

Standard Form of a Line is $AX + BY = C$ ← constant
 where A, B, + C are real #'s. No Fractions or decimals in standard form. (x + y are on the side)

Case 1 Write in standard

Form using integers. * to get rid of fractions - multiply each term by the LCD * then get x + y on the same side.

ex $4 \cdot y = 4 \cdot \frac{3}{4}x + 4 \cdot 2$
 $4y = 3x + 8$
 $-3x \quad -3x$

$-3x + 4y = 8$

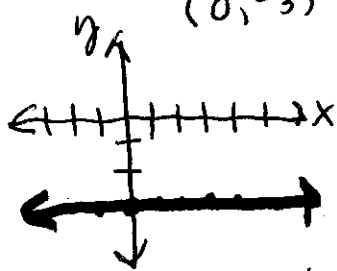
ex $y = -\frac{2}{5}x + \frac{1}{10}$
 $+4x \quad +4x$
 $10y = -4x + 1$

$4x + 10y = 1$

Case 3:

Horizontal Lines:

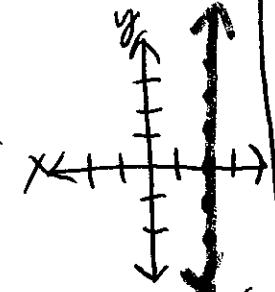
$y = \#$ ex $y = -3$
 every point on that line has a y-value of -3.
 (0, -3) (1, -3) (2, -3) ...



* Line goes thru the y-axis at that #.

Vertical Lines:

$x = \#$ ex $x = 2$
 every point has an x-value of 2
 (2, 1) (2, 2) (2, 0) (2, -1)



* Line goes thru the x-axis at that #

Standard Form (6.4)

Point-slope (6.5)

Case 2: Find x + y intercepts

- To find the x-intercept: Plug in zero for y, solve for x. x-int: (x, 0)
- To find the y-intercept: Plug in zero for x, solve for y. y-int: (0, y)

Examples:

ex 1 $3x + 4y = 8$
 1st: $3x + 4 \cdot 0 = 8$ 2nd: $3 \cdot 0 + 4y = 8$
 $3x + 0 = 8$ $0 + 4y = 8$

