Linear Equation Challenge Problems Part 2

Name _____ Per __

Answers should be done neatly on a separate sheet. You may use a calculator. You can finish this sheet for bonus points.

1. Solve for x using the technique shown in class. Check your answer.

4(3x – 2 + 6x) = 100

2. Solve for x using the technique shown in class. Your answer should be in the form of a mixed number—do not change to decimals. Check your answer.

$$\frac{2}{3}\left(\frac{3}{7}x-\frac{2}{11}\right)=\frac{5}{6}$$

3. Write an equation with one variable that represents the following problem, then solve the equation and check your answer against the original problem.

Bob is 3 years older than Dan. Joe is twice as old as Bob. Sam, who is 57, is as old as the three of them put together. How old is each person?

4. (HARD) Diophantus is sometimes referred to as the "father of algebra". He is the first mathematician to use algebraic symbols. The following is written on his tomb:

This tomb hold Diophantus. Ah, what a marvel! And the tomb tells scientifically the measure of his life. God vouchsafed that he should be a boy for the sixth part of his life; when a twelfth was added, his cheeks acquired a beard; He kindled for him the light of marriage after a seventh, and in the fifth year after his marriage He granted him a son. Alas! late-begotten and miserable child, when he had reached the measure of half his father's life, the chill grave took him. After consoling his grief by this science of numbers for four years, he reached the end of his life.

Write an equation which you can use to figure out how old Diophantus was when he died. Solve the equation to figure out how old Diophantus was.

5. Write an equation with one variable that represents the following problem, then solve the equation and check your answer against the original problem.

A candybar costs $1.00 plus half of its cost. How much is the candybar?

6. Write an equation with one variable that represents the following problem, then solve the equation and check your answer against the original problem.

Pete has $1.99 in change. He has 2/3 as many dimes as quarters, and 1/4 as many nickels as dimes. What coins does he have?

7. Write an equation with one variable that represents the following problem, then solve the equation and check your answer against the original problem.

At 8am a freight train leaves town traveling at 50 mph. At 10am a passenger train leaves the same station traveling in the same direction, along the same route at 65mp. How long will it take the passenger train to overtake the freight train? How far will they be from the station at this time?