Solving One-Step Equations
To solve equations, we use inverse operations (opposite)

$$
\begin{aligned}
& +\longleftrightarrow- \\
& \times \longleftrightarrow \div \\
& x^{2} \longleftrightarrow \sqrt{x}
\end{aligned}
$$

Properties of Equality:

Addition Property of Equality Subtraction Property of Equality Multiplication Property of Equality Division Property of Equality

+ to both sides
- from both sides
$x$ both sides
$\div$ both sides
a.)

$$
\begin{aligned}
(x-1 . x & =3.4 \\
+x \cdot 2 & \left\lvert\, \begin{array}{l}
3.2 \\
+1.2
\end{array}\right. \\
x & =4.6
\end{aligned} \text { Addition Property of Equally }
$$

b.) $\begin{aligned} 14 \cdot \frac{x}{1^{4}} & =3 \cdot 4 \quad \text { given } \\ x & =12 \quad \text { Multiple }\end{aligned}$
Equality
c.) $\frac{4}{13} \cdot-\frac{93}{1}=\frac{3}{4}$ (d) $\cdot \frac{4}{3}$ given $\frac{3}{4} d \div \frac{3}{4}$
$-12 \doteq d \quad$ division property of equality

$$
\begin{aligned}
& \frac{5}{5}(t)=-\frac{15}{5} \\
& \begin{array}{l}
t=-3 \quad \text { div. prop. } \\
\text { of eq. }
\end{array}
\end{aligned}
$$

$$
\begin{array}{r}
-4+9=\begin{array}{r}
-9 \\
+4
\end{array} \quad \text { given } \\
9=-5
\end{array} \begin{array}{r}
\text { add. prop. } \\
\text { of. eq. }
\end{array}
$$



The Pacific Ocean's average depth is 19,588 feet less than the greatest depth.

Let $X$ be the average depth $\quad x=35,837-19,588$

$$
\frac{-19,588}{16,249}
$$

Geometry The angles in each pair are complementary. Write and solve an equation to find each value of $x$. (Hint: The measures of complementary angles add to $90^{\circ}$.)


20. Geology In 1668, the Hope diamond was reduced from its original weight by about 45 carats, resulting in a diamond weighing about 67 carats. Write and solve an equation to find how many carats the original diamond weighed.

Let $x$ be the diamond's original weigh

$$
\begin{aligned}
(x)-45 & =67 \\
+45 & \mid 45 \\
x & =112
\end{aligned}
$$

