4.3: Graph Linear Equations Using *x* and *y* Intercepts
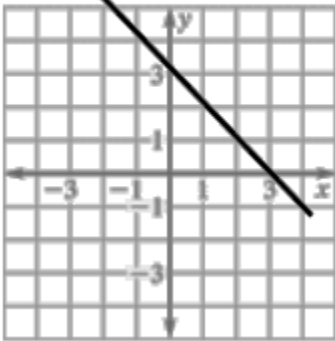
Goals: *Identify *x* and *y* intercepts on a graph
　　　*Find *x* and *y* intercepts from a linear equation
　　　*Graph lines using *x* and *y* intercepts
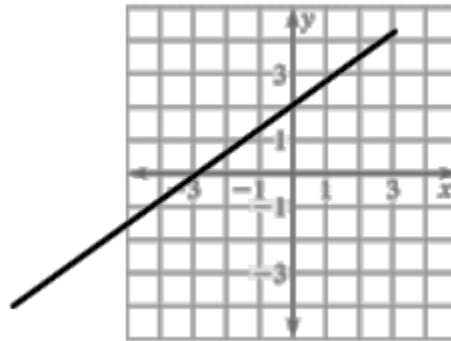　　　*Interpret the meaning of *x* and *y* intercepts

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x – **intercept:**

y – **intercept:**

Identify the *x* and *y* intercepts of the lines graphed.
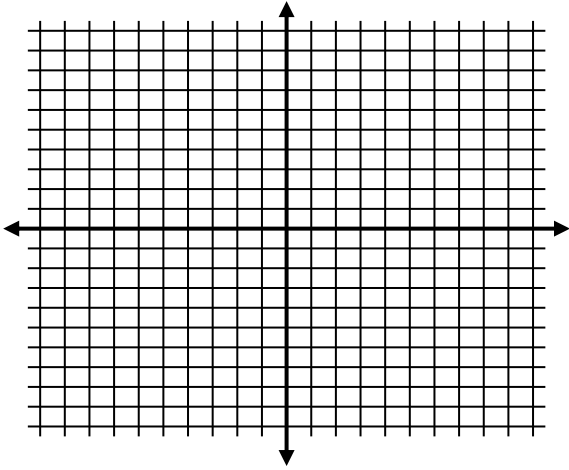
Ex:

Ex:
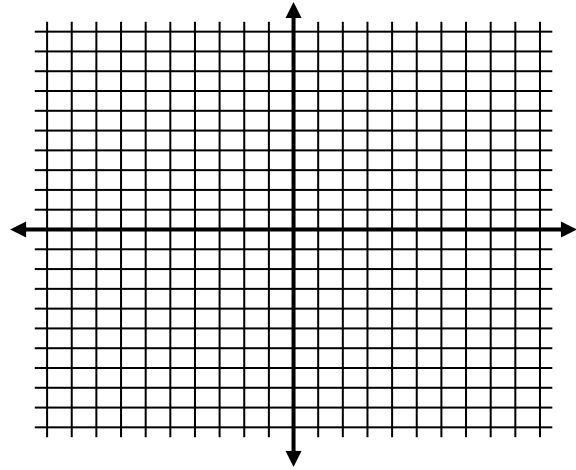

Ex:
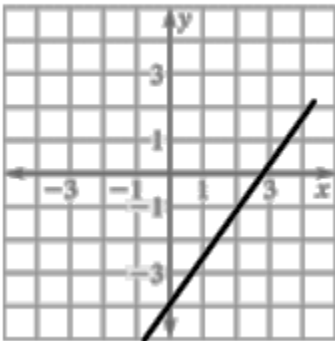
Ex:
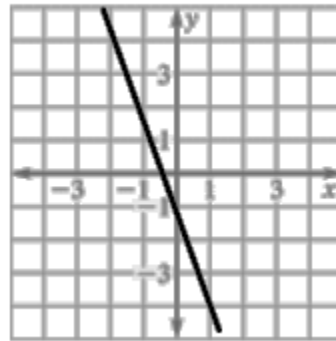
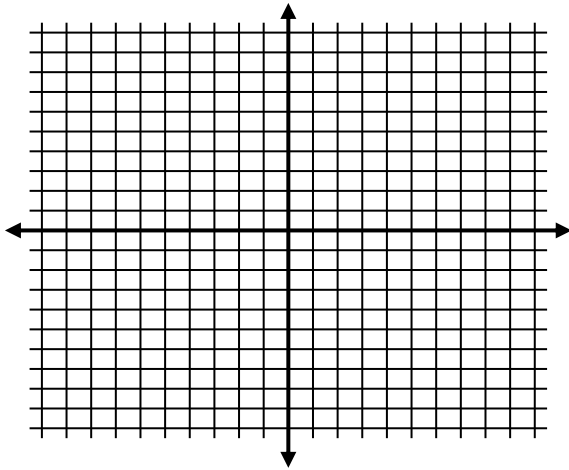**Graph each line using the *x* and *y* intercepts.**

