Linear Patterns in Tables and Their Graphs
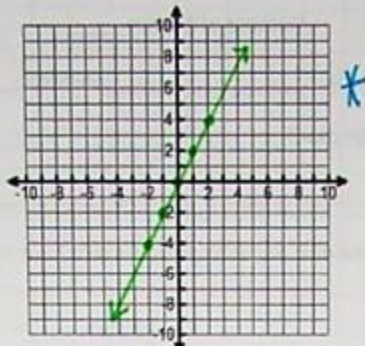
Graph each table. Connect the points and extend them over the coordinate grid.

#1.

x	y
-2	-4
-1	-2
0	0
1	2
2	4

(+2 between each y-value)

Describe the pattern in the y-column as the x-values increase by 1.

y increases by 2

Is the function linear or non-linear?

linear

#2.

x	y
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9

(-5, -3, -1, +1, +3, +5)
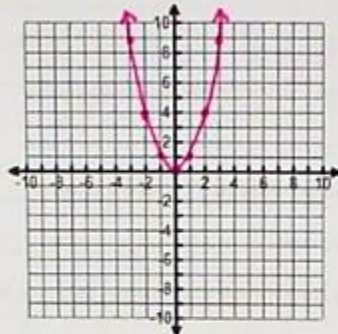
Describe the pattern in the y-column as the x-values increase by 1.

y decreases by 2 less than before until zero, then the pattern reverses in an increase

Is the function linear or non-linear?

nonlinear

#3.

x	y
-1	-3
0	0
1	3
2	6
3	9

(+3 between each y-value)

Describe the pattern in the y-column as the x-values increase by 1.

y increases by 3

Is the function linear or non-linear?

linear

#4.

x	y
0	1
1	2
2	4
3	8
4	16

(×2 between each y-value)

(You can't graph the last point on the given grid.)

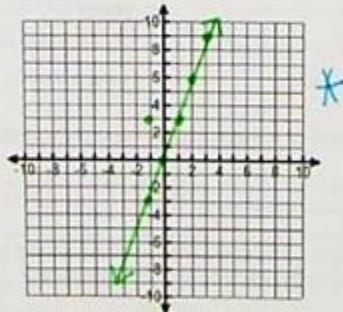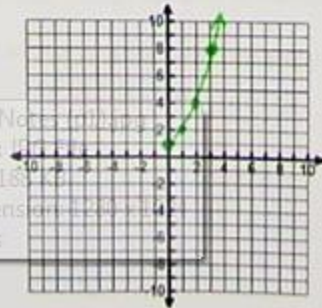Describe the pattern in the y-column as the x-values increase by 1.

y doubles

Is the function linear or non-linear?

nonlinear

#10 Complete each of the following tables of input-output values. Identify the pattern in the y-values and the x-values.

a. $y = 2x$

x	-4	-2	0	2	4	6
y	2(-4) -8	2(-2) -4	2(0) 0	2(2) 4	2(4) 8	2(6) 12

(+2 between each x-value; +4 between each y-value, annotated)

Describe the pattern for the x-values
x increases by 2

Describe the pattern for the y-values
y increases by 4

b. $y = -2x$

x	-3	-2	-1	0	1	2
y						

Describe the pattern for the x-values
_____

Describe the pattern for the y-values
_____

c. $y = -3x$

x	-4	-2	0	2	4	6
y	-3(-4) 12	-3(-2) 6	-3(0) 0	-3(2) -6	-3(4) -12	-3(6) -18

(+2 between each x-value; -6 between each y-value, annotated)

Describe the pattern for the x-values
x increases by 2

Describe the pattern for the y-values
y decreases by 6

d. $y = 3x$

x	-3	-2	-1	0	1	2
y						

Describe the pattern for the x-values
_____

Describe the pattern for the y-values
_____

e. $y = 4x$

x	-6	-3	0	3	6	9
y						

Describe the pattern for the x-values
_____

Describe the pattern for the y-values
_____

f. $y = -5x$

x	-6	-4	-2	0	2	4
y						

Describe the pattern for the x-values
_____

Describe the pattern for the y-values
_____