$\frac{3x}{3} = \frac{8}{3}$

$x = 2\frac{2}{3}$

x-int: $(2\frac{2}{3}, 0)$

$\frac{4y}{4} = \frac{8}{4}$

$y = 2$

y-int: $(0, 2)$

ex 2

$6x - 3y = 9$

1st: $6x - 3 \cdot 0 = 9$

$6x - 0 = 9$

$\frac{6x}{6} = \frac{9}{6}$

$x = 1.5$

2nd: x-int = $(1.5, 0)$

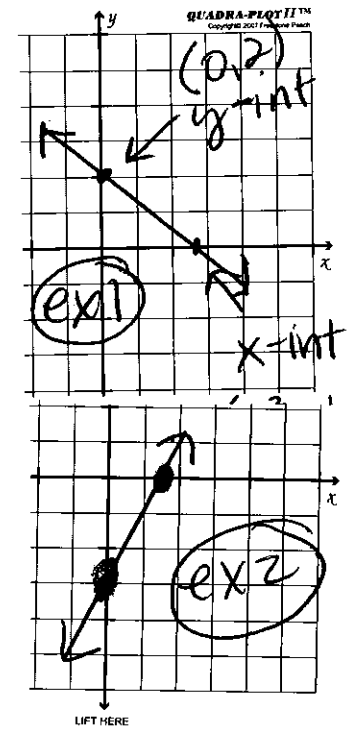
$6 \cdot 0 - 3y = 9$

$0 - 3y = 9$

$\frac{-3y}{-3} = \frac{9}{-3}$

$y = -3$

y-int: $(0, -3)$



LIFT HERE

p. 333 textbook

36 (a) $c = \text{cars } (x)$
 $v = \text{vans } (y)$

(b) $5x + 6.50y = 800$
OR
 $5c + 6.50v = 800$

Graph (Find the $x + y$ -intercepts) Case 2 *

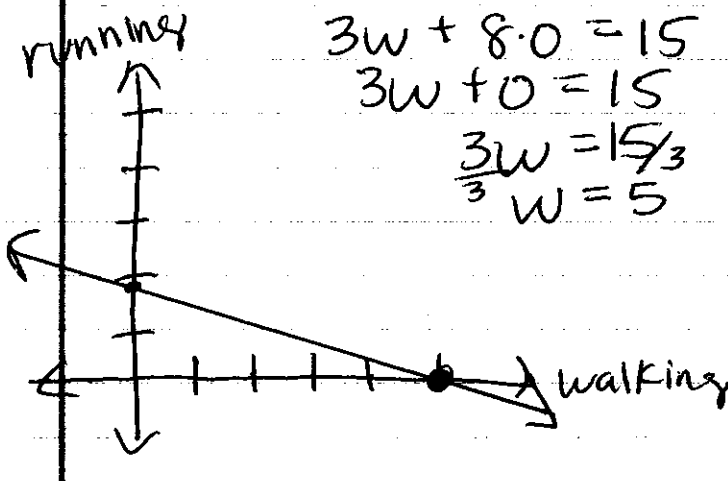
$$\begin{array}{l|l} 5c + 6.5(0) = 800 & 5 \cdot 0 + 6.5v = 800 \\ 5c + 0 = 800 & 0 + 6.5v = 800 \\ \frac{5c}{5} = \frac{800}{5} & \frac{6.5v}{6.5} = \frac{800}{6.5} \\ \text{cars } c = 160 & v = 123.07 \end{array}$$

X-axis (160, 0)

Y-axis (0, 123.07)

37 (a) $w = \text{walking}$ $r = \text{running}$

(b) $8r + 3w = 15$
OR
 $3w + 8r = 15$



$$\begin{array}{l} 3w + 8 \cdot 0 = 15 \\ 3w + 0 = 15 \\ \frac{3w}{3} = \frac{15}{3} \\ w = 5 \end{array}$$

$$\begin{array}{l} 3 \cdot 0 + 8r = 15 \\ 0 + 8r = 15 \\ \frac{8r}{8} = \frac{15}{8} \\ r = 1\frac{7}{8} \end{array}$$

30

vans

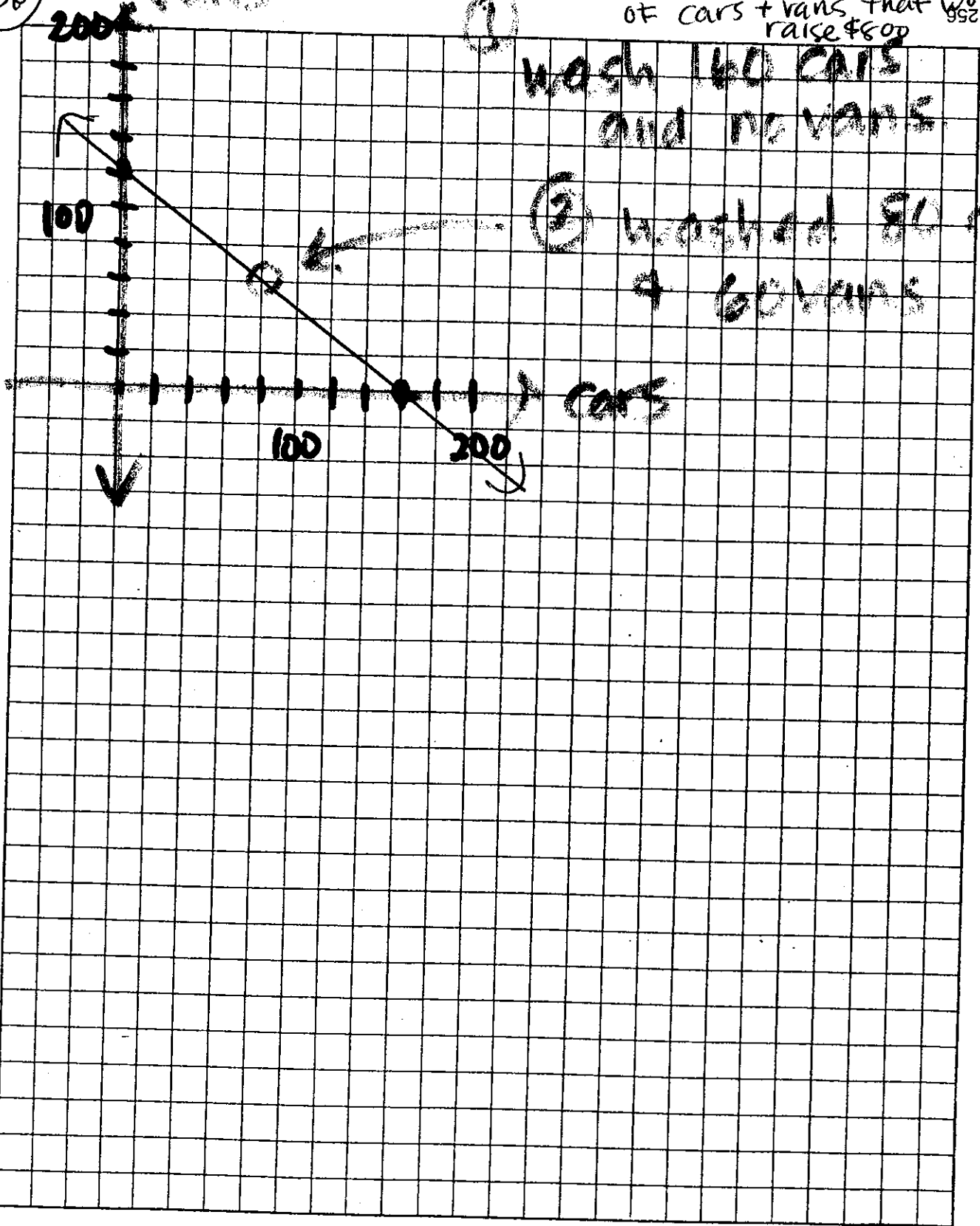
2 different combinations of cars + vans that would raise \$800

