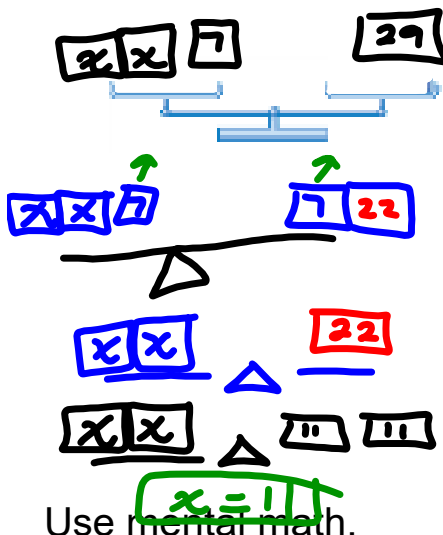


Warm Up Grade 7
Apr 13



Use a balance to solve: (then use algebra)

a) $2x + 7 = 29$



$$2x + 7 = 29$$

$$2x + 7^{-7} = 29^{-7}$$

$$2x = 22$$

$$\div 2 \quad \div 2$$

$$x = 11$$

Use mental math.

1. $\$6.00 - \1.98

$$\$6 - \$2 = \$4$$

Subtract 2¢

too much, so add on

$$= \$4.02$$

2. 84×5

half double

$$42 \times 10$$

$$420$$

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) $x + 7 = 12$

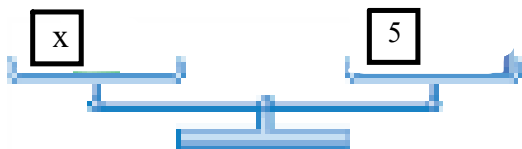
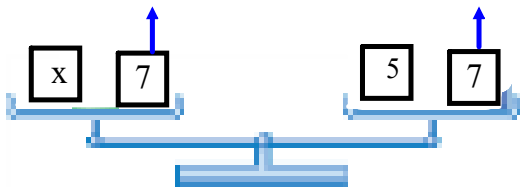
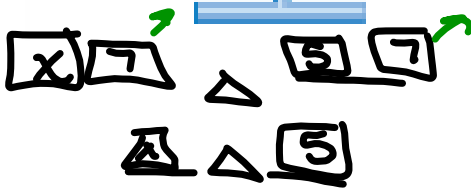
ii) $z + 3 = 9$

iii) $2y = 8$

iv) $4a = 20$

$x + 7 = 12$

$x = 5$



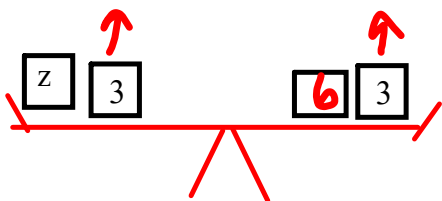
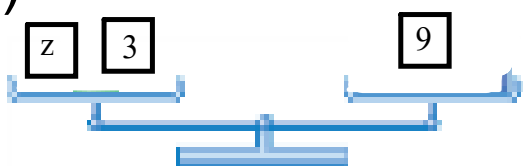
$x + 7 = 12$
 $x + 7 - 7 = 12 - 7$
 $x = 5$

verify

LS
 $x + 7$
 $5 + 7$
 12

RS
 12

1 ii)



Homework Solutions

$$z + 3 = 9$$

$$z = 6$$

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

Verify

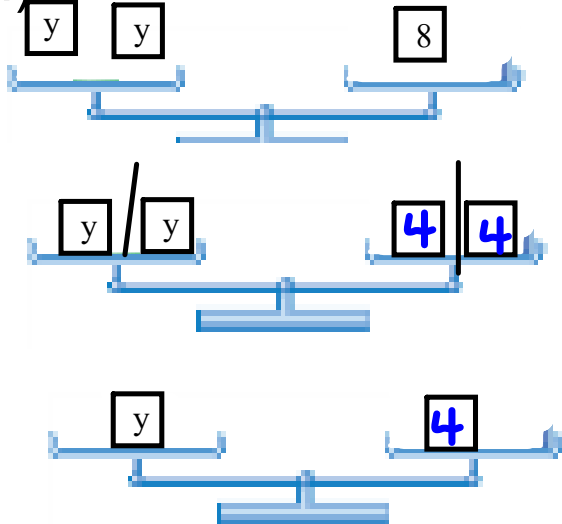
$$\begin{array}{r} \text{LS} \\ z + 3 \\ 6 + 3 \\ 9 \end{array}$$

