



Warm Up Grade 8



Solve each equation. Verify the solution.

a) $-2x + 4 = 26$

$$\begin{aligned} -2x + 4 - 4 &= 26 - 4 \\ -2x &= 22 \\ \div (-2) \quad \div (-2) \end{aligned}$$

$$\boxed{x = -11}$$

b) $\frac{a}{3} = 6$

$$3 \times \frac{a}{3} = 6 \times 3$$

$$\boxed{a = 18}$$

c) $-3 = 2x + 15$

$$\begin{aligned} -3 - 15 &= 2x + 15 - 15 \\ -18 &= 2x \\ \div 2 \quad \div 2 \end{aligned}$$

$$\boxed{-9 = x}$$

d) $\frac{12}{x} = 4$

$$x \cdot \frac{12}{x} = 4 \cdot x$$

$$12 = 4x$$

$$\div 4 \quad \div 4$$

$$\boxed{3 = x}$$

$$\begin{aligned} \text{11) a) } -8x + 11 &= 59 \\ -8x + 11 - 11 &= 59 - 11 \\ -8x &= 48 \\ \frac{-8x}{-8} &= \frac{48}{-8} \\ x &= -6 \end{aligned}$$

$$\begin{array}{l} \text{LS} \\ -8x + 11 \\ -8x - 6 + 11 \\ 48 + 11 \\ 59 \\ \text{RS} \\ 59 \end{array}$$

$$\begin{aligned} \text{b) } 11c + 21 &= -34 \\ 11c + 21 - 21 &= -34 - 21 && [-34 + (-21)] \\ 11c &= -55 \\ \frac{11c}{11} &= \frac{-55}{11} \\ c &= -5 \end{aligned}$$

$$\begin{array}{l} \text{LS} \\ 11c + 21 \\ 11c - 5 + 21 \\ -55 + 21 \\ -34 \\ \text{RS} \\ -34 \end{array}$$

$$\begin{aligned} \text{c) } 23 &= -5b + 3 \\ 23 - 3 &= -5b + 3 - 3 \\ 20 &= -5b \\ \frac{20}{5} &= \frac{-5b}{5} \\ 4 &= -b \\ -4 &= b \end{aligned}$$

$$\begin{array}{l} \text{LS} \\ 23 \\ \text{RS} \\ -5b + 3 \\ -5(-4) + 3 \\ 20 + 3 \\ 23 \end{array}$$

$$d) -45 = 6a - 15$$

$$6a - 15 = -45$$

$$6a - 15 + 15 = -45 + 15$$

$$6a = -30$$

$$\frac{6a}{6} = \frac{-30}{6}$$

$$a = -5$$

$$\begin{array}{l} \text{LS} \\ -45 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 6a - 15 \\ 6 \times (-5) - 15 \\ -30 - 15 \\ -45 \end{array}$$

$$e) 52 = 25 - 9f$$

$$52 - 25 = 25 - 25 - 9f$$

$$27 = -9f$$

$$\frac{27}{-9} = \frac{-9f}{-9}$$

$$-3 = f$$

$$\begin{array}{l} \text{LS} \\ 52 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 25 - 9f \\ 25 - 9(-3) \\ 25 - (-27) \\ 25 + 27 \\ 52 \end{array}$$

$$f) -13 + 4d = 31$$

$$-13 + 13 + 4d = 31 + 13$$

$$4d = 44$$

$$\frac{4d}{4} = \frac{44}{4}$$

$$d = 11$$

$$\begin{array}{l} \text{LS} \\ -13 + 4d \\ -13 + 4 \times 11 \\ -13 + 44 \\ 31 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 31 \end{array}$$

$$12 a) 3n + 7 = 8$$

$$3n + 7 - 7 = 8 - 7$$

$$3n = 1$$

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

$$n = \frac{1}{3} \text{ or } 0.\bar{3}$$

LS	RS
$3n + 7$	8
$3 \times \frac{1}{3} + 7$	
$1 + 7$	
8	

$$b) bx + b = 15$$

$$bx + b - b = 15 - b$$

$$bx = 9$$

$$\frac{bx}{b} = \frac{9}{b}$$

$$x = 1.5$$

LS	RS
$bx + b$	15
$b \times 1.5 + b$	
$9 + b$	
15	

$$c) -23 = 5p - 27$$

$$-23 + 27 = 5p - 27 + 27$$

$$4 = 5p$$

$$\frac{4}{5} = \frac{5p}{5}$$

$$0.8 = p$$

LS	RS
-23	$5p - 27$
	$5 \times (0.8) - 27$
	$4 - 27$
	-23

Page 332 #12

$$\begin{aligned}
 d) \quad 5p + b &= 7 \\
 5p + b - b &= 7 - b \\
 5p &= 1 \\
 \frac{5p}{5} &= \frac{1}{5} \\
 p &= 0.2
 \end{aligned}$$

