

Graphs of Linear Systems (Standard Form: $Ax + By = C$)

Example 1: You are running a concession stand at the basketball game. You sell hotdogs for \$1 and sodas for \$2. You sold a total of 120 items. At the end of the night, you made \$200.

Define your variables: h : hotdogs s : sodas

Write a system of equations: $h + s = 120$
 $1h + 2s = 200$

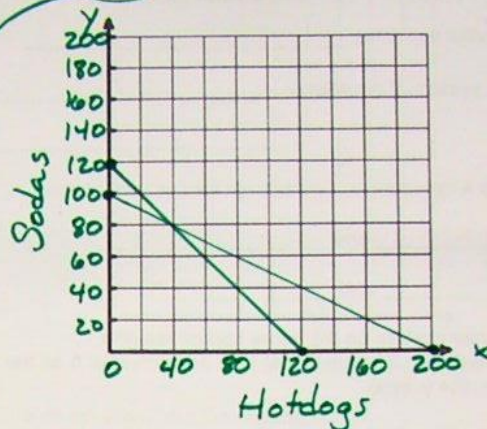
Find the x-intercept and y intercept for both equations.

Eq. 1: $(0, 120)$ and $(120, 0)$ $h + s = 120$

Eq 2: $(0, 100)$ and $(200, 0)$ $1h + 2s = 200$

Graph your system on the same coordinate grid.

(Hotdogs, Sodas) Use an interval of 20 on the x-axis and 20 on the y-axis)



State the coordinates of intersection. Explain what these coordinates tell you about the situation.

$(40, 80)$ We sold 40 hotdogs & 80 sodas that totals 120 items worth \$200

Example 2: Beaumont is sponsoring a pancake dinner to raise money for a field trip. Each adult ticket will cost \$20 and each child's ticket will cost \$10. You estimate a total of 70 tickets to be sold. At the end of the night, you made \$900.

Define your variables: a : adults c : children

Write a system of equations: $a + c = 70$
 $20a + 10c = 900$

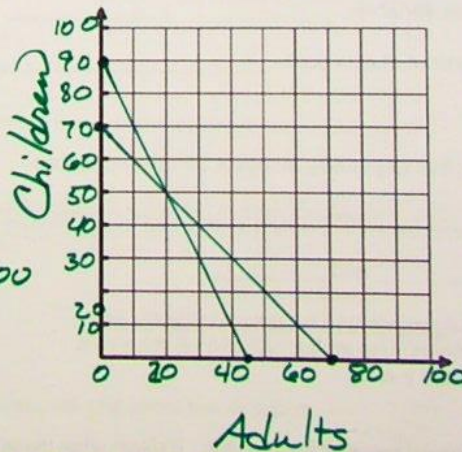
Find the x-intercept and y intercept for both equations.

Eq. 1: $(0, 70)$ and $(70, 0)$ $\leftarrow a + c = 70$

Eq 2: $(0, 90)$ and $(45, 0)$ $\leftarrow 20a + 10c = 900$

Graph your system on the same coordinate grid.

(Adults, Children) Use an interval of 10 on the x-axis and 10 on the y-axis)



State the coordinates of intersection. Explain what these coordinates tell you about the situation.

$(20, 50)$ 20 Adults & 50 children total 70 tickets & \$900

$$\begin{array}{r} 20 + 50 \\ 70 \end{array}$$

$$\begin{array}{r} 20 \cdot 20 + 10 \cdot 50 \\ 400 + 500 \\ 900 \end{array}$$