Ex: $2x + 7y = 28$ **Ex:** $3x + 2y = 6$
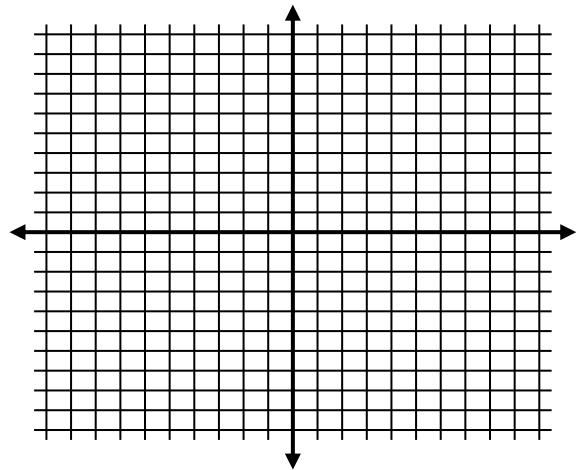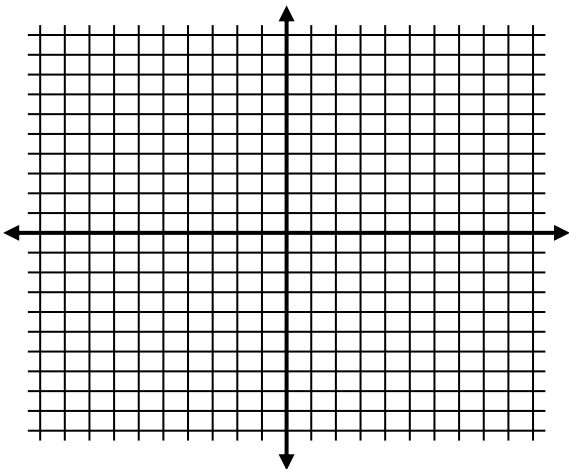
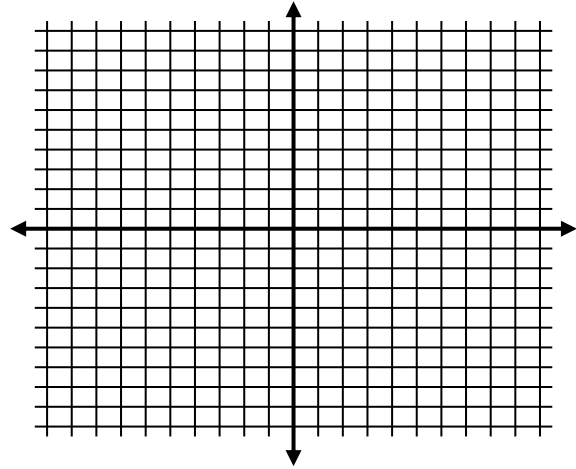**Ex:** $4x - 2y = 10$ **Ex:** $-3x + 5y = -15$
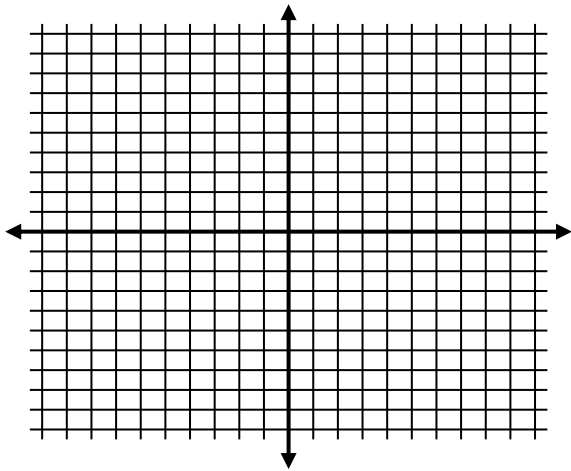
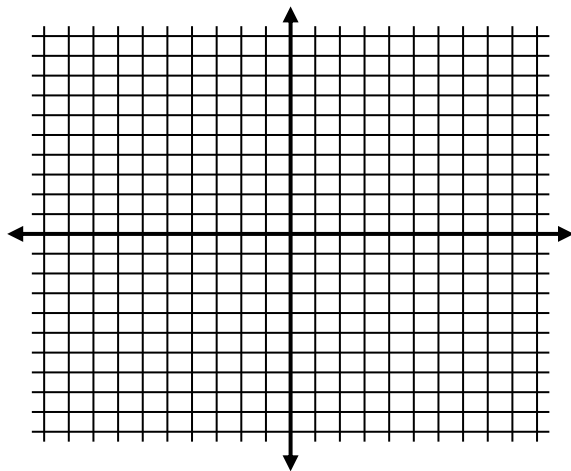**Ex:** $x + 2y = 4$ **Ex:** $3x - 4y = 12$

