

① Simplify: $2(x+3) + 6(x^2-x) - x^2 + 2$

② Solve: $-x + 3 = 8$

③ Solve: $x + \frac{2}{5} = -\frac{3}{7}$

④ WHO invented (discovered?): (A) the XY Coordinate PLANE.

(B) "the" book Algebra WAS NAMED AFTER.

(EX) Start with 8, multiply by 2 $\Rightarrow 8 \cdot 2 = 16$

How do you "undo" multiplication by 2?

Division by 2 $\Rightarrow \frac{16}{2} = 8$

(EX) Start with 10, divide by 5 $\Rightarrow \frac{10}{5} = 2$

How do you "undo" division by 5?

Multiplication by 5 $\Rightarrow 2 \cdot 5 = 10$

(M*) Multiplication AND Division "undo" each other.

1.

*ⓔx Solve: $\frac{x}{7} = -4$

~~$7 \cdot \frac{x}{7} = -4 \cdot 7$~~

$x = -28$ ck $\frac{(-28)}{7} \stackrel{?}{=} -4 \checkmark$

*ⓔx Solve: $9x = \frac{1}{3}$

$\frac{9x}{9} = \frac{\frac{1}{3}}{9}$

$x = \frac{1}{3} \cdot \frac{1}{9}$

$x = \frac{1}{27}$

ck: $9\left(\frac{1}{27}\right) \stackrel{?}{=} \frac{1}{3}$

$\frac{9}{27} \stackrel{?}{=} \frac{1}{3} \checkmark$

All of the equations we have solved so far are "single undo" or "single step" equations.

You can use the $+/-$ and $\cdot/\div$ undos with the GRE as many times as you need to for "multi-undo" or "multi-step" equations. Goal: get variable "by itself"

💡 When you have a choice between a simple +/- undo and a more complicated $\cdot/\div$ undo, do the simple undo first!

Ex $3x - 2 = 6$
 $+2 \quad +2$

$$\frac{3x}{3} = \frac{8}{3}$$

$$\boxed{x = \frac{8}{3}}$$

CK $3\left(\frac{8}{3}\right) - 2 \stackrel{?}{=} 6$

$$8 - 2 \stackrel{?}{=} 6 \checkmark$$

$$\frac{3x - 2}{3} = \frac{6}{3}$$

$$\frac{3x}{3} - \frac{2}{3} = \frac{6}{3}$$

$$x - \frac{2}{3} = 2$$

$$+ \frac{2}{3} \quad + \frac{2}{3}$$

$$\boxed{x = 2\frac{2}{3} = \frac{8}{3}}$$

Both ways worked, but doing the simple $+2$ first was simpler than doing the $\div$ by 3 first.

Use READY, AIM, FIRE NOT READY, FIRE, AIM !!

EX2
Pg 143

$$7m - 17 = 60$$

$$+ 17 \quad + 17$$

$$\frac{7m}{7} = \frac{77}{7}$$

$$\boxed{m = 11}$$

$$\begin{aligned} \underline{\text{CK}} \quad 7(11) - 17 & \stackrel{?}{=} 60 \\ 77 - 17 & \stackrel{?}{=} 60 \checkmark \end{aligned}$$

EX3
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$$\frac{t}{8} + 21 = 14$$

$$- 21 \quad - 21$$

$$\frac{t}{8} = -7$$

$$8 \cdot \frac{t}{8} = -7 \cdot 8$$

$$\boxed{t = -56}$$

$$\begin{aligned} \underline{\text{CK}} \quad \frac{(-56)}{8} + 21 & \stackrel{?}{=} 14 \\ -7 + 21 & \stackrel{?}{=} 14 \checkmark \end{aligned}$$

EX4
Pg 143

$$\frac{p-15}{9} = -6$$

$$\cancel{9} \cdot \frac{(p-15)}{\cancel{9}} = -6 \cdot 9$$

$$\begin{array}{rcl} p-15 & = & -54 \\ +15 & & +15 \end{array}$$

$$\boxed{p = -39}$$

$$\underline{\underline{CK}} \quad \frac{(-39)-15}{9} \stackrel{?}{=} -6$$

$$\frac{-54}{9} \stackrel{?}{=} -6 \quad \checkmark$$

PRACTICE: Pg 145 # 7-12

Homework: Pg 146 # 22 to 26,
31 to 33,
37 to 39.