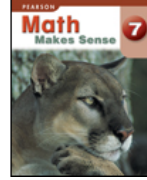
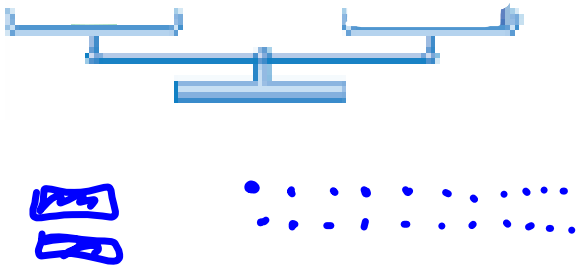


Warm Up Grade 7



Use a balance to solve: (then use algebra)

a) $2x + 7 = 29$



$$2x + 7 = 29$$

$$2x + \cancel{7} = 29 - 7$$

$$2x = 22$$

$\div 2 \quad \div 2$

$$x = 11$$

Use mental math.

1. $\$6.00 - \$1.98 = 4.02$ 2. $84 \times 5 = 420$

$6.00 - 52$
 54
 ↓ Subtract 2 cents too much

↑ half ↑ double
 $42 \times 10 = 420$

LHS	RHS
$2x + 7$	29
$2(11) + 7$	
$22 + 7$	
29	

← Same ✓

Homework Solutions

Lesson 6.2: Using a Model to Solve Equations

1. a) Sketch balance scales to represent each equation.

b) Solve each equation.

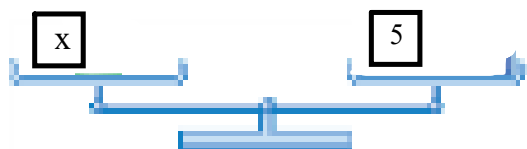
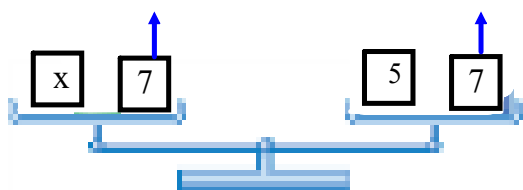
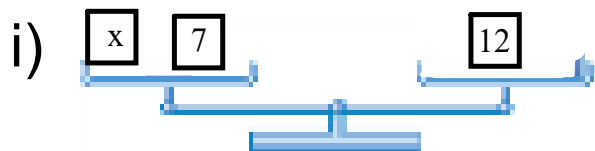
Verify the solution.

i) $x + 7 = 12$

ii) $z + 3 = 9$

iii) $2y = 8$

iv) $4a = 20$



$$x + 7 = 12$$

$$x + 7 - 7 = 12 - 7$$

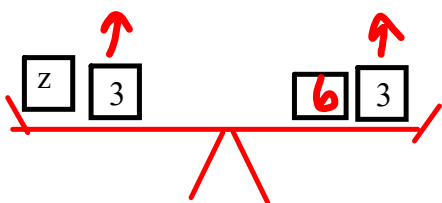
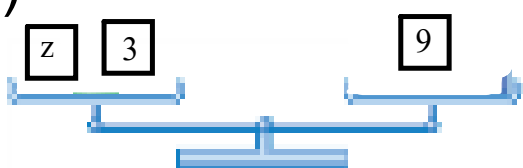
$$x = 5$$

verify

$$\begin{array}{r} \text{LS} \\ x + 7 \\ 5 + 7 \\ \hline 12 \end{array}$$

$$\begin{array}{r} \text{RS} \\ 12 \end{array}$$

1 ii)



