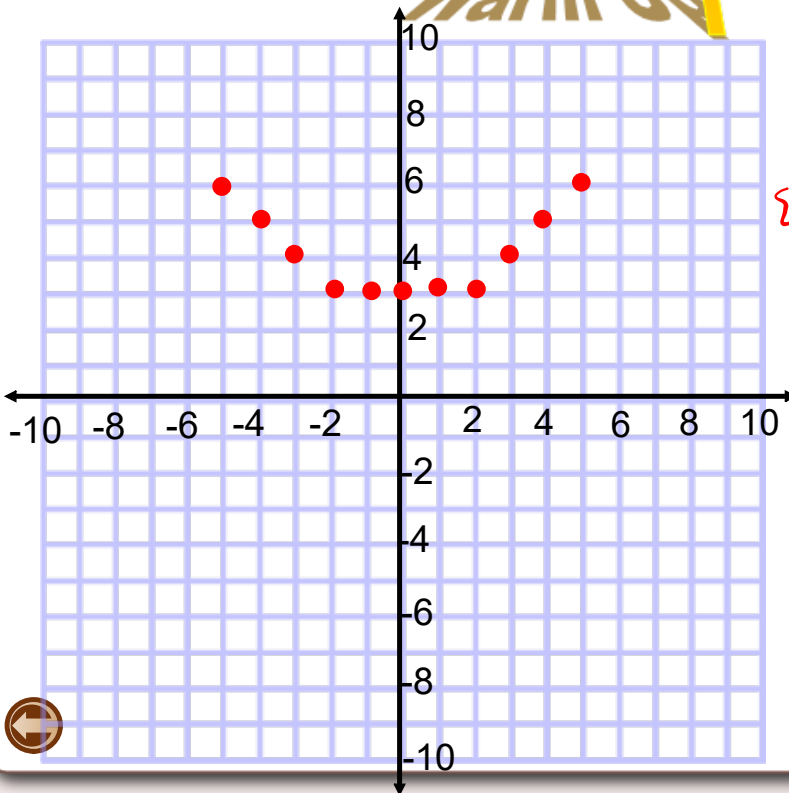
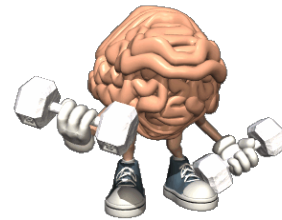


QUIZ Thurs

Warm Up



Domain
 $\{x \mid -5 \leq x \leq 5, x \in \mathbb{I}\}$

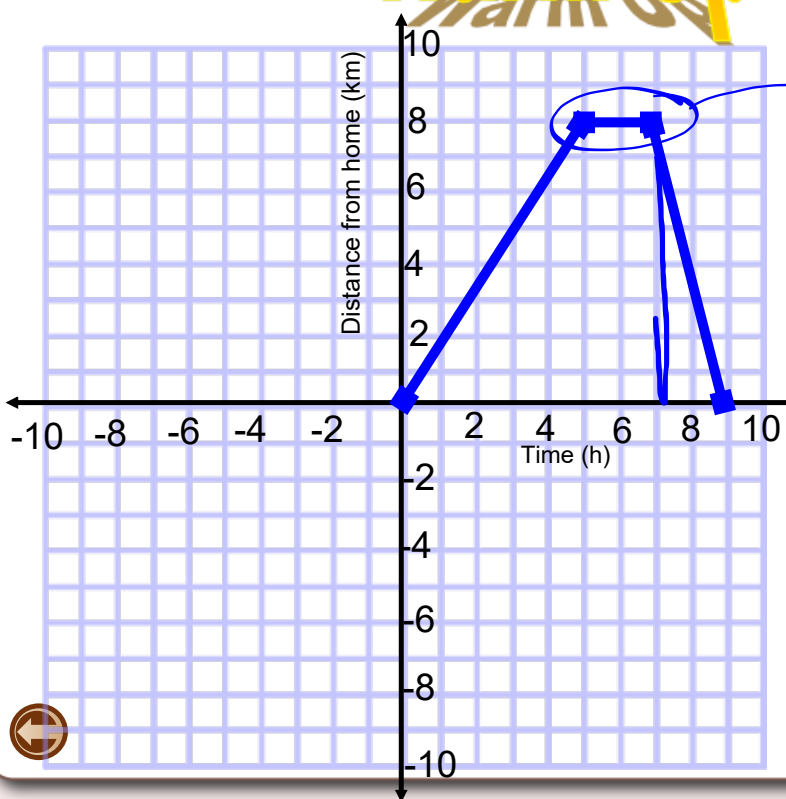
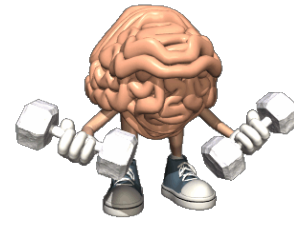
Range
 $\{y \mid 3 \leq y \leq 6, y \in \mathbb{I}\}$

Function / Non-Function

Linear / Non-Linear

Continuous / Discrete

Warm Up



What is between $t=5$ and $t=7$?
 Stopped at 8km
 for the 3 min.

