

1) The Yellow Cab Company charges just \$0.25 a mile, but it costs \$5 to get in the cab. Express Cab charges no fee to get in the cab, but \$1.50 a mile for the ride.

a. Write an equation to represent each company.

let  $C$  = total cost  
 $M$  = # of miles

Yellow Cab  
 $C = .25M + 5$

Express Cab  
 $C = 1.50M$

b. If you are going 7 miles, which cab company should you call?

Yellow  
 $C = .25(7) + 5$   
 $C = \$6.75$

Express  
 $C = 1.50(7)$   
 $C = \$10.50$

Yellow Cab

c. If you are going 3 miles, which company should you call?

$C = .25(3) + 5$   
 $C = \$5.75$

$C = 1.5(3)$   
 $C = \$4.50$

Express

d. For what length of drive is the cost equal?

$$\begin{array}{r} .25M + 5 = 1.50M \\ -.25M \quad -.25M \\ \hline 5 = 1.25M \\ \frac{5}{1.25} = \frac{1.25M}{1.25} \end{array}$$

$M = 4$

4 miles

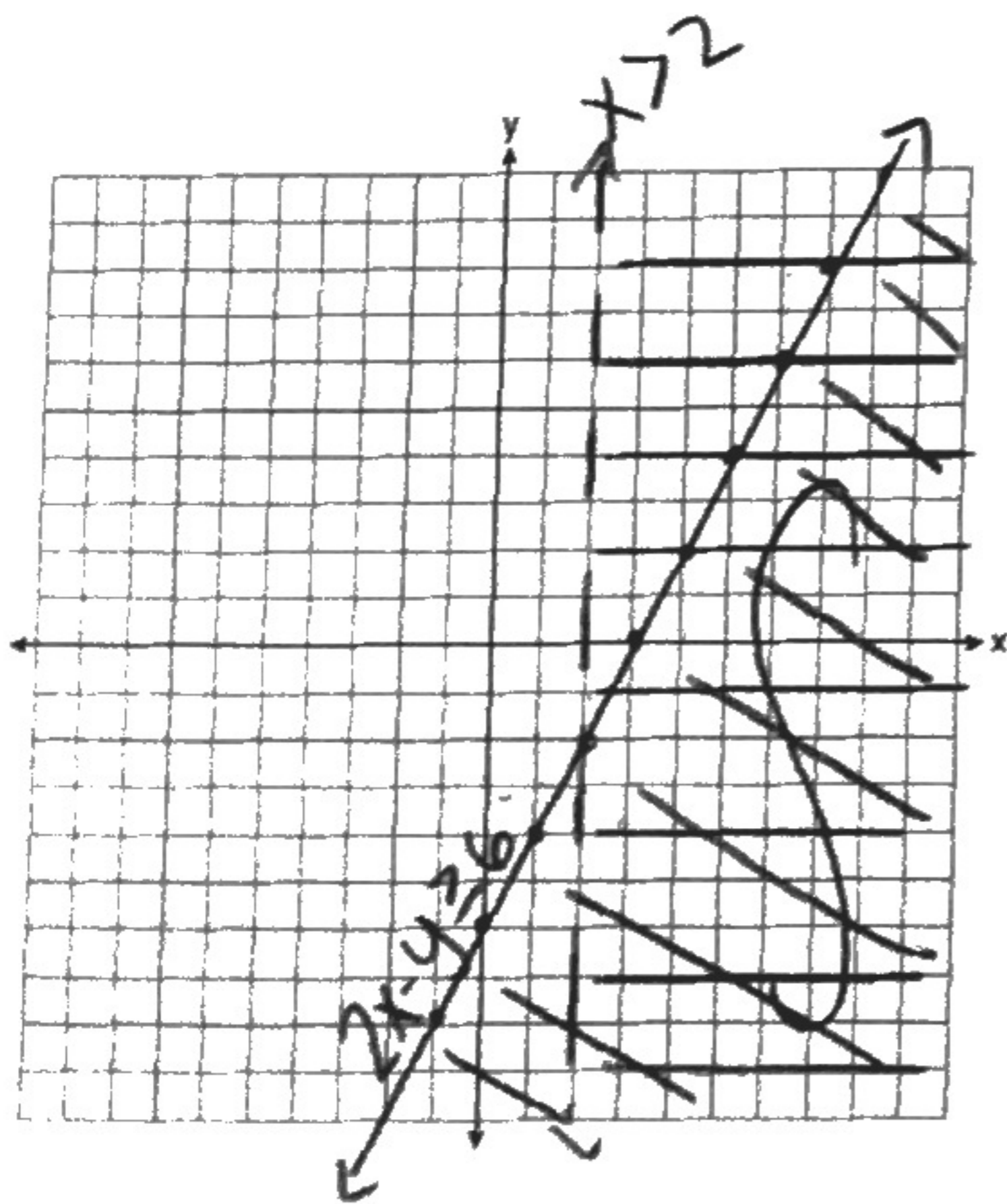
2) On the set of axes below, graph the following system of inequalities and state the coordinates of a point in the solution set.

$2x - y \geq 6 \rightarrow 2x - 6 \geq y \rightarrow y \leq 2x - 6$   
 $x > 2$

Test (0,0)

$0 \leq 2(0) - 6$

$0 \leq -6 \quad \times$



\*State any point in the double shaded region

- ex. (3,0)  
 (4,-2)



3) There are three towing companies in Great Neck that you can call if your care breaks down. Each one charges a different rate.