①

wash 160 cars and no vans

②

washed 80 cars + 60 vans



Case 2

WORK on a sep. sheet for the intercepts

Why Did the Rug Roll Up Around His Girl Friend?

Write the x- and y-intercepts of the graph of the equation. Then use them to draw the graph. If extended, the graph will cross a letter. Write this letter in the box containing the exercise number.

18

1 $x + y = 4$

2 $-x + y = 4$

5 $3x + 4y = 12$

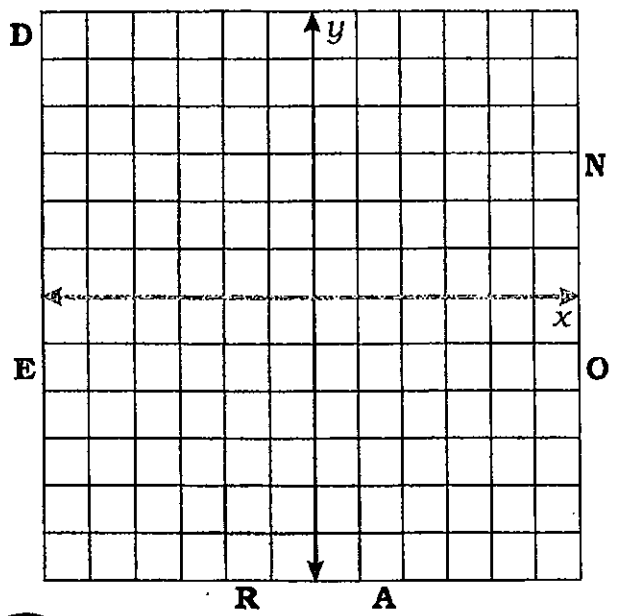
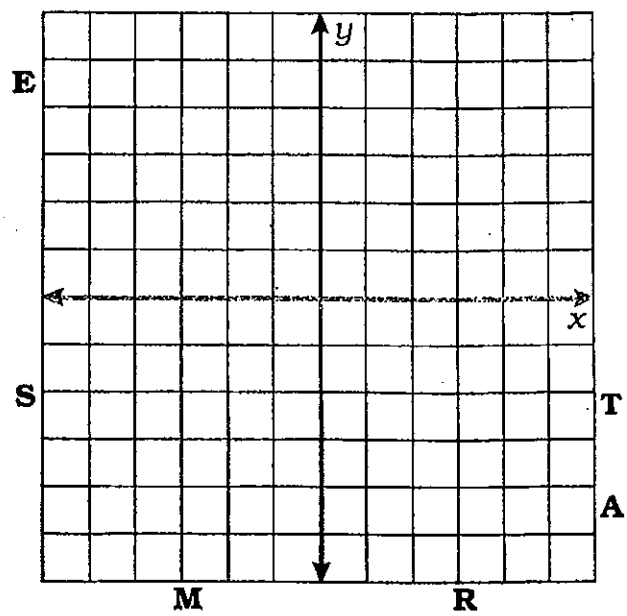
6 $-3x + 4y = 12$