Domain

$$\{x \mid 0 \leq x \leq 9, x \in \mathbb{R}\}$$

Range

$$\{y \mid 0 \leq y \leq 8, y \in \mathbb{R}\}$$

Function / Non-Function

Linear / Non-Linear

Continuous / Discrete

HW Solutions

Any questions from Page 294-296

#10,11,12,13,17,19,20b,21b,22

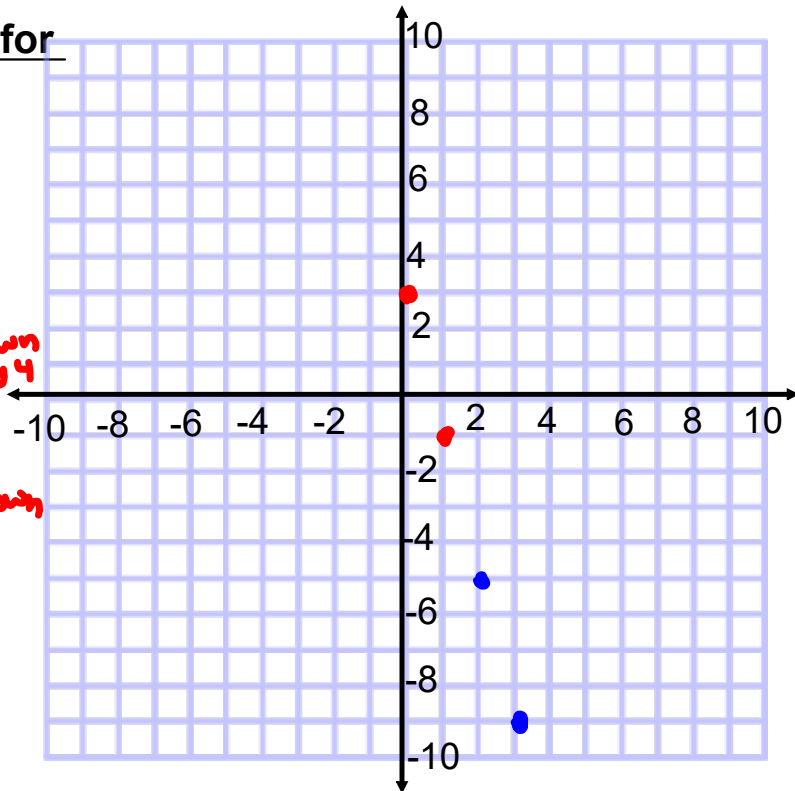
6, 7, 8

Copy down

Complete the table for

$$y = -4x + 3$$

x	y
0	3
1	-1
2	-5
3	-9
4	-13
5	-17



$$\begin{array}{l}
 x=0 \\
 y = -4x + 3 \\
 = -4(0) + 3 \\
 = 0 + 3 \\
 y = 3 \\
 (x, y) \\
 (0, 3)
 \end{array}
 \left. \begin{array}{l}
 x=1 \\
 y = -4(x) + 3 \\
 = -4(1) + 3 \\
 = -4 + 3 \\
 y = -1 \\
 (1, -1)
 \end{array} \right\}
 \left. \begin{array}{l}
 x=2 \\
 y = -4(x) + 3 \\
 = -4(2) + 3 \\
 = -8 + 3 \\
 = -5 \\
 (2, -5)
 \end{array} \right\}$$

Copy down

Solving Equations

Simplify and then solve for x:

Example 1:

$$15 + x + 16x = 100$$

$$15 + 17x = 100$$

$$\cancel{15} + 17x = 100 - 15$$

$$\frac{17x}{17} = \frac{85}{17}$$

$$x = 5$$

Example 2:

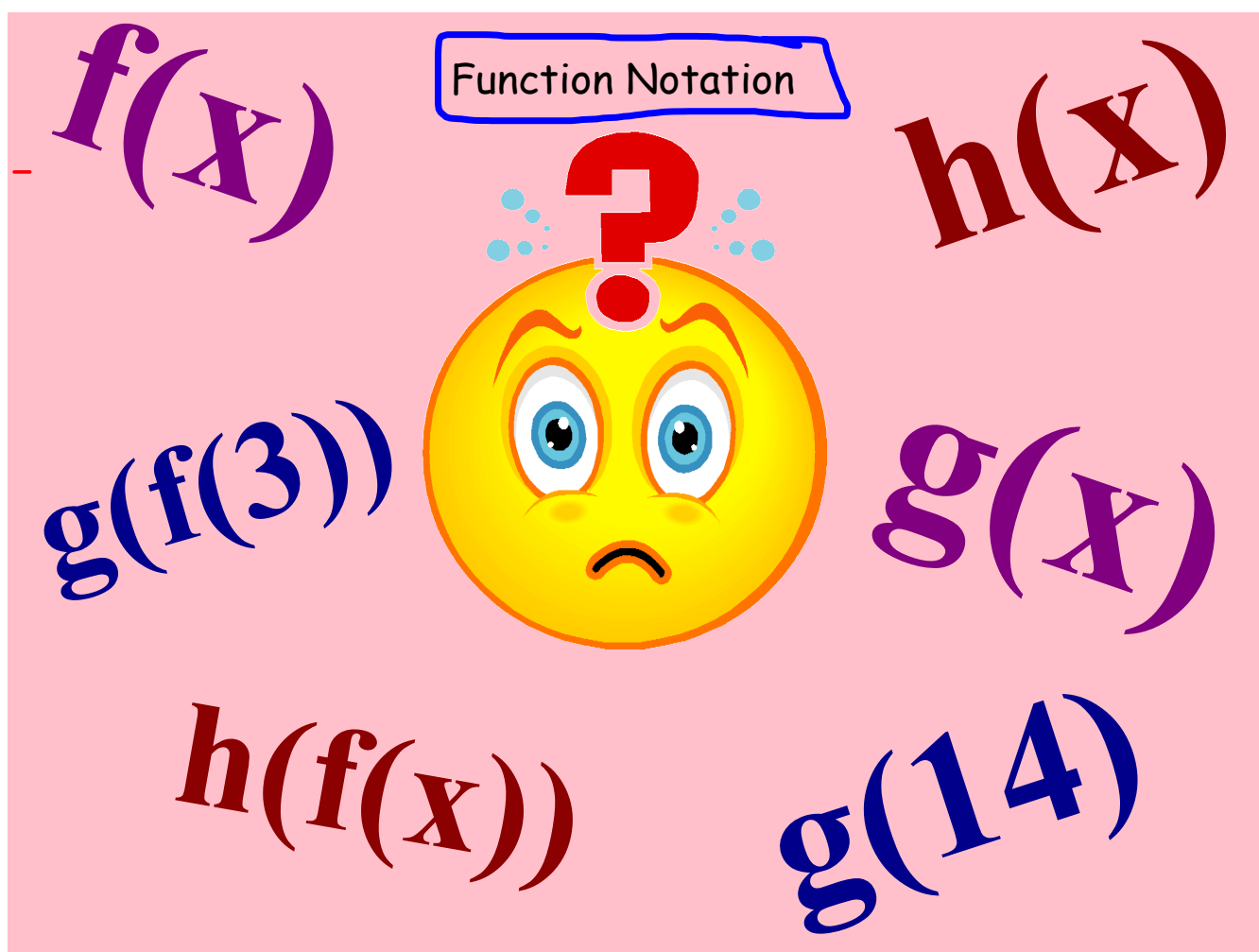
$$-25 = \underline{12x} + 10 - \underline{4x}$$

$$-25 = 8x + 10$$

$$-25 \overset{-10}{=} 8x + \cancel{10} - 10$$

$$\frac{-35}{8} = \frac{\cancel{8x}}{8}$$

$$\frac{-35}{8} = x$$



From middle school

a) Find the value of y for the equation $y=2x+7$ if $x=5$

$$\begin{aligned} y &= 2x + 7 \\ &= 2(5) + 7 \\ &= 10 + 7 \end{aligned}$$

$$y = 17$$

$(5, 17)$
 x, y

b) Find the value of x , if the $y=-25$ for $y=-9x-7$

$$y = -9x - 7$$

$$\downarrow$$

$$-25 = -9x - 7$$

$$\underbrace{-25+7} = -9x - \cancel{7+7}$$

$$-18 = -9x$$

$$\frac{-18}{-9} = \frac{-9x}{-9}$$

$$\boxed{2 = x}$$

Rearrange to
isolate "x"
(SAMEDB)

(x, y)

$(2, -25)$

Function Notation

Function notation is the way a function is written. It is meant to be a precise way of giving information about the function without a rather lengthy written explanation.

The most popular function notation is $f(x)$ which is read "f of x". This is NOT the multiplication of f times x..

$$f(x) = 3x + 1$$

↑ input value ⏟ output value

This means the value of the function $3x+1$ when x is inputted

Traditionally, functions are referred to by single letter names, such as f , g , h and Any letter(s), however, may be used to name a function. Examples:

$$f(x) = x^2 + 1 \quad g(x) = x - 7 \quad h(b) = 3b^2 - 2b + 1 \quad S(t) = \frac{1}{2}t^2 - 3t + 1$$

$$abs(-5) = 5 \quad george(x) = x^{23}$$

The $f(x)$ notation is another way of representing the y -value in a function, $y = f(x)$.

