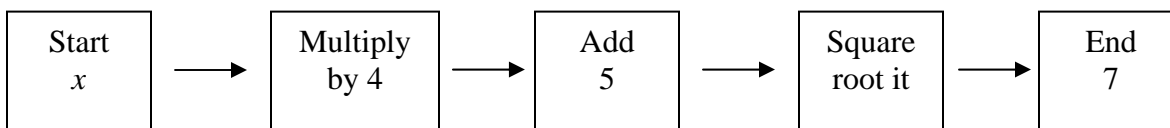


Radical equations  
Verbal model worksheet

NAME:

Verbal models can often help us figure out the steps needed to efficiently solve an equation. Below is the verbal model for the equation  $\sqrt{4x+5} = 7$ . Notice it describes what you would do to a value you substituted in for  $x$ . (It sometimes helps to think about a specific value for  $x$  and imagine what we would need to do to check it as a solution.)



Again, the idea of a verbal model is to determine the steps you need to solve the equation. To solve  $\sqrt{4x+5} = 7$ , we need to reverse these steps, starting at the far right end.

We first square both sides to undo the square root. We then subtract 5 to undo the addition of 5. Lastly, we divide by 4 to undo the multiplication of 4. This leaves us with  $x$  alone on the left side of the equation and our solution on the right side of the equation. Below, I have written the algebra out for you. Check the solution. Does it work?

$$\begin{aligned}\sqrt{4x+5} &= 7 \\ 4x+5 &= 49 \\ 4x &= 44 \\ x &= 11\end{aligned}$$

For the equations below, draw out the verbal model that shows what happened to  $x$  to get it into the equation. Then undo it to solve for  $x$ . Leave your answers in decimal form. If needed, round your answer to two decimal places. You might also want to check your solutions. The numbers in parentheses are the point values of the questions.

1. (3)  $\sqrt{2x-7} = 5$

2. (3)  $\sqrt{5x+14} = 16$

3. (4)  $\sqrt{3x-2} - 10 = 7$