Homework Solutions

$$\begin{aligned}z + 3 &= 9 \\z + 3 - 3 &= 9 - 3 \\z &= 6\end{aligned}$$

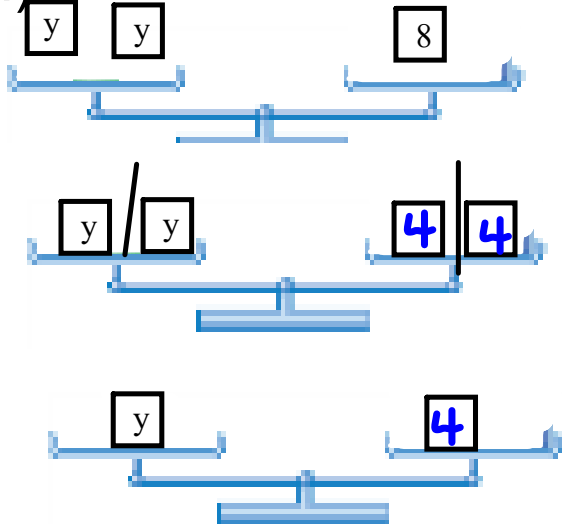
Verify

$$\begin{array}{r}LS \\2 + 3 \\6 + 3 \\9\end{array}$$

$$\begin{array}{r}RS \\9\end{array}$$

Homework Solutions

1 iii)



$$2y = 8$$

$$\frac{2y}{2} = \frac{8}{2}$$

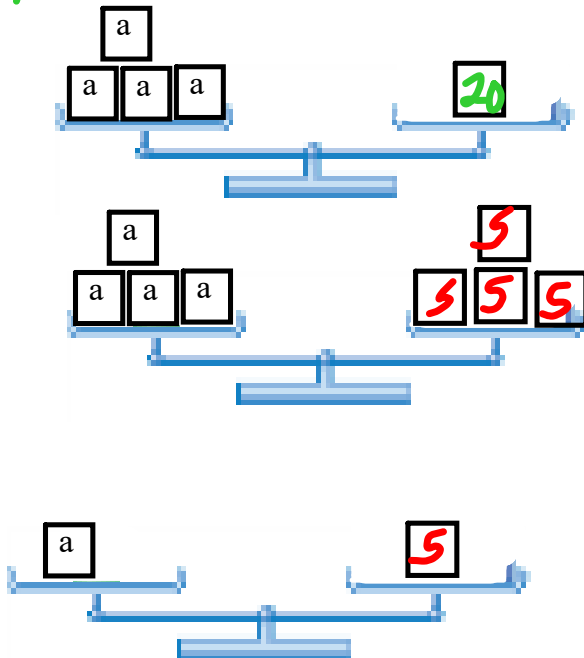
$$y = 4$$

Verify

LS $2y$ RS 8
 2×4
 8

1 iv)

2)



$$4a = 20$$

$$\frac{4a}{4} = \frac{20}{4}$$

$$a = 5$$

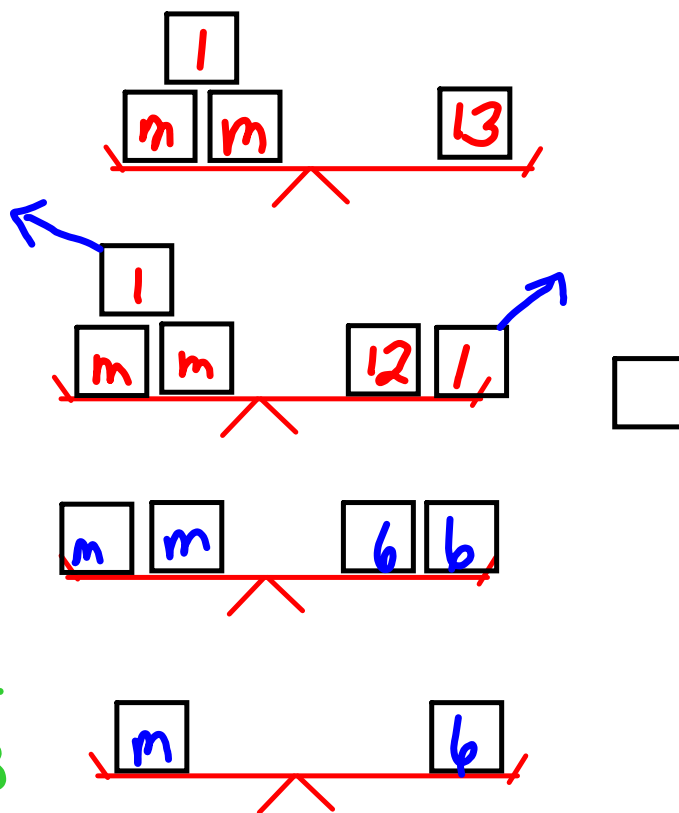
Verify

LS $4a$ RS 20
 4×5
 20

- 1 v) $2m + 1 = 13$ vi) $2p + 3 = 27$
 vii) $k + k + 7 = 19$ viii) $5 + 3n = 20$