$$\begin{array}{r}
 \text{LS} \\
 5p + b \\
 5 \times 0.2 + b \\
 1 + b \\
 7
 \end{array}
 \qquad
 \begin{array}{r}
 \text{RS} \\
 7
 \end{array}$$

$$\begin{aligned}
 e) \quad 8e - 9 &= -3 \\
 8e - 9 + 9 &= -3 + 9 \\
 8e &= 6 \\
 \frac{8e}{8} &= \frac{6}{8} \\
 e &= \frac{6}{8} \text{ or } \frac{3}{4} \\
 &\text{or } 0.75
 \end{aligned}$$

$$\begin{array}{r}
 \text{LS} \\
 8e - 9 \\
 8 \times 0.75 - 9 \\
 6 - 9 \\
 -3
 \end{array}
 \qquad
 \begin{array}{r}
 \text{RS} \\
 -3
 \end{array}$$

$$\begin{aligned}
 f) \quad -17 + 10g &= -9 \\
 -17 + 10g + 17 &= -9 + 17 \\
 10g &= 8 \\
 \frac{10g}{10} &= \frac{8}{10} \\
 g &= \frac{8}{10} \text{ or } \frac{4}{5} \\
 &\text{or } 0.8
 \end{aligned}$$

$$\begin{array}{r}
 \text{LS} \\
 -17 + 10g \\
 -17 + 10 \times 0.8 \\
 -17 + 8 \\
 -9
 \end{array}
 \qquad
 \begin{array}{r}
 \text{RS} \\
 -9
 \end{array}$$

page 332

13. $n = y$ yesterday's temp.

$$2n + 7 = -3$$

$$2n + 7 - 7 = -3 - 7$$

$$[-3 + (-7)]$$

$$2n = -10$$

$$\frac{2n}{2} = \frac{-10}{2}$$

$$n = -5$$

$$\begin{array}{l} \text{LS} \\ 2n + 7 \\ 2x - 5 + 7 \\ -10 + 7 \end{array} \qquad \begin{array}{l} \text{RS} \\ -3 \end{array}$$

Yesterday's temperature was -5°C .

Homework Sheet Extra Prac 2 # 1-7

Ex. Prac

1a) $4x = 32$

$$\frac{4x}{4} = \frac{32}{4}$$

$$x = 8$$

$$\begin{array}{l} \text{LS} \\ 4x \\ 4 \times 8 \\ 32 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 32 \end{array}$$

b) $-35 = -5x$

$$\frac{-35}{-5} = \frac{-5x}{-5}$$

$$7 = x$$

$$\begin{array}{l} \text{LS} \\ -35 \end{array}$$

$$\begin{array}{l} \text{RS} \\ -5x \\ -5 \times 7 \\ -35 \end{array}$$

c) $-48 = 8x$

$$\frac{-48}{8} = \frac{8x}{8}$$

$$-6 = x$$

$$\begin{array}{l} \text{LS} \\ -48 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 8x \\ 8 \times -6 \\ -48 \end{array}$$

d) $9x = 54$

$$\frac{9x}{9} = \frac{54}{9}$$

$$x = 6$$

$$\begin{array}{l} \text{LS} \\ 9x \\ 9 \times 6 \\ 54 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 54 \end{array}$$

$$\begin{aligned}
 2a) \quad & -8a + 11 = 27 \\
 & -8a + 11 - 11 = 27 - 11 \\
 & -8a = 16 \\
 & \frac{-8a}{-8} = \frac{16}{-8} \\
 & a = -2
 \end{aligned}$$

$$\begin{array}{ll}
 \text{LS} & \text{RS} \\
 -8a + 11 & 27 \\
 -8a - 2 + 11 & \\
 16 + 11 & \\
 27 &
 \end{array}$$

$$\begin{aligned}
 b) \quad & 12b + 21 = 93 \\
 & 12b + 21 - 21 = 93 - 21 \\
 & 12b = 72 \\
 & \frac{12b}{12} = \frac{72}{12} \\
 & b = 6
 \end{aligned}$$

$$\begin{array}{ll}
 \text{LS} & \text{RS} \\
 12b + 21 & 93 \\
 12 \times 6 + 21 & \\
 72 + 21 & \\
 93 &
 \end{array}$$

