SPECIAL SOLUTIONS TO EQUATIONS

Essential Question: How can you determine if you an equation has no solution as opposed to all real solutions?
Answer on your response card.

Some equations may have no solution. That means, there is no value of the variable that will make the equation true. Similarly, some equations are true for ALL values of the variable. These are called identities.

Solve the following equations, if possible.

$8-1(5c-2)=3(6+5c)$

$8-5c+2=18+15c$

$10-\cancel{5c}=18+15c$
$\quad +5c \qquad\qquad +5c$

$10=\cancel{18}+20c$
$-18 \quad -18$

$\frac{-8}{20}=\frac{\cancel{20}c}{\cancel{20}}$

$\boxed{-\frac{2}{5}=c}$

$4(x+20)=\frac{1}{5}(20x+40)$

$\cancel{4x}+80=\cancel{4x}+8$
$-4x \qquad -4x$

$80\neq 8$ False

No Solution

$5x+5=3(5x-4)-10x$

$5x+5=15x-12-10x$

$\cancel{5x}+5=\cancel{5x}-12$
$-5x \qquad -5x$

$5\neq -12$ False

No Solution

$3(2b-1)-7=6b-10$

$6b-3-7=6b-10$

$6b-10=6b-10$

All Real Numbers

$\frac{1}{8}(3d-2)=\frac{1}{4}(d+5)$

*Multiply by LCM of denominators

$8\left[\frac{3}{8}d-\frac{1}{4}=\frac{1}{4}d+\frac{5}{4}\right]$

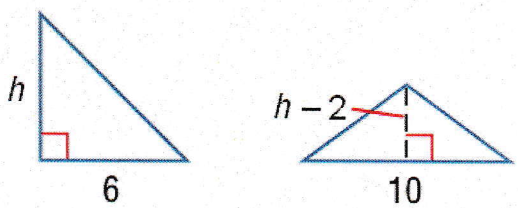
$3d-2=\cancel{2d}+10$
$-2d \qquad -2d$

$d\,\cancel{-2}=10$
$\quad +2 \qquad +2$

$\boxed{d=12}$

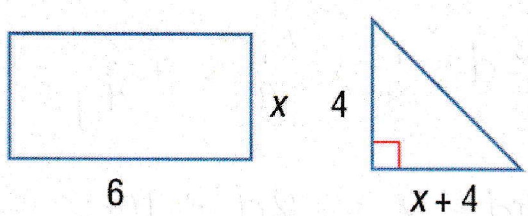
EQUATION PROBLEMS INVOLVING AREA AND PERIMETER.

Find the value of h so that the figures have the same area.



$$\text{Area}(1) = \text{Area}(2)$$
$$\frac{1}{2}bh = \frac{1}{2}bh$$
$$\frac{1}{2}(6)(h) = \underbrace{\frac{1}{2}(10)}(h-2)$$
$$3h = 5(h-2)$$
$$\cancel{3h} = 5h - 10$$
$$-\cancel{3h} \quad -3h$$
$$0 = 2h \cancel{-10}$$
$$+10 \quad \cancel{+10}$$
$$\frac{10}{2} = \frac{\cancel{2}h}{\cancel{2}}$$
$$5 = h$$

Find the value of X so that the figures have the same area.



$$\text{Area}(1) = \text{Area}(2)$$
$$bh = \frac{1}{2}bh$$
Sub. $(6)(x) = \frac{1}{2}\cdot(x+4)(4)$ $\quad \underbrace{\frac{1}{2}(4)}(x+4$
$$6x = 2(x+4)$$
$$6x = \cancel{2x} + 8$$
$$-2x \quad \cancel{-2x}$$
$$\frac{\cancel{4}x}{\cancel{4}} = \frac{8}{4}$$
$$x = 2$$