Solving equations using inverses NAME:

For each function, complete the following steps in the spaces provided.

--Describe the function in words. What we do to an x to get a y?

--Find the function's inverse. Do not simplify as you go.

--Describe the inverse in words. What we do to an x to get a y?

--Solve the given equation. Detail the steps as you go. Notice the steps needed are exactly those that the inverse accomplishes.

Solving equations may be easier if you think through them using the idea of inverses and the notion of "unburying the variable". The first one is done for you. Show as much detail as shown in the example. Make sure you understand each step.

Original function	**Find its inverse.**	**Solve the equation. Write down the steps. Show all work.**
$y = 2x + 3$ **In words:** Start with x, Multiply by 2, Add 3, End y	$y = 2x + 3$ $x = 2y + 3$ $x - 3 = 2y$ $\frac{x-3}{2} = y$ Switch x and y and then solve for y. **In words:** Start with x, Subtract 3, Divide by 2, End y Notice this undoes the original function.	$7 = 2x + 3$ Subtract 3 $4 = 2x$ $2 = x$ Divide by 2 These steps mimic the inverse's operations.

Original function	Find its inverse.	Solve the equation. Write down the steps. Show all work.
$y = \frac{3x+2}{4}$ **In words:**	**In words:**	$5 = \frac{3x+2}{4}$

Original function	Find its inverse.	Solve the equation. Write down the steps. Show all work.
$y = \sqrt{\frac{x-2}{3}}$ **In words:**	**In words:**	$3 = \sqrt{\frac{x-2}{3}}$

Original function	Find its inverse.	Solve the equation. Write down the steps. Show all work.
$y = \frac{2x-4}{3} + 5$ **In words:**	**In words:**	$7 = \frac{2x-4}{3} + 5$

Original function	Find its inverse.	Solve the equation. Write down the steps. Show all work.
$y = -3\sqrt{x} + 4$ **In words:**	 **In words:**	$-8 = -3\sqrt{x} + 4$