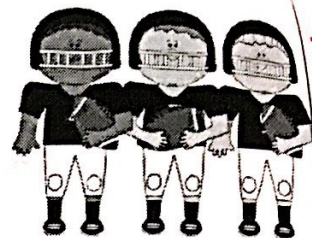


There are 48 football players who are traveling for a game. Cars seat 4 passengers. Vans seat 6 passengers. The drivers of both vehicles will be someone who is not on the team.



How many different ways can you get these players in cars and vans (assuming, every vehicle has to be full)?

48 people Determine some possible solutions.

Patterns
4 players / car 6 players / van

Number of cars, x	Number of vans, y
0	8
12	0
9	2
6	4
3	6

Solutions

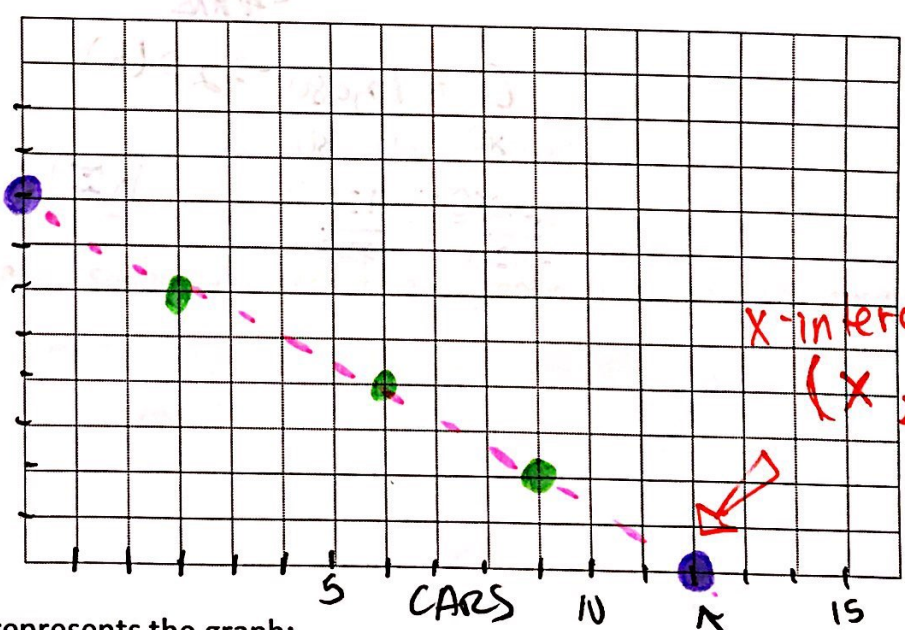
(x, y)

When (x, y) are substituted into a function and you get a TRUE statement.

5(4) + 2(6) = 48 (5, 2) NOT A SOLUTION

Graph

zero cars, 8 vans
y-intercept: (0, y)
• x has to be zero
• where graph crosses y-axis



x-intercept: (x, 0)
y-value has to be zero

Equations
Write the equation of the line that represents the graph:

$$4x + 6y = 48$$

This equation is in STANDARD FORM:
When a linear equation is written so that x and y are on the same side and have whole number coefficients (no decimals or fractions).