The y -axis may even be labeled as the $f(x)$ axis, when graphing. Ordered pairs may be written as $(x, f(x))$, instead of (x, y) .

Equations

Often in working with a formula we may need to substitute more than one value for the variable.

Example

The cost, c , in cents for making pencils is given by the formula


$$C = 5 + 2n$$

C Cost in cents

n number of pencils made

The cost depends on the number of pencils you buy

function notation

$$C(n) = 5 + 2n$$

copy down **Function**

A function is just an expression evaluated at a specific value



The cost, c , in cents for making pencils is given by the formula



$$C(n) = 5 + 2n$$

$C(n)$ Cost in cents of
"n" pencils

n number of
pencils made

The cost depends on the number of pencils you buy

copy down
Try this on your own!!!!!!!!!!!!!!!!!!!!

Example



The equation $V = -0.08d + 50$ represents the volume, V liters, of gas remaining in a vehicle's tank after travelling d kilometers. The tank is not filled until it is empty.



- a) Describe the function.
Write the equation in function notation.

$$V(d) = -0.08d + 50$$

- b) Determine the value of $V(600)$.
What does this number represent?

- c) Determine the value of d when $V(d) = 26$.
What does this number represent?

→ 26L in my tank after driving?

b) $V(d) = -0.08d + 50$

Evaluate $V(600)$

$d = 600$

$$V(600) = -0.08(600) + 50$$

$$= -48 + 50$$

$$V(600) = 2$$

There is 2L of gas remaining in the tank after driving 600 km.

c) $V(d) = -0.08d + 50$

$$26 = -0.08d + 50$$

$$26 - 50 = -0.08d + 50 - 50$$

$$-24 = -0.08d$$

$$\frac{-24}{-0.08} = \frac{-0.08d}{-0.08}$$

$$300 = d$$

I would have to drive 300 km to have 26L left in my tank.

1. Given the function $f(x) = 3x - 5$, find $f(4)$.

$$f(x) = 3x - 5$$

\downarrow
 $x=4$

$$f(4) = 3(4) - 5$$

$$= 12 - 5$$

$f(4) = 7$

(x, y)
 $(4, 7)$

2. Find the value of $h(b) = 3b^2 - 2b + 1$ when $b = -3$ and $b = 2$

$b = -3$

$$h(b) = 3b^2 - 2b + 1$$

$$h(-3) = 3(-3)^2 - 2(-3) + 1$$

$$= 3(9) - 2(-3) + 1$$

$$= 27 + 6 + 1$$

$h(-3) = 34$

$\left. \begin{array}{l} \\ \\ \\ \end{array} \right\} \text{BEDMAS}$

$\#1$ $\#2$

$b = 2$

$$h(b) = 3b^2 - 2b + 1$$

$$h(2) = 3(2)^2 - 2(2) + 1$$

$$= 3(4) - 2(2) + 1$$

$$= 12 - 4 + 1$$

$h(2) = 9$

3) Given the equation $p = 3x - 4$

a) Write as function notation.

$$p(x) = 3x - 4$$

b) Find the value of $p(20)$.

$$p(20) = 3(20) - 4$$

$$= 60 - 4$$

$p(20) = 56$

c) if $p(x) = -37$ find x ?

$$-37 = 3x - 4 + 4$$

$$\frac{-33}{3} = \frac{3x}{3}$$

$-11 = x$

4) if $d(m) = -3x^2 - 5$ and $r(t) = 10t - 6$, Find $r(d(3))$

Step 1

$$d(m) = -3x^2 - 5$$

$$d(3) = -3(3)^2 - 5$$

$$= -3(9) - 5$$

$$= -27 - 5$$

$d(3) = -32$

work from inside out

Step 2 $r(-32)$

Answer to $d(3)$ \downarrow sub into r

$$r(t) = 10t - 6$$

$$r(-32) = 10(-32) - 6$$

$$= -320 - 6$$

$$= -326$$

Answer:

$$r(d(3)) = -326$$

Function Notation

Recap

- To represent functions, we use symbols like $f(x)$ and $g(x)$.
- The symbol $f(x)$ is read "f of x" and simply means that the expression that follows involves x .

Complete for Homework

Evaluating Functions

Show all work

1) If $f(x) = 3x^2 - x - 6$, find...

a) $f(5)$

b) $f(-7)$

c) $f(-3)$

2) If $g(x) = x + 3$ and $h(x) = -3x - 2$

a) $g(5)$ b) $g(7)$ c) $h(-10)$ d) $h(5)$

e) $g(h(4))$ f) $g(x) = 33$ g) $h(x) = -41$