

INTRODUCTION TO TWO-STEP EQUATIONS

ANSWERS

ALWAYS REMEMBER, WHEN YOU ARE SOLVING EQUATIONS YOU ARE TRYING TO SEPARATE THE NUMBERS AND VARIABLES. IN OTHER WORDS, YOU ARE MOVING THE NUMBERS AND VARIABLES AROUND SO THE NUMBERS ARE ON ONE SIDE OF THE EQUAL SIGN AND THE VARIABLES ON THE OTHER. MOST OF THE TIME YOU CAN START BY MOVING THE NUMBER THAT IS ON THE SAME SIDE AS THE VARIABLE.

ORDER OF OPERATIONS

1. PARENTHESES ()
2. EXPONENTS $3^2 = 3 \times 3$
3. MULTIPLICATION AND DIVISION $\times \div$
4. ADDITION AND SUBTRACTION $+$ $-$

HELPFUL EXAMPLE

DO YOU SEE THAT THE FOUR AND THE MINUS SIX ARE ON THE SAME SIDE AS THE VARIABLE? THIS TELLS US WE HAVE TO MOVE THEM TO THE OTHER SIDE.

BACKWARDS

$$18 = 4h - 6$$

THE BEST WAY TO SOLVE AN EQUATION IS TO DO THE ORDER OF OPERATIONS BACKWARDS.

$$\begin{array}{r} 1. \quad 18 = 4h - 6 \\ \quad + 6 \quad \quad + 6 \\ \hline \quad 24 = 4h - 0 \end{array}$$

ADDITION AND SUBTRACTION ARE LAST IN THE ORDER OF OPERATIONS, SO WE FIRST MOVE THE **MINUS 6**. DO YOU SEE HOW THE OPPOSITE OPERATION (+ 6) WAS DONE TO BOTH SIDES OF THE EQUATION?

$$\begin{array}{r} 2. \quad 24 = 4h \\ \quad \div 4 \quad \div 4 \\ \hline \quad 6 = 1h \end{array}$$

WE ARE LEFT WITH **4** AND **h** NEXT TO EACH OTHER, WHICH MEANS MULTIPLICATION. THE OPPOSITE OF MULTIPLICATION IS DIVISION, SO WE NEED TO DIVIDE BOTH SIDES BY 4.

$$6 = h$$

THE NUMBER AND VARIABLE ARE ON OPPOSITE SIDES, SO WE ARE FINISHED. **h = 6**.

Now your turn. What would you move to solve each equation?

1. $2a + 7 = 21$

2. $\frac{t}{3} - 8 = 1$

3. $15 = 4k - 5$

FIRST I WOULD SUBTRACT THE 7.

FIRST I WOULD ADD THE 8.

FIRST I WOULD ADD THE 5.

THEN I WOULD DIVIDE BY 2.

THEN I WOULD MULTIPLY BY 3.

THEN I WOULD DIVIDE BY 4.

Solve the equations.

4. $\frac{d}{2} + 10 = 7$

5. $5g - 9 = 6$

6. $20 = 4y - 12$

d = -6

g = 3

y = 8

7. $14 = 6 + \frac{r}{6}$

8. $6 - 2b = 10$

9. $12 + \frac{m}{5} = 13$

r = 48

b = -2

m = 5

10. $8 = 8h - 4$

11. $1 = 4 - \frac{z}{3}$

12. $41 = 17 + 6e$

h = 1.5

z = 9

e = 4