RS

$$9$$

Homework Solutions

1 iii)



$$2y = 8$$

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

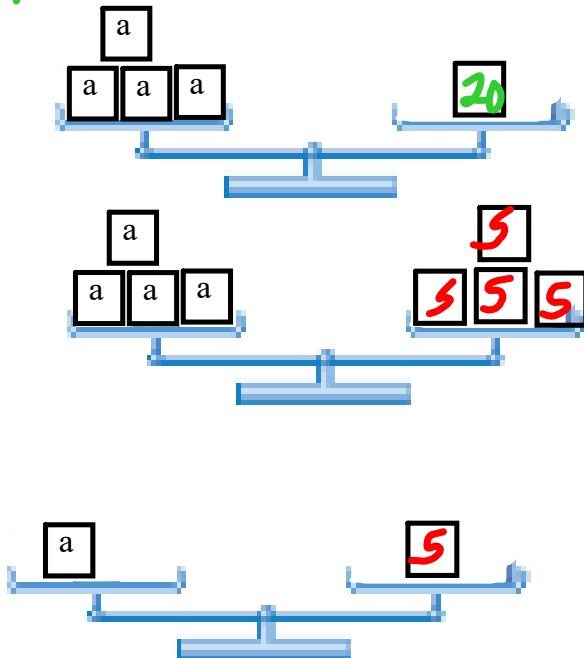
$$y = 4$$

Verify

LS $2y$ RS 8
 2×4
 8

1 iv)

2)



$$4a = 20$$

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

$$a = 5$$

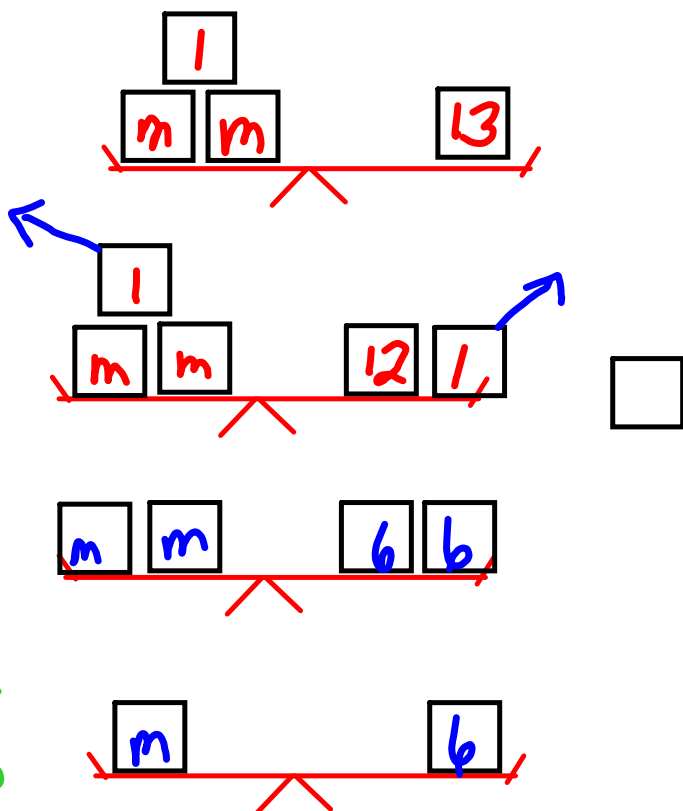
Verify

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
 LS
 $2p + 3$
 $2 \times 12 + 3$
 $24 + 3$
 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