Part 3: How to graph a line using intercepts

Ex 1: $5x + 3y = 30$

$$5x + 3(0) = 30$$

$$5x = 30$$

$$\frac{5x}{5} = \frac{30}{5}$$

$$x = 6$$

$$5(0) + 3y = 30$$

$$3y = 30$$

$$\frac{3y}{3} = \frac{30}{3}$$

$$y = 10$$

x	y
6	0
0	10
3	5

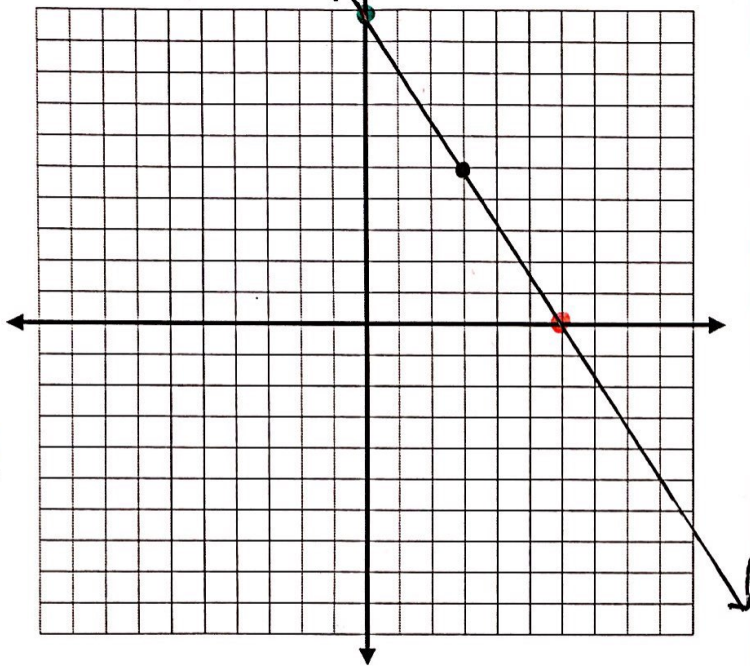
$$5(3) + 3y = 30$$

$$15 + 3y = 30$$

$$-15 \quad -15$$

$$\frac{3y}{3} = \frac{15}{3}$$

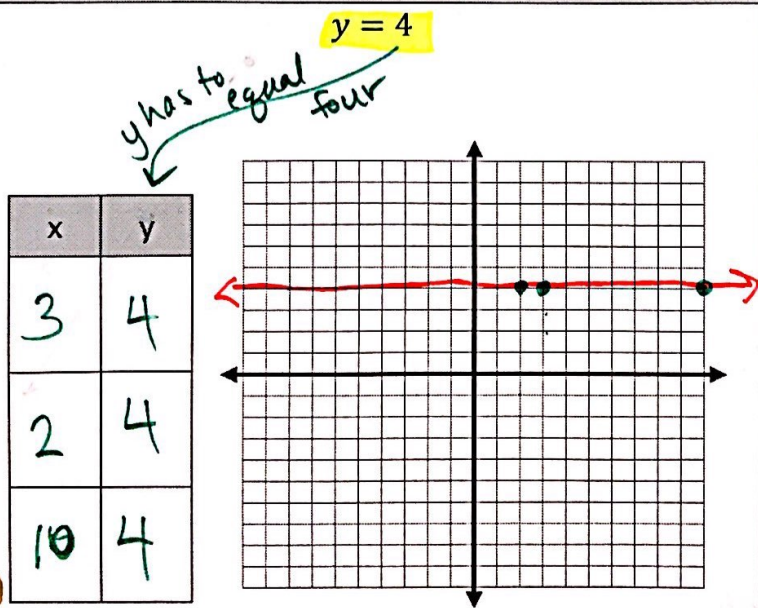
$$y = 5$$



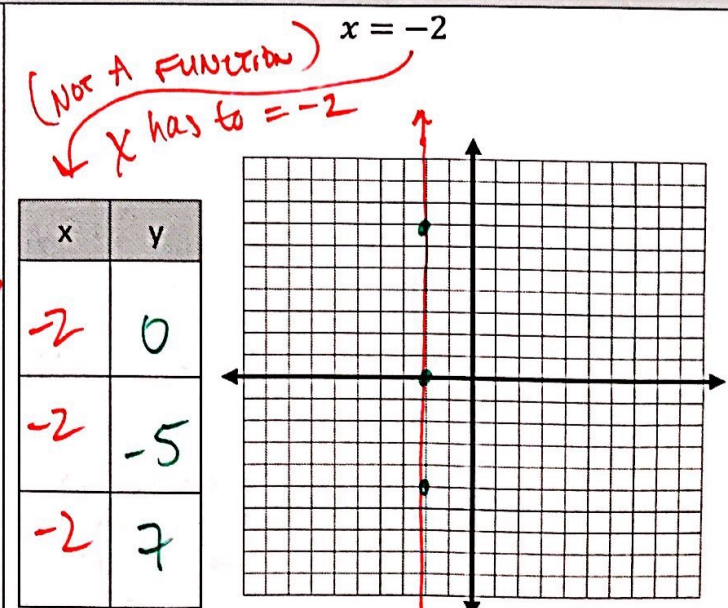
- Find the x-intercept
 - Substitute 0 for y into equation
 - Solve for x
 - Put ordered pair in the table: $(x, 0)$
- Find the y-intercept
 - Substitute 0 for x into equation
 - Solve for y
 - Put ordered pair in the table: $(0, y)$
- Choose any x (recommend a value between the x-coordinates you have in table.)
 - Substitute x-value
 - Solve for y
 - Put ordered pair in the table
- Plot all 3 ordered pairs.

If done correctly, you should have a LINE.

Graph using intercepts.



Function form:



Function form:

Examples:

- Identify the equation in standard form and in function form.
- Identify the x and y-intercepts of the function; express them as ordered pairs.
- Graph the equation USING the x and y-intercepts.

