

## Station 1: Graphing Stories

KEY

\* STEEPER = FASTER

\* BOTTOM OF GRAPH = AT HOME

Match the situations to the graphs.

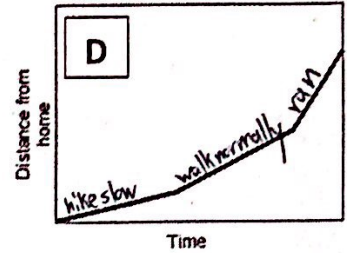
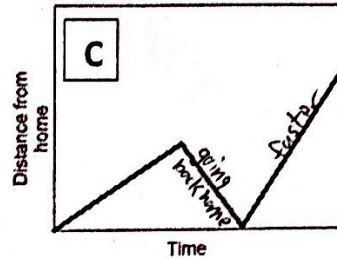
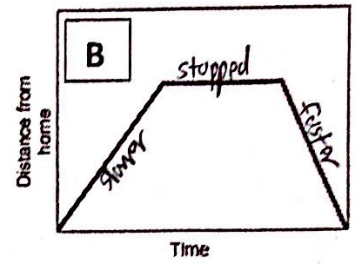
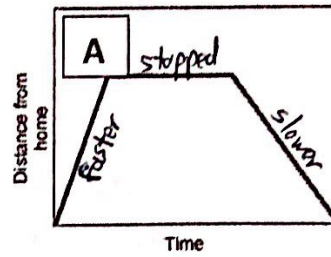
1) Derman left his home and hiked slowly up a hill. He walked normally across the top, then ran quickly down the other side.

**D** Never gets back home!

2) Derman ran to his friend's house. He hung out with his friend for a while, then walked home again. **A**

3) Derman walked to the gas station to buy a candy bar. After he bought it, he saw a ferocious lion. Scared, he ran all the way home. **B**

4) Derman was walking to a birthday party. When he was halfway there, he realized he'd forgotten to bring the present, so he went home to go get it. Once he got the present, he thought he might be late, so he ran all the way to the party. **C**



Draw a graph to represent each situation. Label the x- and y-axis with the given variables.

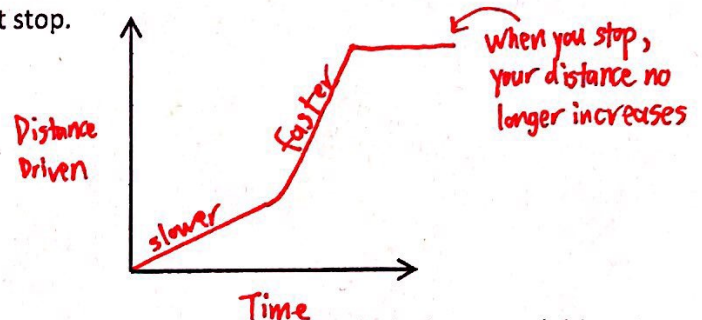
5) You throw a ball straight up in the air. It comes back down about halfway before a bird catches it in its beak. The bird hovers in place while it tries to eat the ball, but then realizes that it isn't food, so it drops the ball to the ground.

x-axis: Time y-axis: Height of ball



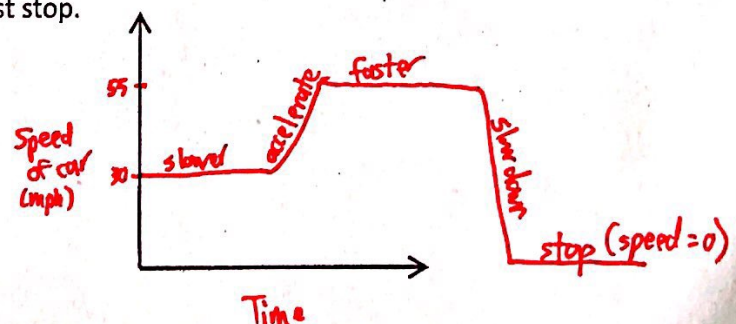
6) You are driving through town at a constant rate of about 30 miles per hour. You then get on the highway, and drive at a constant rate of about 55 miles per hour. You then stop at a rest stop.

x-axis: Time y-axis: Distance driven



7) You are driving through town at a constant rate of about 30 miles per hour. You then get on the highway, and drive at a constant rate of about 55 miles per hour. You then stop at a rest stop.

x-axis: Time y-axis: Speed of the car



## Station 2: Is It a Function? + Evaluating Functions

For 1 – 5, say whether it is a function, and explain why.

KEY

**\* EACH INPUT MUST HAVE ONLY ONE OUTPUT \***

1)

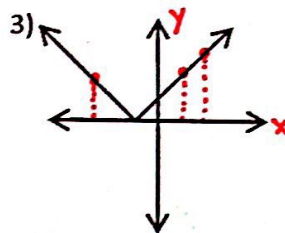
Input	Output
0 →	12
2 →	6
4 →	0
6 →	6
8 →	12

Yes; each input has one output

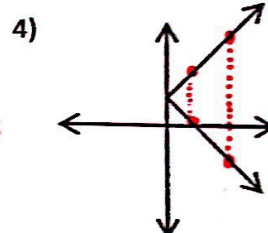
2)

Input	Output
3	20
4	24
5	28
5	32
6	36

No; the input "5" has 2 outputs



Yes; each x-value only has one y-value



No; most x-values have 2 y-values.