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

$$\begin{array}{l} RS \\ 19 \end{array}$$

Homework Solutions

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

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

$$3h = 15$$

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

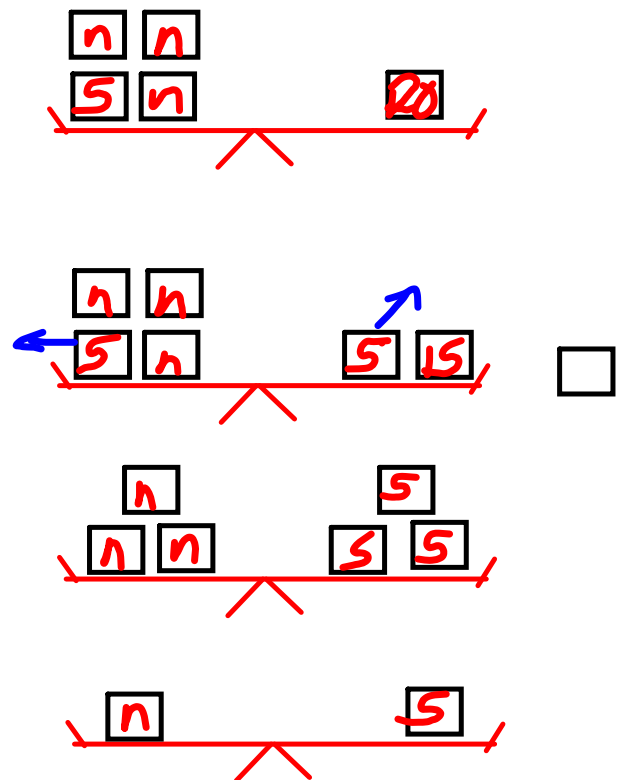
$$h = 5$$

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.

$n = \text{the number}$

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

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

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

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

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

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

Homework Solutions

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

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

$$2h = 22$$

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

$$h = 11$$

verify

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

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

$$3h + 6 - 6 = 27 - 6$$

$$3h = 21$$

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

$$h = 7$$

verify

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

$$vi) 12h = 84$$

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

$$h = 7$$

verify

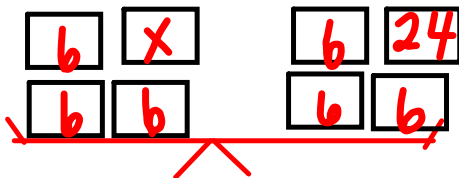
$$\begin{array}{l} L \\ 12h \\ 12 \times 7 \\ 84 \end{array} \quad \begin{array}{l} RS \\ 84 \end{array}$$

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.



$x = 24$

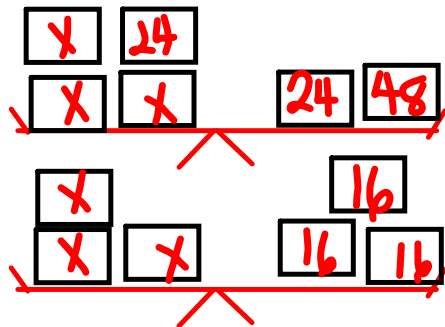
$x + 18 = 42$
 ~~$x + 18 = 42$~~
 $x = 24$
 $4 \times 6g$

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 $x = 3$?

a) $x + a = 15$
 $9 + a = 15$
 $9 + a - 9 = 15 - 9$
 $a = 6$

b) $x + a = 15$
 $3 + a = 15$
 $3 + a - 3 = 15 - 3$
 $a = 12$

Class/Homework

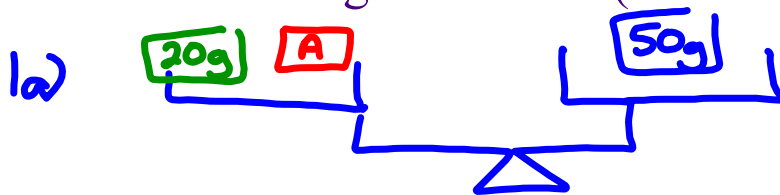
page 229

-Write an equation then solve for each question

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

a b a b \times

You can use algebra for all (don't have to draw scales)



$$A + 20 = 50$$

$$A + \cancel{20} = 50 - \cancel{20}$$

$$A = 30$$



$$B + 15 = 80$$

$$B = 65$$

$$4) A = bh$$

$$a) \begin{array}{l} \boxed{A = 60} \quad h \\ b = 12 \end{array}$$

$$\begin{array}{r} A = bh \\ \downarrow \quad \downarrow \quad \downarrow \\ 60 = 12h \\ \div 12 \quad \div 12 \\ \boxed{5 = h} \end{array}$$

This multiply
so
to get h
alone
we \div