## Lesson Plan

## Unit/Chapter: Linear Equations Topic: Solving Linear Relations using Inverse Operations

## \# homework check: $\underline{\text { NPM } 9} \mathbf{p}$. 201 \# 1-3, 9, 10, 13, 15-17

## If note: Solving Linear Relations using Inverse Operations

Because equations work like a scale with the equal sign as a fulcrum, we can keep the equation balanced by doing the same operation to each side. In order to "zero out" any operation, we use the inverse. For example, to "zero out" the number that is added, we subtract. To "zero out" a number that is dividing, we multiply by that same number. We can use inverse operations to isolate any variable or term. This principle is the basis for algebraic manipulation of any kind.

Solve each of the following.

$$
\text { b) } \frac{x}{3}+7=-8
$$

a) $3 x-5=-3$

$$
\begin{aligned}
3 x-5+5 & =-3+5 \\
3 x & =2 \\
\frac{3 x}{3} & =\frac{2}{3} \\
x & =\frac{2}{3}
\end{aligned}
$$

$$
\begin{aligned}
\frac{x}{3}+7-7 & =-8-7 \\
\frac{x}{3} & =-15 \\
\frac{x}{3}(3) & =-15(3) \\
x & =-45
\end{aligned}
$$

c) $-2(x+3)=14$

$$
-2 x-6=14
$$

$$
-2 x-6+6=14+6
$$

$$
-2 x=20
$$

$$
\frac{-2 x}{-2}=\frac{20}{-2}
$$

$$
x=-10
$$

d) $\frac{2(x+1)}{3}=5-x$

$$
\begin{gathered}
\frac{2(x+1)}{3}(3)=(5-x)(3) \\
2(x+1)=15-3 x \\
2 x+2=15-3 x \\
2 x+2+3 x=15-3 x+3 x \\
5 x+2=15 \\
5 x+2-2=15-2 \\
5 x=13 \\
\frac{5 x}{5}=\frac{13}{5} \\
x=\frac{13}{5}
\end{gathered}
$$

$$
\begin{aligned}
\frac{1}{2}(x+2)-\frac{1}{3}(x-1) & =4 \\
{\left[\frac{1}{2}(x+2)\right](6)-\left[\frac{1}{3}(x-1)\right](6) } & =4(6) \\
3(x+2)-2(x-1) & =24 \\
3 x+6-2 x+2 & =24 \\
x+8 & =24 \\
x+8-8 & =24-8 \\
x & =16
\end{aligned}
$$