$$\begin{aligned}
 c) \quad & -42 = 5c - 27 \\
 & -42 + 27 = 5c - 27 + 27 \\
 & -15 = 5c \\
 & \frac{-15}{5} = \frac{5c}{5} \\
 & -3 = c
 \end{aligned}$$

$$\begin{array}{ll}
 \text{LS} & \text{RS} \\
 -42 & 5c - 27 \\
 & 5 \times -3 - 27 \\
 & -15 - 27 \\
 & -42
 \end{array}$$

$$\begin{aligned}
 d) \quad & 6f - 15 = -45 \\
 & 6f - 15 + 15 = -45 + 15 \\
 & 6f = -30 \\
 & \frac{6f}{6} = \frac{-30}{6} \\
 & f = -5
 \end{aligned}$$

$$\begin{array}{ll}
 \text{LS} & \text{RS} \\
 6f - 15 & -45 \\
 6 \times -5 - 15 & \\
 -30 - 15 & \\
 -45 &
 \end{array}$$

$$3a) 2x - 7 = 9$$

$$2x - 7 + 7 = 9 + 7$$

$$2x = 16$$

$$\frac{2x}{2} = \frac{16}{2}$$

$$x = 8$$

$$\begin{array}{l} \text{LS} \\ 2x - 7 \\ 2 \times 8 - 7 \\ 16 - 7 \\ 9 \end{array} \qquad \begin{array}{l} \text{RS} \\ 9 \end{array}$$

$$b) -4x + 6 = -14$$

$$-4x + 6 - 6 = -14 - 6$$

$$-4x = -20$$

$$\frac{-4x}{-4} = \frac{-20}{-4}$$

$$x = 5$$

$$\begin{array}{l} \text{LS} \\ -4x + 6 \\ -4 \times 5 + 6 \\ -20 + 6 \\ -14 \end{array} \qquad \begin{array}{l} \text{RS} \\ -14 \end{array}$$

$$c) 6x - 7 = -19$$

$$6x - 7 + 7 = -19 + 7$$

$$6x = -12$$

$$\frac{6x}{6} = \frac{-12}{6}$$

$$x = -2$$

$$\begin{array}{l} \text{LS} \\ 6x - 7 \\ 6 \times -2 - 7 \\ -12 - 7 \\ -19 \end{array} \qquad \begin{array}{l} \text{RS} \\ -19 \end{array}$$

$$d) -7x - 8 = 13$$

$$-7x - 8 + 8 = 13 + 8$$

$$-7x = 21$$

$$\frac{-7x}{-7} = \frac{21}{-7}$$

$$x = -3$$

$$\begin{array}{l} \text{LS} \\ -7x - 8 \\ -7 \times -3 - 8 \\ 21 - 8 \\ 13 \end{array} \qquad \begin{array}{l} \text{RS} \\ 13 \end{array}$$

$$4 \text{ a) } 2a - 3 = 4$$

$$2a - 3 - 3 = 4 - 3$$

$$2a = 1$$

$$\frac{2a}{2} = \frac{1}{2}$$

$$a = \frac{1}{2}$$

$$\begin{array}{l} \text{LS} \\ 2a + 3 \\ 2 \times \frac{1}{2} + 3 \\ 1 + 3 \\ 4 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 4 \end{array}$$

$$b) 15 = 10 + 2b$$

$$15 - 10 = 10 + 2b - 10$$

$$5 = 2b$$

$$\frac{5}{2} = \frac{2b}{2}$$

$$2.5 = b$$

$$\begin{array}{l} \text{LJ} \\ 15 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 10 + 2b \\ 10 + 2 \times 2.5 \\ 10 + 5 \\ 15 \end{array}$$

$$c) 3 = 5c - 6$$

$$3 + 6 = 5c - 6 + 6$$

$$9 = 5c$$

$$\frac{9}{5} = \frac{5c}{5}$$

$$1.8 = c$$

$$\begin{array}{l} \text{LS} \\ 3 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 5c - 6 \\ 5 \times 1.8 - 6 \\ 9 - 6 \\ 3 \end{array}$$

$$d) 9f - 7 = 1$$

$$9f - 7 + 7 = 1 + 7$$

$$9f = 8$$

$$\frac{9f}{9} = \frac{8}{9}$$

$$f = 0.\bar{8}$$

$$\frac{9 \times \frac{8}{9}}{9} = \frac{8}{9} = 0.\bar{8}$$

$$\begin{array}{l} \text{LS} \\ 9f - 7 \\ 9 \times \frac{8}{9} - 7 \\ 8 - 7 \\ 1 \end{array}$$

$$\begin{array}{l} \text{RS} \\ 1 \end{array}$$

5a) $n =$ the number

$$2n + 5 = 17$$

$$2n + 5 - 5 = 17 - 5$$

$$2n = 12$$

$$\frac{2n}{2} = \frac{12}{2}$$

$$n = 6$$

The number is 6.

