Name: _____ Date: _____

3 Algebraic Linear Equations

Lesson 3.1 Solving Linear Equations with One Variable

Solve each linear equation. Show your work.

1. $2x + 3(x - 4) = 4(2x + 3)$

2. $3x + 0.5(10x - 6) = 21$

3. $4(x + 2) - 2(x - 4) = 32$

4. $8 - 3(x + 2) = 2(4 - 3x) - 4.5$

5. $0.8(5 + 5x) + 4x = 20$

6. $7(x + 5) - 3(2x + 3) = 33.8$

7. $0.7(3x - 5) + 3.9x = 14.5$

8. $\frac{1}{2}(6x - 8) = \frac{7}{5}(x - 5) - \frac{1}{5}$

9. $\frac{x - 4}{10} = \frac{3}{5} - \frac{x - 5}{15}$

10. $\frac{1}{6}x = \frac{3x + 5}{4} + \frac{1}{3}(x - 1)$

11. $\dfrac{2(2x + 1)}{5} - \dfrac{x + 2}{3} = \dfrac{1}{5}$

12. $\dfrac{x + 3}{2} - \dfrac{11 - x}{5} = 1 + \dfrac{3x - 1}{20}$

Express each repeating decimal as a fraction. Show your work.

13. $0.\overline{4}$

14. $0.0\overline{3}$

15. $0.1\overline{5}$

16. $0.2\overline{5}$

17. $0.41\overline{6}$

18. $0.3\overline{18}$

Solve each problem algebraically. Show your work.

19. Mabel paid $2.95 for a granola bar with dimes and quarters. She used 5 fewer quarters than dimes. How many dimes and quarters did she use to pay for the granola bar?

Solve each problem algebraically. Show your work.

20. Mrs. Willy bought $3\frac{1}{2}$ pounds of ground turkey and $2\frac{1}{2}$ pounds of white fish.

The white fish is $4.60 per pound cheaper than the ground turkey. If she paid a total of $51.50, what is the price per pound she paid for the ground turkey and the price per pound for the white fish?

21. Sylvia is carrying two bags of potatoes, Bag A and Bag B. The weight of Bag B is 3 pounds more than twice the weight of Bag A. The total weight of both bags of potatoes is 27 pounds. Find the weight of each bag of potatoes.

22. Gary is x years old today. Two years ago, his grandfather was 3 times older than Gary at that time.

a) The age difference of Gary and his grandfather then was 48 years. Write a linear equation to represent this age difference.

b) Find Gary's grandfather's age today.

Solve each problem algebraically. Show your work.

23. There are 40 students in a class. The teacher gave each female student 5 counters and each male student 3 counters. After the distribution of the counters, the teacher realized that the female students had 128 more counters than the male students.

Write and solve a linear equation to find the number of female students in the class.

24. Harry has 3 bamboo poles of different lengths. The total combined length of the three poles when placed end-to-end is $47\frac{1}{2}$ inches long. Pole B is $1\frac{3}{4}$ times as long as Pole A and Pole C is $2\frac{1}{2}$ inches longer than Pole A.

a) Write a linear equation for the total combined length of the 3 poles.

b) Find the length of Pole C.