Homework Solutions

v) $2m + 1 = 13$
 $2m + 1 - 1 = 13 - 1$
 $2m = 12$
 $\frac{2m}{2} = \frac{12}{2}$
 $m = 6$



verify
 LS
 $2m + 1$
 $2 \times 6 + 1$
 13 ✓

RS
 13

vi) $2p + 3 = 27$
 $2p + 3 - 3 = 27 - 3$
 $2p = 24$
 $\frac{2p}{2} = \frac{24}{2}$
 $p = 12$

verify
 L
 $2p + 3$
 $2 \times 12 + 3$
 $24 + 3$
 27

RS
 27

Homework Solutions

$$1 \text{ vii) } k+k+7=19$$

$$2k+7-7=19-7$$

$$2k=12$$

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

$$k=6$$

verify

$$\begin{array}{l} k+k+7 \\ 6+6+7 \\ 19 \end{array} \quad \begin{array}{l} RS \\ 19 \end{array}$$

Homework Solutions

$$1) \text{ viii) } 5 + 3h = 20$$

$$5 + 3h - 5 = 20 - 5$$

$$3h = 15$$

$$\frac{3h}{3} = \frac{15}{3}$$

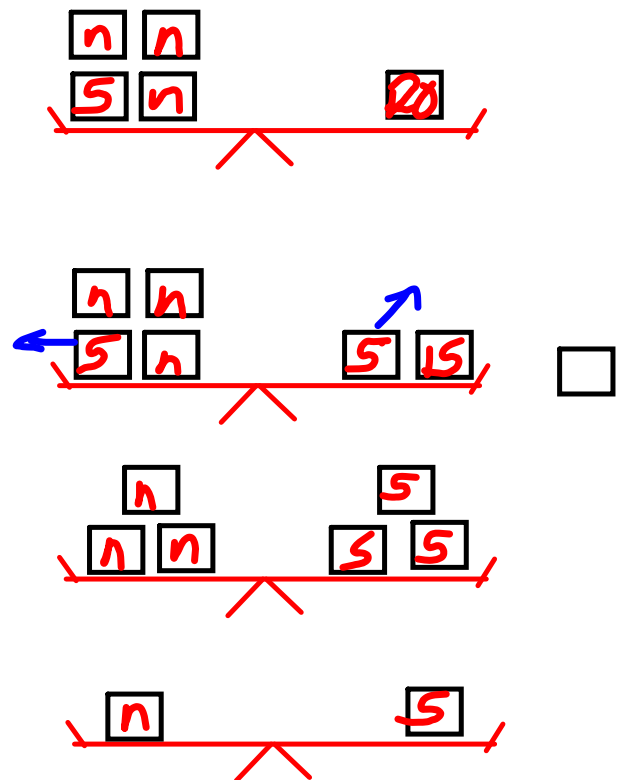
$$h = 5$$

LS verify

R

20

$$\begin{array}{l} 5 + 3h \\ 5 + 3 \times 5 \\ 5 + 15 \\ 20 \end{array}$$



2. a) Write an equation for each sentence.

b) Solve each equation.

Homework Solutions

Verify the solution.

i) Seven more than a number is 29.

ii) A number increased by nine is 23.

iii) Four times a number is 24.

iv) Three more than twice a number is 25.

v) Six more than three times a number is 27.

vi) A number multiplied by twelve is 84.

