SOLVING EQUATIONS

1) $w - 9 = 5.1$ move 9 to the right and switch the sign

      +9 $w = 14.1$

2) $10k - 5z = 20$ solve for k

            +5z   move the 5z to the right and switch the sign

   $10k = 20 + 5z$ divide all by 10

   $k = 2 + \frac{1}{2}z$

3) $x - 8 = 4$ move 8 to the right and switch the sign

      +8 $w = 12$

4) $-\frac{x}{4} = 22$ multiply the right by - 4

            $x = -88$

5) $11 + 5q = 16 + 4q$ *we want to get qs on the left hand side*

   - 4q   move the 4q to the left and switch the sign

   $11 + q = 16$ move 11 to the right and change the sign

         - 11

            $q = 5$

6) $12x - 5 = 40x + 16$ *we want to get xs on the left hand side*

   - 40x   move the 40x to the left and switch the sign

   $-28x - 5 = 16$ move - 5 to the right and change the sign

         + 5

   $-28x = 21$ divide by - 28 $x = -\frac{21}{28} = -\frac{3}{4}$

7) $7y - 8 - 4y + 6 = 0$ *combine like terms first*

   $3y - 2 = 0$ move the 2 to the right and switch the sign

         + 2

   $3y = 2$ divide by 3 $x = \frac{2}{3}$

8) $20 - (x + 7) = 7x - 3$ *we want to distribute the negative first*

    $20 - x - 7 = 7x - 3$ combine like terms on the left

    $-x + 13 = 7x - 3$ move the 7x to the left and switch the sign

    <u>- 7x   </u>

    $-8x + 13 = -3$ move -13 to the right and switch the sign

           -13

     $-8x = -16$ divide by -8 $x = \dfrac{-16}{-8} = 2$

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9) $9(x + 3) = 45$ *we want to distribute the 9 first*

    $9x + 27 = 45$ move the 27 to the right and change the sign

         <u>-27</u>

    $9x = 18$ divide by 9 $x = 2$

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10) $22 - (x + 6) = 4x - 4$ *we want to distribute the negative first*

    $22 - x - 6 = 4x - 4$ combine like terms on the left

    $-x + 16 = 4x - 4$ move the 4x to the left and switch the sign

    <u>- 4x   </u>

    $-5x + 16 = -4$ move -16 to the right and switch the sign

          <u>-16</u>

    $-5x = -20$ divide by -5 $x = \dfrac{-20}{-5} = 4$

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11) $20 - (x + 9) = 5x - 7$ *we want to distribute the negative first*

    $20 - x - 9 = 5x - 7$ combine like terms on the left

    $-x + 11 = 5x - 7$ move the 5x to the left and switch the sign

    <u>- 6x </u>

    $-6x + 11 = -7$ move -11 to the right and switch the sign

          <u>-11</u>

    $-6x = -18$ divide by -6 $x = \dfrac{-18}{-6} = 3$

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12) $W = XYZ$ for X   to get X by itself, divide by YZ

       $X = \dfrac{W}{YZ}$

13)   D = ABC solve for A   to get A by itself, divide by BC

$$A = \dfrac{D}{BC}$$

14)   12 − 3(2w + 1) = 7w − 3(7 + w)   *we want to distribute the -3 first on both sides*

12 − 6w − 3 = 7w − 21 − 3w   combine like terms on both sides

9 − 6w = 4w - 21   move the 4w to the left and switch the sign

 - 4w

9 − 10w = -21   move 9 to the right and switch the sign

            -9

-10w = -30   divide by -10   x = 2

15)   7 − 4(2w + 1) = 9w − 4(9 + w)   *we want to distribute the -4 first on both sides*

7 − 8w − 4 = 9w − 36 − 4w   combine like terms on both sides

3 − 8w = 5w - 36   move the 5w to the left and switch the sign

 - 5w

3 − 13w = -36   move 3 to the right and switch the sign

            -3

-13w = -39   divide by -13   x = 3

16)   10 − 4(2w + 1) = 6w − 4(6 + w)   *we want to distribute the -3 first on both sides*

10 − 4w − 4 = 6w − 24 − 4w   combine like terms on both sides

6 − 4w = 2w - 24   move the 2w to the left and switch the sign

 - 2w

6 − 6w = -24   move 6 to the right and switch the sign

            -6

-6w = -30   divide by -6   x = 5