5) Input = Person, Output = Current height of that person

Yes, each PERSON has only one CURRENT HEIGHT (Mr. L → 5'3" Lebron James → 6'8")

6) Input = Student, Output = Letter of the row they are sitting in in Mr. Lischwe's class

Yes, each STUDENT only has one GROUP they are sitting in (Jacob → A Jazlyn → A Joanna → B)

7) Input = Word, Output = A vowel that is in that word

No, each WORD could have multiple VOWELS

(Apple → a e Dinosaur → a i o u)

8)  $f(x) = 2x + 3$

Yes, each INPUT will only have one OUTPUT

$$\begin{cases} f(10) = 23 \\ f(22) = 47 \end{cases}$$

Evaluate each function.

9) If  $a(x) = -3x + 4$ , find  $a(7)$ .

$$a(7) = -3(7) + 4$$

$$a(7) = -21 + 4$$

$$a(7) = -17$$

10) If  $b(x) = 5x^2 + |x|$ , find  $b(-3)$ .

$$b(-3) = 5(-3)^2 + |-3|$$

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

$$b(-3) = 45 + 3$$

$$b(-3) = 48$$

### Station 3: Writing Functions from Real-World Situations

1) Tommy is buying DVD's online. Each DVD costs \$15, and there is a one-time shipping cost of \$9.

a) Complete the table:

Input	Output
1	24
2	39
3	54
4	69
5	84

b) What do the inputs represent?

# of DVDs bought

c) What do the outputs represent?

total cost

d) Write a rule in function notation to match the situation.  $C(x) = 15x + 9$

3) Angelica is sad – she only has 3 points on LiveSchool right now! However, she makes a commitment to do all of her homework every day, and each day, she earns 4 more points. State what the inputs and outputs represent, and write a rule in function notation. You can make a table if you feel that will help you.

Inputs: # of days

Outputs: # LiveSchool points

$$P(x) = 3 + 4x$$

2) Chuckie starts a lawn-mowing business. He is able to mow 4 lawns per day.

a) Complete the table:

Input	Output
1	4
2	8
3	12
4	16
5	20

b) What do the inputs represent?

# of days

c) What do the outputs represent?

total # of lawns mowed

d) Write a rule in function notation to match the situation.  $M(d) = 4d$

4) Phil and Lil come to the fair with \$80 total. Each ticket they buy for a ride costs \$3. State what the inputs and outputs represent, and write a rule in function notation that would calculate how much money they have left. You can make a table if you feel that will help you.

Inputs: # of tickets bought

Outputs: Amount of money left

$$M(x) = 80 - 3x$$

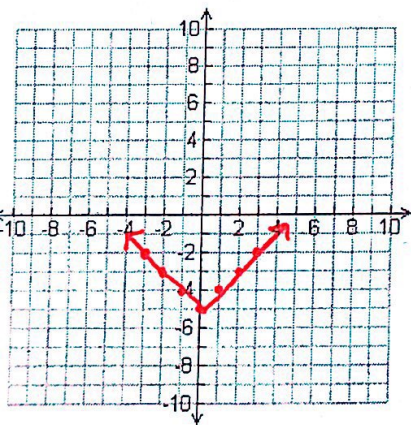


Station 4: Graphing Functions

For each function, complete the table (pick your own inputs if they are not given), and use it to make the graph.

1)  $a(x) = |x| - 5$  ← Absolute value = "V" shape

x	a(x)
-3	-2
-2	-3
-1	-4
0	-5
1	-4
2	-3
3	-2

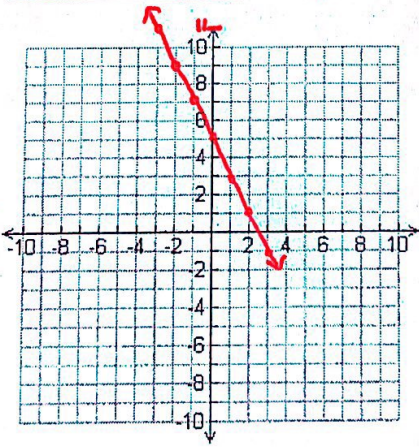


2)  $b(x) = -2x + 5$

x	b(x)
-3	11
-2	9
-1	7
0	5
1	3
2	1
3	-1

Linear!

4	-3
5	-5
6	-7
7	-9
8	-11



3)  $c(x) = \frac{1}{2}x^2$  ←  $x^2$  = parabola!

x	c(x)
-3	4.5
-2	2
-1	0.5
0	0
1	0.5
2	2
3	4.5

\* square it first, THEN multiply by 1/2!

