3.1: Solve One-Step Equations

Goals: *Solve equations using addition and subtraction
*Solve equations using multiplication and division
*Solve equations involving fractions and reciprocals
*Check answers

Inverse Operations: Operations that undo each
· Addition and subtraction
· Multiplication and division
· Square roots and squaring

Properties of Equality:

To Solve an Equation You Need To: ISOLATE THE VARIABLE

****GOLDEN RULE OF EQUATION SOLVING****
WHATEVER YOU DO TO ONE SIDE OF THE EQUATION DO TO THE OTHER!

Solve each equation. Show all work.

Ex: $x + 7 = 4$
$-7 \quad -7$
$x = -3$

Ex: $x - 12 = 3$
$+12 \quad +12$
$x = 15$

Ex: $19 - x = 5$
$-19 \qquad -19$
$-x = -14$
$x = 14$

Ex: $-x + 4 = 15$
$-4 \quad -4$
$-x = 11$
$x = -11$

Ex: $\frac{-6x}{} = \frac{48}{}$
$-6 \quad -6$
$x = -8$

Ex: $\frac{x}{-4} = -7$
$\cdot -4 \quad \cdot -4$
$x = 28$

Ex: $-\frac{7}{2} \cdot -\frac{2}{7}x = 4 \cdot -\frac{7}{2}$

$x = -14$

Ex: $\frac{6}{5} \cdot \frac{5}{6}w = 10 \cdot \frac{6}{5}$

$w = 12$

Ex: $\frac{3}{2} \cdot \frac{2}{3}p = 14 \cdot \frac{3}{2}$

$p = 21$

Ex: $-\frac{4}{3} \cdot 9 = -\frac{3}{4}n \cdot -\frac{4}{3}$

$n = -12$

Ex: $-\frac{5}{4} \cdot -8 = -\frac{4}{5}v \cdot -\frac{5}{4}$

$v = 10$

Ex: $\frac{9x}{9} = \frac{3}{9}$

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

Ex: In the 2004 Olympics, Shawn Crawford won the 200 meter dash. His winning time was 19.79 seconds. Find his average speed to the nearest tenth of a meter per second.

$d = rt$

$200 = r(19.79)$

$r = 10.1$ m/s

Ex: What if Crawford ran the 100 meter dash at the same speed as the 200? How long would it take him to run it?

$d = rt$

$100 = 10.1t$

$t = 9.9$ second

Ex: In the 2004 Olympics, Inge de Brujin won the 50-meter freestyle with a time of 24.58 seconds. What was her average speed?

$d = rt$

$50 = r(24.58)$

$r = 2.03$ m/s

Ex. You are traveling 250 miles to your friend's house. It takes you 5 hours to get there. What was your average speed?

$d = rt$
$250 = r(5)$
$r = 50$ mph

Ex. You are traveling 150 miles to your cousin's house. You travel at a rate of 50 miles per hour. When will you get to your cousin's house?

$d = rt$
$150 = 50t$
$t = 3$ hours