

Name _____

Date _____ Pd. _____

Notes: Solving One-Step Equations

Addition Property of Equality

For any numbers a , b , and c , if $a = b$, then $a + c = b + c$.

Example 1

Solve $m - 32 = 18$.

$$\begin{aligned} m - 32 &= 18 && \text{Original equation} \\ m - 32 + 32 &= 18 + 32 && \text{Add 32 to each side.} \\ m &= 50 && \text{Simplify.} \end{aligned}$$

The solution is

Example 2

Solve $-18 = p - 12$.

$$\begin{aligned} -18 &= p - 12 && \text{Original equation} \\ -18 + 12 &= p - 12 + 12 && \text{Add 12 to each side.} \\ p &= -6 && \text{Simplify.} \end{aligned}$$

The solution is

Subtraction Property of Equality

For any numbers a , b , and c , if $a = b$, then $a - c = b - c$.

Example

Solve $22 + p = -12$.

$$\begin{aligned} 22 + p &= -12 && \text{Original equation} \\ 22 + p - 22 &= -12 - 22 && \text{Subtract 22 from each side.} \\ p &= -34 && \text{Simplify.} \end{aligned}$$

The solution is

Multiplication Property of Equality

For any numbers a , b , and c , if $a = b$, then $ac = bc$.

Example 1

Solve $3\frac{1}{2}p = 1\frac{1}{2}$.

$$\begin{aligned} 3\frac{1}{2}p &= 1\frac{1}{2} && \text{Original equation} \\ \frac{7}{2}p &= \frac{3}{2} && \text{Rewrite each mixed number as an improper fraction.} \\ \left(\frac{7}{2}p\right) &= \left(\frac{3}{2}\right) && \text{Multiply each side by } \frac{2}{7}. \\ p &= \frac{3}{7} && \text{Simplify.} \end{aligned}$$

The solution is

Example 2

Solve $-\frac{1}{4}n = 16$.

$$\begin{aligned} -\frac{1}{4}n &= 16 && \text{Original equation} \\ \left(-\frac{1}{4}n\right) &= (16) && \text{Multiply each side by } -4. \\ n &= -64 && \text{Simplify.} \end{aligned}$$

The solution is

Division Property of Equality

For any numbers a , b , and c , with $c \neq 0$, if $a = b$, then $\frac{a}{c} = \frac{b}{c}$.

Example 1

Solve $8n = 64$.

$$\begin{aligned} 8n &= 64 && \text{Original equation} \\ \frac{8n}{8} &= \frac{64}{8} && \text{Divide each side by 8.} \\ n &= 8 && \text{Simplify.} \end{aligned}$$

The solution is

Example 2

Solve $-5n = 60$.

$$\begin{aligned} -5n &= 60 && \text{Original equation} \\ \frac{-5n}{-5} &= \frac{60}{-5} && \text{Divide each side by } -5. \\ n &= -12 && \text{Simplify.} \end{aligned}$$

The solution is

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Exit Card: Solving One-Step Equations

1. A book club charges a one-time membership fee of \$15 plus \$22 per book. Which of these expressions represents the amount a customer spends for b books?

A. $15b - 22$ B. $15b + 22$ C. $22b - 15$ D. $22b + 15$

2. Complete the following statements:

An equation is a statement that two mathematical _____ are equal.

A variable is either:

A quantity that _____ or can have different _____.

A _____, usually a letter, than can stand for a changeable quantity.

An equivalent equation is when the same _____, with the same quantity,
is performed to _____ sides of an equation

Name _____

Date _____ Pd. _____

Homework: Page 132 (21 – 23, 30, 33, 51 – 55)

21. $-18 = -61 + d$

22. $-25 = -150 + q$

23. $r - (-19) = -77$

30. $6.2 = -4.83 + y$

33. $x - \frac{3}{4} = \frac{5}{6}$

A midsize car with a 4-cylinder engine goes 10 miles more on a gallon of gasoline than a luxury car with an 8-cylinder engine. A midsize car consumes one gallon of gas for every 34 miles driven.

51. Write an addition equation to represent the situation.
52. How many miles does a luxury car travel on a gallon of gasoline?
53. A subcompact car with a 3-cylinder engine goes 13 miles more than a luxury car on one gallon of gas. How far does a subcompact car travel on a gallon of gasoline?
54. How many more miles does a subcompact travel on a gallon of gasoline than a midsize car?
55. Estimate how many miles a full-size car with a 6-cylinder engine goes on one gallon of gasoline. Explain your reasoning.

Homework: Pages 138 – 139 (16 – 18, 29, 31, 43 – 45)

16. $-1634 = 86s$

17. $\frac{b}{7} = -11$

18. $-\frac{v}{5} = -45$

29. $-5h = -3\frac{2}{3}$

31. If $4m = 10$, what is the value of $12m$?

In baseball, if all other factors are the same, the speed of a four-seam fastball (132 feet/second) is faster than a two-seam fastball (126 feet/second). The distance from the pitcher's mound to home plate is 60.5 feet.

43. How long does it take a two-seam fastball to go from the pitcher's mound to home plate?

44. How long does it take a four-seam fastball to go from the pitcher's mound to home plate?

45. How much longer does it take for a two-seam fastball to reach home plate than a four-seam fastball?