$n = \text{the number}$

$$\begin{aligned} \text{i)} \quad n + 7 &= 29 \\ n + 7 - 7 &= 29 - 7 \\ n &= 22 \end{aligned}$$

$$\begin{array}{l} \text{Ls} \text{ verify} \\ n + 7 \\ 22 + 7 \\ 29 \end{array} \quad \begin{array}{l} \text{Rs} \\ 29 \end{array}$$

$$\begin{aligned} \text{ii)} \quad n + 9 &= 23 \\ n + 9 - 9 &= 23 - 9 \\ n &= 14 \end{aligned}$$

$$\begin{array}{l} \text{Ls} \text{ verify} \\ n + 9 \\ 14 + 9 \\ 23 \end{array} \quad \begin{array}{l} \text{Rs} \\ 23 \end{array}$$

$$\begin{aligned} \text{iii)} \quad 4n &= 24 \\ \frac{4n}{4} &= \frac{24}{4} \\ n &= 6 \end{aligned}$$

$$\begin{array}{l} \text{Ls} \text{ verify} \\ 4n \\ 4 \times 6 \\ 24 \end{array} \quad \begin{array}{l} \text{Rs} \\ 24 \end{array}$$

Homework Solutions

$$w) 2h + 3 = 25$$

$$2h + 3 - 3 = 25 - 3$$

$$2h = 22$$

$$\frac{2h}{2} = \frac{22}{2}$$

$$h = 11$$

verify

$$\begin{array}{l} L \\ 2h + 3 \\ 2 \times 11 + 3 \\ 22 + 3 \\ 25 \end{array} \quad \begin{array}{l} RS \\ 25 \end{array}$$

$$v) 3n + 6 = 27$$

$$3n + 6 - 6 = 27 - 6$$

$$3n = 21$$

$$\frac{3n}{3} = \frac{21}{3}$$

$$n = 7$$

verify

$$\begin{array}{l} L \\ 3n + 6 \\ 3 \times 7 + 6 \\ 21 + 6 \\ 27 \end{array} \quad \begin{array}{l} RS \\ 27 \end{array}$$

$$vii) 12n = 84$$

$$\frac{12n}{12} = \frac{84}{12}$$

$$n = 7$$

verify

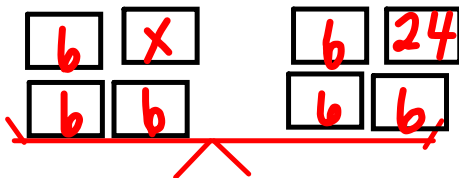
$$\begin{array}{l} L \\ 12n \\ 12 \times 7 \\ 84 \end{array} \quad \begin{array}{l} RS \\ 84 \end{array}$$

Homework Solutions

3. Suppose the masses for balance scales are only available in multiples of 6 g.

a) Sketch balance scales to represent the equation: $18 + x = 42$

b) Solve the equation.



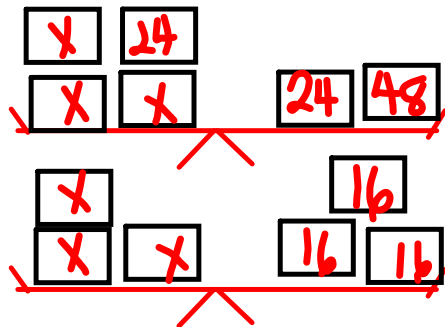
$$x = 24$$

4. Suppose the masses for balance scales are only available in multiples of 8 g.

a) Sketch balance scales to represent the equation: $3x + 24 = 72$

b) Solve the equation.

Verify the solution.



$$x = 16$$

5. Use this equation: $x + a = 15$

a) What value of a will give the solution $x = 9$?

b) What value of a will give the solution $x = 3$?

$$\begin{aligned} a) \quad x + a &= 15 \\ 9 + a &= 15 \\ 9 + a - 9 &= 15 - 9 \\ a &= 6 \end{aligned}$$

$$\begin{aligned} b) \quad x + a &= 15 \\ 3 + a &= 15 \\ 3 + a - 3 &= 15 - 3 \\ a &= 12 \end{aligned}$$

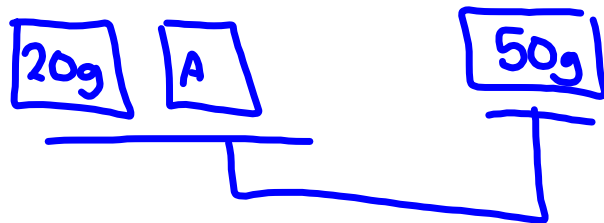
Class/Homework

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1, #2, #3, #4, #5, #6

USE algebra

~~You only have to draw sketches for 2 (i) to (iv) and #5~~



g = grams

$$A + 20 = 50$$

1d)



$$2D + 3 = 45$$