

Equations Review:

Name: Key

1. State the inverse of each of the following operations:

a) $\times 3$ $\div 3$

b) $+ 4$ $- 4$

c) $-\frac{2}{3}$ $+\frac{2}{3}$

d) $\div 11$ $\times 11$

2. Fill in the gaps using the words in the box:

The balance of an equation will be maintained if we:

a) Add the same amount to both sides.

b) Subtract the same amount from both sides.

c) Multiply both sides by the same amount.

d) Divide both sides by the same amount.

~~sides~~
~~both~~
~~multiply~~
~~add~~



3. Complete the flow charts by filling in the empty boxes.

a) $\boxed{4} \xrightarrow{-1} \boxed{3} \xrightarrow{\times 8} \boxed{24}$

b) $\boxed{12} \xrightarrow{\div 4} \boxed{3} \xrightarrow{-5} \boxed{-2}$

c) $\boxed{3} \xrightarrow{\times 5} \boxed{15} \xrightarrow{-10} \boxed{5}$
 $\xrightarrow{\div 5}$

d) $\boxed{1} \xrightarrow{+9} \boxed{10} \xrightarrow{\div 2} \boxed{5}$
 $\xrightarrow{-9}$

4. One of the numbers in the brackets is the correct solution to the given equation. Show work and circle the correct answer.

a) $2x + 3 = 7$, {0, 1, 2}

$$\begin{array}{r} \cancel{2x} + 3 \\ - \cancel{3} - 3 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$\boxed{x = 2}$$

b) $\frac{a}{3} - 5 = -2$, {3, 6, 9}

$$\begin{array}{r} \cancel{\frac{a}{3}} - 5 \\ + 5 + 5 \\ \hline \end{array}$$

$$\frac{a}{3} = 3$$

$$\begin{array}{r} \cancel{\frac{a}{3}} \cdot 3 \\ \cdot 3 \cdot 3 \\ \hline \end{array}$$

$$\boxed{a = 9}$$

5. Solve these equations using inverse operations.

a) $y - 7 = 4$

$$\begin{array}{r} \cancel{y} - 7 \\ + 7 + 7 \\ \hline \end{array}$$

$$\boxed{y = 11}$$

b) $x + 11 = 12$

$$\begin{array}{r} \cancel{x} + 11 \\ - 11 - 11 \\ \hline \end{array}$$

$$\boxed{x = 1}$$

c) $a + 8 = -5$

$$\begin{array}{r} \cancel{a} + 8 \\ - 8 - 8 \\ \hline \end{array}$$

$$\boxed{a = -13}$$

d) $\frac{z}{3} = 21$

$$\begin{array}{r} \cancel{\frac{z}{3}} \cdot 3 \\ \cdot 3 \cdot 3 \\ \hline \end{array}$$

$$\boxed{z = 63}$$

e) $\frac{x}{5} = -15$

$$\boxed{x = -75}$$

f) $\frac{b}{5} = 8$

$$\begin{array}{r} \cancel{\frac{b}{5}} \cdot 5 \\ \cdot 5 \cdot 5 \\ \hline \end{array}$$

$$\boxed{b = 40}$$

6. Solve these equations using inverse operations.

$$\text{a) } \frac{-8x}{-8} = \frac{-24}{-8}$$

$$\boxed{x = 3}$$

$$\text{b) } \frac{-a}{-1} = \frac{100}{-1}$$

$$\boxed{a = 100}$$

$$\text{c) } \frac{b}{-8} = 12$$

$$\begin{array}{r} \cdot 7 \\ \hline -8 \end{array} \cdot -8$$

$$\boxed{b = -96}$$

$$\text{d) } \frac{-x}{7} = 9$$

$$\begin{array}{r} \cdot 7 \\ \hline -x \end{array} = \frac{63}{-1}$$

$$\boxed{x = -63}$$

7. Solve the following two step equations:

$$\text{a) } 2x + 1 = 7$$

$$\begin{array}{r} -1 \\ \hline 2x = 6 \\ \hline \frac{2x}{2} = \frac{6}{2} \end{array}$$

$$\boxed{x = 3}$$

$$\text{b) } 13x - 6 = 20$$

$$\begin{array}{r} +6 \\ \hline 13x = 26 \\ \hline \frac{13x}{13} = \frac{26}{13} \end{array}$$

$$\boxed{x = 2}$$

$$\text{c) } 3x + 4 = -14$$

$$\begin{array}{r} -4 \\ \hline 3x = -18 \\ \hline \frac{3x}{3} = \frac{-18}{3} \end{array}$$

$$\boxed{x = -6}$$

$$\text{d) } 5x - 4 = -69$$

$$\begin{array}{r} +4 \\ \hline 5x = -65 \\ \hline \frac{5x}{5} = \frac{-65}{5} \end{array}$$

$$\boxed{x = -13}$$

$$\text{e) } \frac{x}{3} + 5 = 8$$

$$\begin{array}{r} -5 \\ \hline \frac{x}{3} = 3 \end{array}$$

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

$$\begin{array}{r} \cdot 3 \\ \hline x = 9 \end{array}$$

$$\boxed{x = 9}$$

$$\text{e) } \frac{x}{7} - 10 = -7$$

$$\begin{array}{r} +10 \\ \hline \frac{x}{7} = 3 \end{array}$$

$$\frac{x}{7} = 3$$

$$\begin{array}{r} \cdot 7 \\ \hline x = 21 \end{array}$$

$$\boxed{x = 21}$$