1. $-12x + 3y = 24$



Standard form:

$-12x + 3y = 24$

Function form:

x-intercept: $(-2, 0)$

$-12x + 3(0) = 24$

$\frac{-12x}{-12} = \frac{24}{-12}$

$x = -2$

$x = -2$

y-intercept: $(0, 8)$

$-12(0) + 3y = 24$

$\frac{3y}{3} = \frac{24}{3}$

$y = 8$

Find one more ordered pair:

$x = -1$

$-12(-1) + 3y = 24$

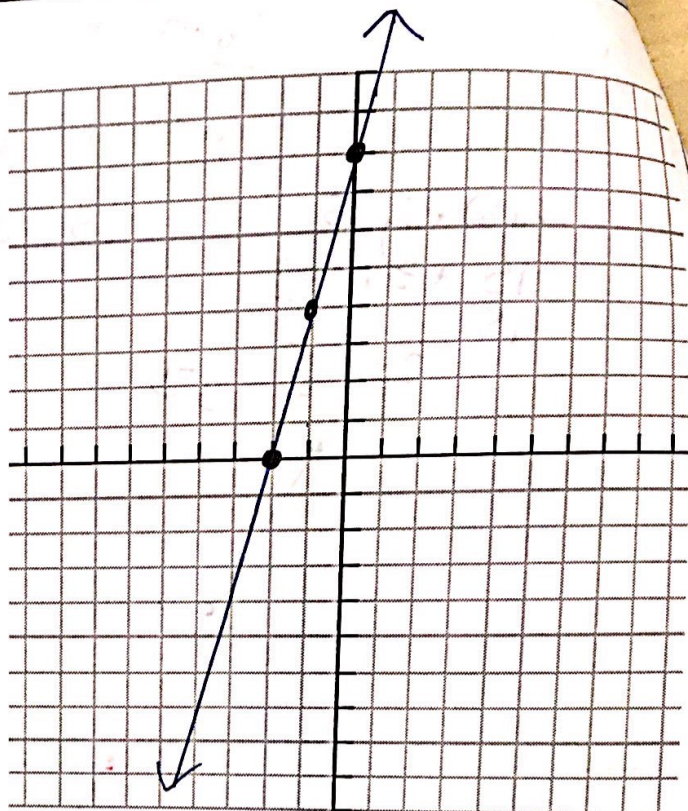
$12 + 3y = 24$

$-12 \quad -12$

$\frac{3y}{3} = \frac{12}{3}$

$y = 4$

X	Y
-2	0
0	8
-1	4



2. $3x + 2y = 18$



Standard form:

$3x + 2y = 18$

Function form:

x-intercept: $(6, 0)$

$3x + 2(0) = 18$

$\frac{3x}{3} = \frac{18}{3}$

$x = 6$

y-intercept: $(0, 9)$

$3(0) + 2y = 18$

$\frac{2y}{2} = \frac{18}{2}$

$y = 9$

Find one more ordered pair: $x = 3$

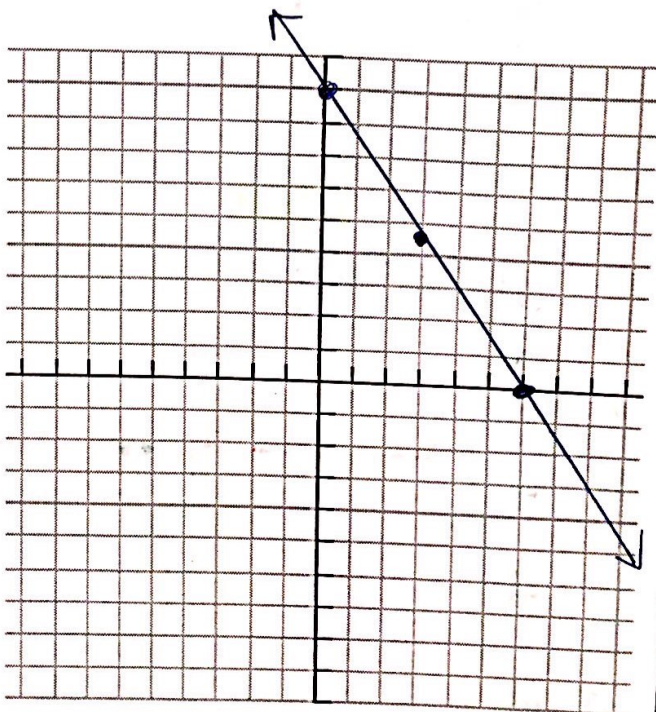
$3(3) + 2y = 18$

$9 + 2y = 18$

$-9 \quad -9$

$\frac{2y}{2} = \frac{9}{2} \quad y = 4.5$

X	Y
6	0
0	9
3	4.5



Exit Ticket: What are the advantages and disadvantages of plotting a line by using intercepts?