

**Unit 1 Day 16: Review Solving Equations Unit**

Focus Question: Am I ready for my test?

1. Simplify each of the following:

a.  $\frac{x + 5x + 2 - 9}{6x - 7}$

b.  $-2 + 4m - 8 - 10m$   
 $-2 - 8 + 4m - 10m$   
 $-10 - 6m$

2. Use the following expression:  $2a^4 - 4a + 7$

- a. How many terms? **3**
- b. Expand the first term?  **$2 \cdot a \cdot a \cdot a \cdot a$**
- c. What is the coefficient of the 2<sup>nd</sup> term? **-4**
- d. What is the constant? If there is not one, explain why not. **7**
- e. Can the expression be solved? Explain. **no because expressions are simplified. Equations are the ones that can be solved**

3. Find the volume of a cylinder with a height of 10 m and a diameter of 5 m. The formula for volume of a cylinder is  $V = \pi r^2 h$  with  $\pi \approx 3.14$ .

$V = \pi r^2 h$       $\pi \approx 3.14$

$V = (3.14)(2.5)^2(10)$       $r = 2.5$

$V = 196.25 m^3$       $h = 10$

4. One of the following expressions is not equivalent to the others. Which one is not equivalent? Explain.

A:  $5(2x - 4) + 6$

B:  $7(2 + x) + 3x$

C:  $4x + 3(x - 4) - 2 + 3x$

$10x - 20 + 6$

$14 + 7x + 3x$

$4x + 3x - 12 - 2 + 3x$

$10x - 14$

$14 + 10x$

$4x + 3x + 3x - 12 - 2$

positive 10x negative 14

positive 10x positive 14

10x - 14

positive 10x negative 14

A and C are equivalent because they both have a positive 10x and negative 14. B has a positive 14, which makes it different.

5. For which equation is  $x = -4$  a solution? Explain.

A:  $-5x + 6 = -16$

B:  $3(x + 2) = -6$

$-5x + 6 = -16$   
 $-6 - 6$

$3x + 6 = -6$   
 $-6 - 6$

$x = -4$  is a solution for

$\frac{-5x}{-5} = \frac{-22}{-5}$

$\frac{3x}{3} = \frac{-12}{3}$

Problem B because when I isolate x by subtracting the constant and dividing the coefficient,  $x = -4$

$x = \frac{-22}{5}$

$x = -4$

$x = -4$



6. Jackie says that the equation  $4x + 2 = 2 + 4x$  has  $\emptyset$  solution because the 4 and the 2 are in different places. Explain her error(s) in reasoning.

Jackie understands that the coefficient has to be the same to be infinite or no solution. Just because they are in different places does not mean they are different. Because the coefficient 4 is positive on both sides and the constant 2 is positive on both sides, both expressions are equivalent, so they have INFINITE SOLUTIONS

7. Solve each equation below.

a.  $6x + 3 = -10$

$$\begin{array}{r} 6x + 3 = -10 \\ -3 \quad -3 \end{array}$$

$$6x = -13$$

$$\begin{array}{r} 6 \quad 6 \\ \boxed{x = -\frac{13}{6}} \end{array}$$

b.  $4(2y - 5) = -20$

$$\begin{array}{r} 4(2y - 5) = -20 \\ 8y - 20 = -20 \end{array}$$

$$\begin{array}{r} 8y = 0 \\ \cancel{8} \quad \cancel{8} \end{array}$$

$$\boxed{y = 0}$$

c.  $2x - 4 = 8x + 2$

$$\begin{array}{r} 2x - 4 = 8x + 2 \\ -2x \quad -2x \end{array}$$

$$-4 = 6x + 2$$

$$-2 \quad -2$$

$$-6 = 6x$$

$$\begin{array}{r} 6 \quad 6 \\ \boxed{x = -1} \end{array}$$

d.  $-2\left(3x - \frac{5}{4}\right) = \frac{1}{6}$

$$-2\left(3x - \frac{5}{4}\right) = \frac{1}{6}$$

$$12 \cdot -6x + \frac{12 \cdot 10}{4} = \frac{1}{6} \cdot 12$$

$$-72x + 30 = 2$$

$$-30 \quad -30$$

$$-72x = -28$$

$$\begin{array}{r} -72 \quad -72 \\ x = \frac{-28}{-72} \end{array}$$

$$x = \frac{7}{18}$$

4: 4, 8, 12  
6: 6, 12

$$\boxed{x = \frac{7}{18}}$$

e.  $4(4x - 8) - 12x + 10 = -14$

$$4(4x - 8) - 12x + 10 = -14$$

$$16x - 32 - 12x + 10 = -14$$

$$16x - 12x - 32 + 10 = -14$$

$$4x - 22 = -14$$

$$+22 \quad +22$$

$$4x = 8$$

$$\begin{array}{r} 4 \quad 4 \\ \boxed{x = 2} \end{array}$$

f.  $4 - 3(2x - 1) = 5x + 10$

$$4 - 3(2x - 1) = 5x + 10$$

$$-6x + 7 = 5x + 10$$

$$\begin{array}{r} +6x \quad +6x \\ 7 = 11x + 10 \end{array}$$

$$-3 = 11x$$

$$\begin{array}{r} 11 \quad 11 \\ \boxed{-\frac{3}{11} = x} \end{array}$$