Ex: $y = x - 4$ **Ex:** $y = 2x + 6$

Ex: You are helping plan an awards banquet for your school and you need to rent tables to seat 180 people. Tables come in two sizes. Small tables seat 4 people and large tables seat 6 people.

a) Let x equal the number of small tables and y equal the number of large tables. Write an equation to represent the situation.

b) Graph the equation.

c) What do the intercepts mean?

d) Give 4 possible combinations of small and large tables you could use.

number of large tables

5 10 15 20 25 30 35 40 45 50

5 10 15 20 25 30 35 40 45 50

number of small tables
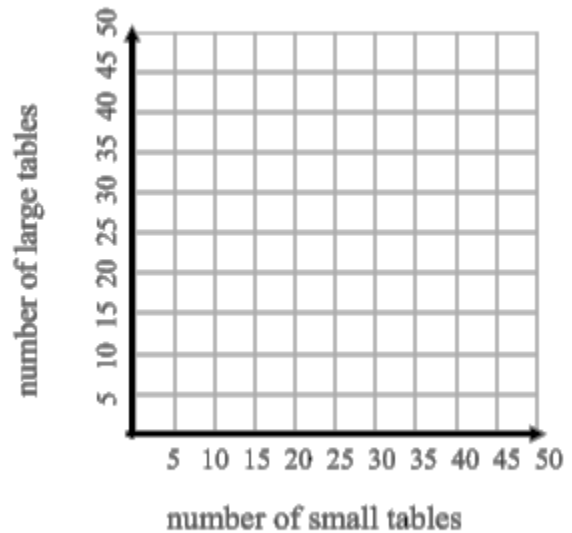
e) Identify the domain and range of the function.

Domain: _____ ≤ x ≤ _____
            (min)   (max)

Range: _____ ≤ y ≤ _____
            (min)   (max)

Ex: You make and sell decorative bows. You sell small bows for $3 and large bows for $5. You want to earn $60.

a) Write an equation to represent the situation

b) Graph the equation

c) What do the intercepts mean?

number of large bows

2 4 6 8 10 12 14 16 18 20

2 4 6 8 10 12 14 16 18 20

number of small bows
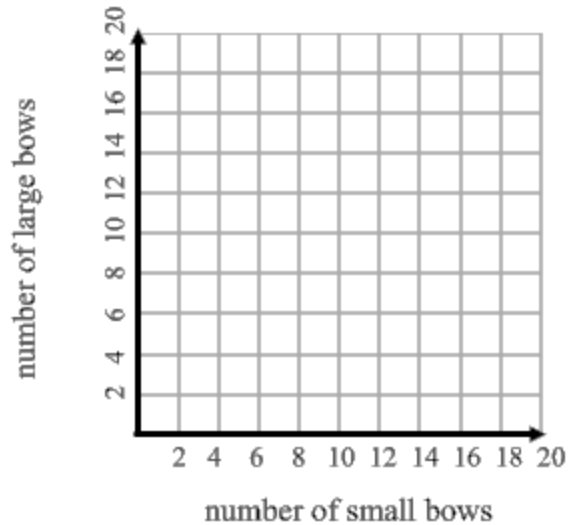
d) Give 3 possible combinations of small and large bows you could sell.

e) Identify the domain and range of the function.

Ex: A submersible is designed to explore the ocean floor at −13,000 feet. The submersible ascends to the surface at a rate of 650 feet/minute. The equation:

$$e = 650t - 13000$$

models this situation, where e is elevation and t is time (in minutes) since it began to ascend.

a) Graph the equation.

time

b) Explain the meaning of the x and y intercepts.

0   2   4   6   8   10   12   14   16   18   20   22   24

0

-1350

-2700

-4050

-5400

c) Identify the domain and range.

-6750

-8100

-9450

-10800

-12150

-13500

elevation

y