3 $2x + 5y = 10$

4 $-2x - 5y = 10$

7 $4x + 3y = -12$

8 $-4x + 3y = -12$



9 $2x + y = 5$

10 $3x - 2y = 9$

13 $5x - 3y - 15 = 0$

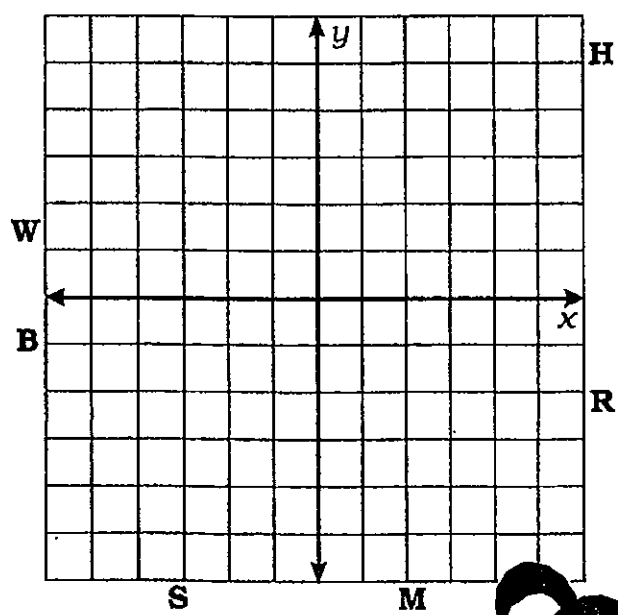
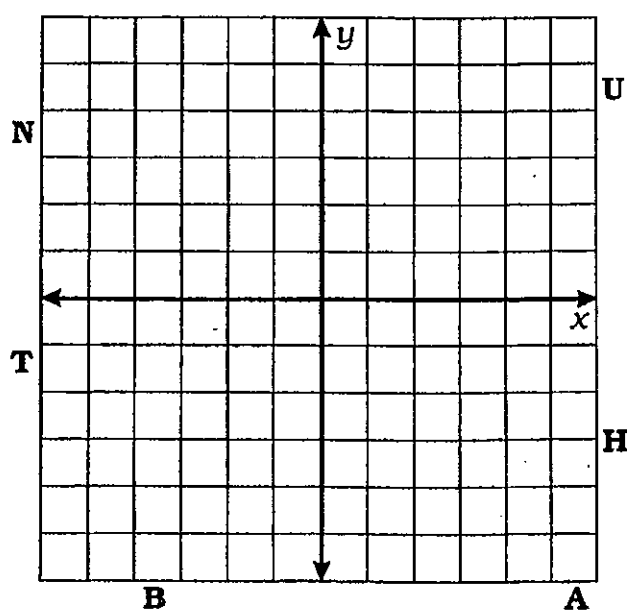
14 $x + 2y + 3 = 0$

11 $x + 4y = -6$

12 $-5x + 8y = 20$

15 $-3x + 5y - 15 = 0$

16 $y = 6 - 6x$



11 6 14 9 2 16 7 12 4 15 5 10 1 13 3 8



Why Did the Orchestra Get an "R" Rating?

Write the equation in the form indicated. Circle the letter next to the correct equation, then write this letter in each box containing the exercise number.

In Exercises 1-7, write the equation in slope-intercept form.

1. $y + 8 = 3(x + 2)$

K $y = 3x - 6$

H $y = 3x - 2$

2. $y - 5 = \frac{1}{2}(x + 4)$

T $y = \frac{1}{2}x - 1$

D $y = \frac{1}{2}x + 7$

3. $y - 9 = -5(x - 2)$

A $y = -5x + 19$

E $y = -5x - 1$

4. $y + 1 = \frac{2}{3}(x - 12)$

Y $y = \frac{2}{3}x - 4$

U $y = \frac{2}{3}x - 9$

5. $y - 2 = \frac{7}{4}(x + 1)$

I $y = \frac{7}{4}x + \frac{15}{4}$

B $y = \frac{7}{4}x + \frac{3}{4}$

6. $y - 4 = -\frac{1}{5}(x - 3)$

P $y = -\frac{1}{5}x + \frac{23}{5}$

S $y = -\frac{1}{5}x + \frac{8}{5}$

7. $y - 7 = -\frac{8}{3}(x + 2)$

P $y = -\frac{8}{3}x - \frac{29}{3}$

V $y = -\frac{8}{3}x + \frac{5}{3}$

In Exercises 8-14, write the equation in standard form with integer coefficients.

Case 1

8. $y = 2x + 9$

WORK

M $-2x + y = 9$

L $2x - y = 9$

9. $y = \frac{4}{3}x - 1$

R $-4x - 3y = 1$

N $-4x + 3y = -3$

10. $y = -\frac{5}{8}x + 3$

S $5x - 8y = 15$

C $5x + 8y = 24$

11. $y = -4x - 15$

L $4x + y = -15$

G $-4x + y = 15$

12. $y = \frac{3}{10}x + 8$

B $-3x - 10y = 60$

X $-3x + 10y = 80$

13. $y = -\frac{16}{5}x + \frac{4}{5}$

O $16x + 5y = 4$

E $-16x - 5y = 4$

14. $y = \frac{7}{4}x - \frac{1}{8}$

R $14x + 8y = -8$

S $-14x + 8y = -1$

6	13	13	8	4	10	1	14	3	12	3	9	2	7	5	13	11	5	9	14
---	----	----	---	---	----	---	----	---	----	---	---	---	---	---	----	----	---	---	----

Review

extra: Comparing Slopes

- Which of these two graphed lines has the greater slope?
- What is the slope of the speeding bullet graph?
- What is the slope of the Superman graph?
- Which is faster, Superman or a speeding bullet?

