2 The volume of a rectangular prism is represented by $12x^3$. The height is represented by $3x$.

Which of the following represents the area of the base?

Hint:
V = (area of base)(height)

a $4x^2$

b $4x^3$

c $9x^2$

d $9x^3$

$$V = A \times h$$

$$\frac{12x^3}{3x} = \frac{A(3x)}{3x}$$

$$4x^2$$

21 In the relation $C = 60 + 15n$, C represents the total cost of holding an event at a hall, and n represents the number of guests.

The maximum number of guests allowed in the hall is 100.

What are the minimum and maximum possible values for C?

a $0, $1500

b $0, $1560

c $60, $1500

d $60, $1560

Learning Goals

Today's lesson is all about solving for "x", given "y".

1. If given y, solve for x using **a table**.

2. If given y, solve for x using **a graph**.

3. If given y, solve for x using **algebra**.

4.1 - Interpreting the Solution of a Linear Equation

You can use a table or a graph to estimate the solution to an equation.

For example, solve $3 = \frac{1}{5}x + 2$.

$$y = mx + b$$

$y = \frac{1}{5}x + 2$

x	y
0	2
5	3
10	4

$y = \frac{1}{5}x + 2$
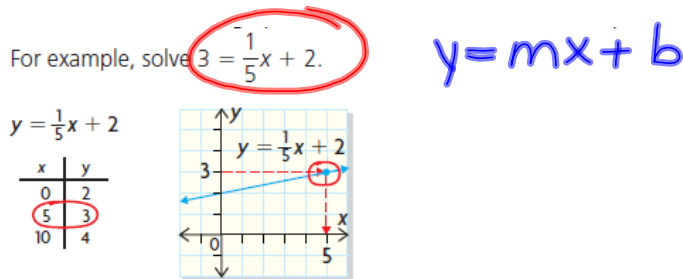
The exact solution to an equation can be determined using a balancing strategy and algebra.

When you isolate use...

SAMDEB

For example,

$$3 = \frac{1}{5}x + 2$$

$$3 - 2 = \frac{1}{5}x + 2 - 2$$

$$1 = \frac{1}{5}x$$

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

$$5 = x$$

Example One

Mariane wants U-Host to host her website.

U-Host's Charges per Month
$19.00 monthly charge
$1.15/megabyte (MB) of storage used

Using a table, graph and algebra, determine how many megabytes of storage Mariane can purchase for $60 per month.

a) $y = mx + b$

$$C = 1.15m + 19$$

C = cost

M = megabytes used

2

Using a Table

MB	Total Cost ($)
0	$1.15(0)+19 = 19$
10	$1.15(10)+19 = 30.50$
20	$1.15(20)+19 = 42.00$
30 $\rangle$ 35ish	$1.15(30)+19 = 53.50$
40	$1.15(40)+19 = 65$

Using Algebra

$$C = 1.15m + 19$$

Solve for M when C=60

$$60 = 1.15m + 19$$
↑ given in the question

1. Follow ⓈⒶⓂⒹⒺⒷ

$$60 \overset{-19}{=} 1.15m + \cancel{19}^{\,-19}$$

$$\frac{41}{1.15} = \frac{1.15m}{1.15}$$

$$35.652 \overset{.}{=} m \quad \leftarrow \text{approximately}$$

This method is the most correct.

Example Two

With the person beside you, create a table, graph and use algebra to solve: $-3x + 2 = 14.$ ← think of as "y"!

Algebraically

$$-3x + 2 = 14 \quad -2$$
$$-3x = 12$$
$$\frac{-3x}{-3} = \frac{12}{-3}$$
$$x = -4$$

∴ when $y = 14$,
$x = -4$

Using a Table

$$y = -3x + 2$$

x	y
0 } around -4	$-3(0) + 2 = 2$
-5 }	$-3(-5) + 2 = 17$
-10	$-3(-10) + 2 = 32$

Using a Graph

On the graph (blue line): $y = -3x + 2$

Labels: $y = 14$, $x = -4$
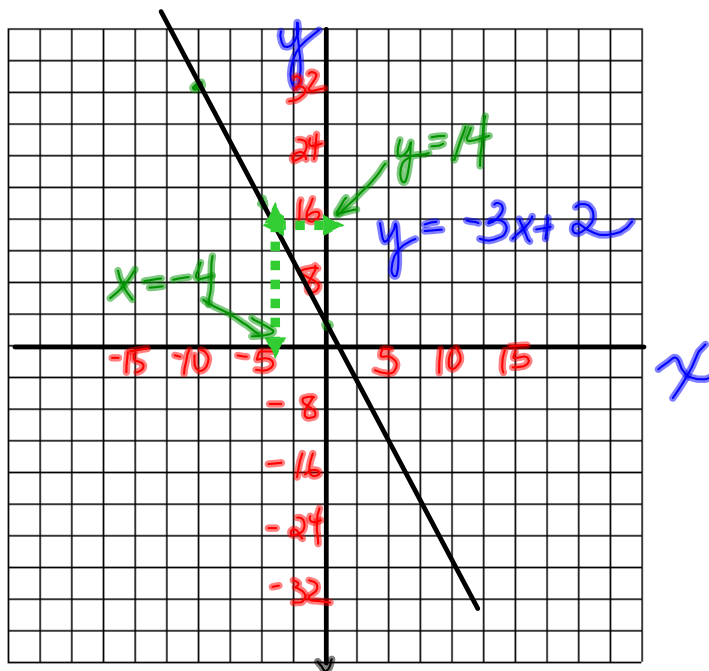
Complete: p. 202 - 204 #5 - 8, 16

6c)

$$+35 - 2t = 13$$
$$-35 \qquad \qquad -35$$

$$\frac{-2t}{-2} = \frac{-22}{-2}$$

$$t = 11$$

$\text{\textcircled{S}}\text{A}\text{m}\text{DEB}$

7a)

$$2x - 8 = -9$$

Rewrite as...

$$2x - 8 = y$$

x	y
0	$2(0) - 8 = -8$
1	$2(1) - 8 = -6$
-1	$2(-1) - 8 = -10$

$\therefore x = -0.5$

when $y = -9$

5a)

$$-3x - 11 = \boxed{7} \leftarrow \text{this is the given "y".}$$

Rewrite as....

$$-3x - 11 = y$$

x	y
0	$-3(0) - 11 = -11$
1	$-3(1) - 11 = -14$
2	$-3(2) - 11 = -17$