Additional Problems: 1-Variable Equations and Inequalities

**Solving Linear Equations**

1. Determine whether the following linear equations have the same solution set.
   1. 4x + 10 = 34
   2. 2(x + 5) + 12 = 38
2. What value of *q* will make the following equation true?
   1. 1/5 (10 – 5*q*) – 3 = -*q*
3. For number 2, did you start with first with the distributive property or the multiplication property of equality? Explain your selection. What would have happened if you started with the other strategy?
4. Darnell was asked to use and identify appropriate properties of equality to find the value of *d* that makes this statement -4*d* – 8 = 2 + *d* true. He has written out his steps below. Label those steps with the property used.
   1. -4*d* + 4*d* – 8 = 2 + *d* + 4*d* (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
   2. -8 = 2 + 5*d* (combine like terms)
   3. -8 – 2 = 2 – 2 + 5*d* (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
   4. -10 = 5*d* (combine like terms)
   5. -10/5 = 5*d*/5 (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
   6. -2 = *d*
5. Determine whether the following equations have the same solution set.

4y - 9 = 3y + 15

5y + 20 = 35

2b - 4b + 6b = 12

1. Determine whether the following equations have the same solution set.

7z + 5 = 2z + 30

3z - 10 = 5

c - 5c + 9c = 27

1. What value will make the equation 5n + 7/3 – 2n/3 = 1 true? Write your answer as a fraction.
2. What value will make the equation 4p – 3/5 + p/5 = 2 true? Write your answer as a fraction.
3. Fatima was asked to use and identify appropriate properties of equality to find the value of y that makes the statement ¾ (y + 8) = ½ (2y + 4) true. She has written out her steps below. Label those steps with the property used.
   1. 4 (¾ (y + 8)) = 4(¼ (2y + 4)) (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
   2. 3 (y + 8) = 2y + 4 (simplify)
   3. 3(y) + 3(8) = 2y + 4 (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
   4. 3y + 24 = 2y + 4 (simplify)
   5. 3y – 2y + 24 = 2y – 2y + 4 (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
   6. y + 24 = 4 (combine like terms)
   7. y + 24 – 24 = 4 – 24 (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
   8. y = -20
4. How many solutions will the equation ½ (4n + 6) – 3 = 2n have?
   1. no solution
   2. infinite/many solutions
   3. two solutions
   4. one solution