2.4 Linear Functions and Models   (# 19 – 37 odd, 47 – 69 odd)
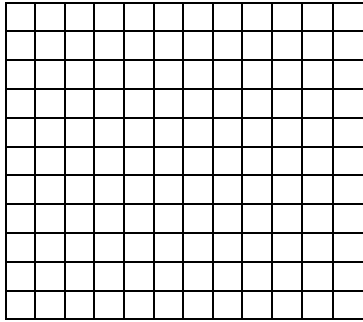
* Graph Linear Functions
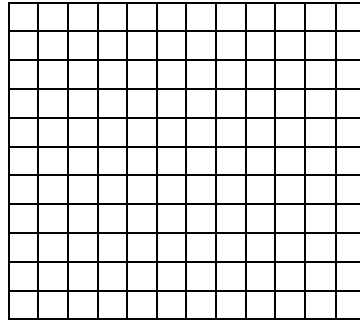
A **Linear Function** is a function of the form $f(x) = mx + b$ where **m** and **b** are real numbers.

ex. Graph the following linear functions:

a. $f(x) = -\dfrac{3}{2}x + 4$

b. $g(x) = -5$

* Find the Zero of a linear Function

ex. Find the zero of $h(x) = -6x + 18$.

* Build Linear Models form Verbal Descriptions

ex. TTC's weekly salary at a paint store is 5% of his weekly sales plus $440. The linear function $S(x) = 0.05x + 440$ describes TTC's weekly salary S as function of his weekly sale x.

a.   What is implied domain of the function?

b.   If TTC earn $600 one week, what was the value of the paint that he sold?

c. If TTC sells paint worth a total of $9876 one week, what is his salary?

d. What value of paint sold will TTC's weekly salary will exceed $1000?

ex. Suppose that a small bicycle manufacture has daily fixed costs of $2000 and each bicycle costs $80 to manufacture. The government imposes a tax of $1 per bicycle manufactured to the company.

a. Write a linear function that expresses the cost of manufacturing x bicycles in a day.

b. What is the cost of manufacturing 5 bicycles in a day?

c. How many bicycles can be manufactured for $2810?

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ex. Roberta just purchased a new car. Her monthly payments are $250 per month. She estimates that maintenance and gas cost her $0.81 per mile.

a. Write a liner function that relates the monthly cost C of operating the car as a function of miles driven x.

b. What is the implied domain of this linear function?

c. What is the monthly cost of driving 320 miles?

d. How many miles can Roberta drive each month if she can afford the monthly cost to be 4282.40?