) How long does it take Mr. White to save \$3375?

4. Plane A travels at 500km/h with the equation $D = 500t$. Plane B leaves an hour later and travels at 750km/h with equation $D = 750(t-1)$. If t represents the number of hours each flight has flown, how long will it take flight 2 to reach flight 1?

5. Eric has a cottage on Rainy River. When he goes upstream to visit his friend, the current reduces his boat speed and it takes him $\frac{3}{4}$ of an hour. When he goes downstream, the current increases his boat speed and it takes him $\frac{1}{2}$ hour. The speed of the boat is 20 km/h in still water. Since the distance to his friend's cabin is the same each way, Eric uses the equation

$\frac{3}{4}(20-x) = \frac{1}{2}(20+x)$ to model the speed of the current x . Solve the equation.