Multi Step (with Fractions) Equations

Big Idea:
- Goal: Find the value of the variable
- Things to remember:
  > Equations have equals signs so we have to maintain equality – if we change one side, we must make the same change to the other side
  > We solve equations in reverse order of operations – by "undoing" the operations that were used to create the equations

Steps:
1. Analyze the problem.
2. Use additive inverse (adding the opposite)
3. Do the inverse in reverse order of operations. (Undo the equation.)
4. Check your answer.

Examples:

$$\frac{x}{8} - 5 = 6$$
$$\phantom{\frac{x}{8}} +5 \quad +5$$

$$\frac{x}{8} = 11$$
$$\cdot 8 \qquad \cdot 8$$

$$\boxed{x = 88}$$

$$\frac{10k - 7}{4} + 6 = 19$$
$$\phantom{\frac{10k-7}{4}} -6 \quad -6$$

$$\frac{10k - 7}{4} = 13$$
$$\cdot 4 \qquad \cdot 4$$

$$10k - 7 = 52$$
$$ +7 \quad +7$$

$$\frac{10k}{10} = \frac{59}{10}$$

$$\boxed{k = \frac{59}{10} = 5\frac{9}{10}}$$

$$\frac{1}{8}(x - 3) = \frac{1}{2}$$

$$\frac{x - 3}{8} = \frac{1}{2}$$
$$\cdot 8 \qquad \cdot 8$$

$$x - 3 = 4$$
$$ +3 \quad +3$$

$$\boxed{x = 7}$$