LS	RS
$2n + 5$	17
$2 \times 6 + 5$	
$12 + 5$	
17	

b) $n =$ the number

$$5n - 6 = 29$$

$$5n - 6 + 6 = 29 + 6$$

$$5n = 35$$

$$\frac{5n}{5} = \frac{35}{5}$$

$$n = 7$$

The number is 7.

LS	RS
$5n - 6$	29
$5 \times 7 - 6$	
$35 - 6$	
29	

6. a = number of students who attended

$$13a + 125 = 944$$

$$13a + 125 - 125 = 944 - 125$$

$$13a = 819$$

$$\frac{13a}{13} = \frac{819}{13}$$

$$a = 63$$

LS	RS
$13a + 125$	944
$13 \times 63 + 125$	
$819 + 125$	
944	

63 students attended

7. If it cost \$225 for the class to go skating and they have to pay \$150 for ice rental and \$3 for skate rental, how many students skated?

s = # who skated

$$3s + 150 = 225$$

$$3s + 150 - 150 = 225 - 150$$

$$3s = 75$$

$$\frac{3s}{3} = \frac{75}{3}$$

$$s = 25$$

25 students skated.

a) Which number could you multiply $\frac{5}{9}$ by to get the product 5?

$$\frac{5}{9} \times \frac{9}{1} = 5$$

$\underbrace{\hspace{1.5cm}}$

$$\frac{45}{9} = 5$$

b) Which number could you multiply $\frac{4}{7}$ by to get the product 4?

$$\frac{4}{7} \times \frac{7}{1} = 4$$
$$\frac{28}{7} = 4$$

2 people

Sarah shares a bag of candy with her friend Emma so that each of them get 15 candy. How much candy did the bag contain?



- a) Write an equation that you can use to solve the problem
let b represent the number of candy in the bag originally

b) solve $\frac{b}{2} = 15$

The bag
contained 30
Candy.

$$2 \times \frac{b}{2} = 15 \times 2$$

- c) verify

$b = 30$

LHS

 $\frac{b}{2}$

 $\frac{30}{2}$

 15

RHS

 15

same ✓

Example 1)

Grandma has enough money to give the same amount to her five grandchildren.

After Grandma gives them the money, each grandchild has \$25. How much money did Grandma have to start?

a) Write an equation to represent this problem.

b) Solve the equation.

c) Verify the solution.



Let $m \equiv$ amount of money grandma has

$$\frac{m}{5} = 25$$

Grandma has \$125.

$$5 \times \frac{m}{5} = 25 \times 5$$

$$\cancel{5} \frac{m}{\cancel{5}} = 125$$

$$m = 125$$

Example 2)



The school's student council sold T-shirts for charity. The council bought the T-shirts in boxes of 40. The student council added \$6 to the cost of each T-shirt. Each T-shirt sold for \$26. What did the student council pay for 1 box of T-shirts?



$\frac{40}{1} C$ \Rightarrow let $x \equiv$ the cost of 1 box
 \Rightarrow cost of 1 t-shirt

a) Write an equation to represent this problem then solve the equation.

$$\frac{C}{40} + 6 = 26$$

$$\frac{C}{40} + 6^{-6} = 26^{-6}$$

$$\frac{C}{40} = 20$$

$$\frac{C}{40} \wedge 40 = 20 \times 40$$

$$C = 800$$

The cost of 1 box is \$800

B) Verify the solution

add to your notes (variable on the bottom)

$$\underline{3} + 7 = -5$$

x

$$\frac{3}{x} + 7^{-1} = -5 - 7$$

$$\frac{3}{x} = -12$$

$$x \cdot \frac{3}{x} = -12 \cdot x$$

$$\frac{3}{-12} = \frac{-12x}{\div -12}$$

$$\boxed{-\frac{1}{4} = x}$$

Or

$$x = -0.25$$

Class/Homework

pg. 336

#3(ac), #4(a,c), #5^{ab}, #6^{ab}, #7^{ab}

↓
let $g = \#$ of golf balls

$$\frac{g}{4} = 8$$