Auto Shop towing:

\$15 to come pick you up, \$.50 a mile for the tow.

Benny's wrecker service:

\$10 to come pick you up, \$.75 a mile for the tow.

Cary Automotive:

6 miles cost \$10, 12 miles costs \$19

A) Write an equation that represents the cost of each company.

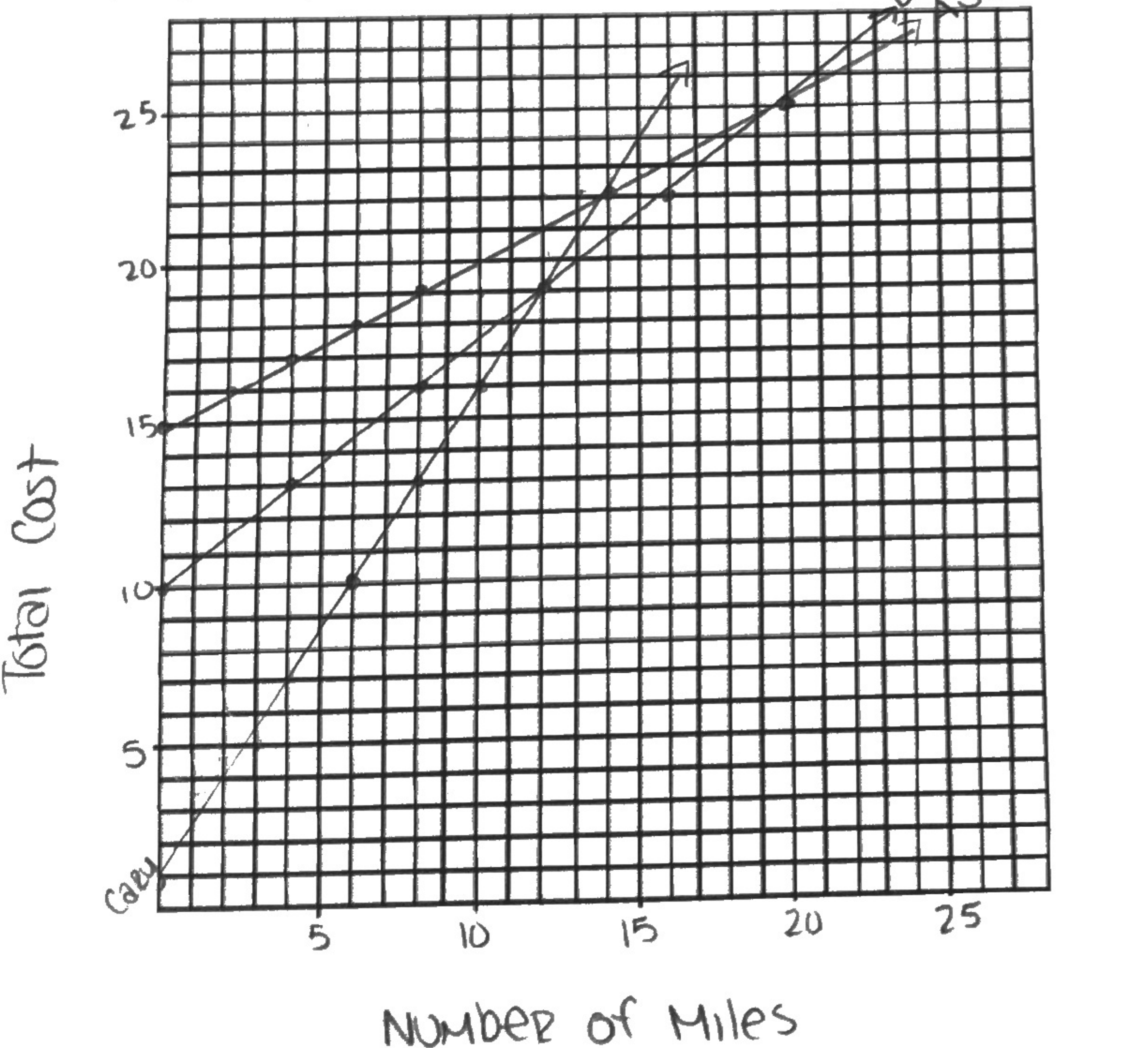
let  $x = \# \text{ of miles}$   
 $y = \text{total cost}$

Auto Shop -  $y = .5x + 15$

Benny's -  $y = .75x + 10$

Cary  $\frac{19-10}{12-6} = \frac{9}{6} = 1.5$       $y - 10 = 1.5(x - 6)$

B) Graph each equation on the grid below.





c) Answer the following questions:

After how many miles are A and B the same price? What is the price?

20 miles \$25

After how many miles are B and C the same price? What is the price?

12 miles \$19

After how many miles are A and C the same price? What is the price?

14 miles \$22

For what mileage is A the best deal?

FOR A TRIP OVER 20 MILES

For what mileage is B the best deal?

between 12 & 20 miles

For what mileage is C the best deal?

FOR A TRIP 12 miles OR LESS

4) David and James are at the Famous Nathan's Hot Dog Eating Championships of the world in New York on the 4th of July. David was late starting, so James already had 6 hot dogs before David started eating. From then on, James ate a hot dog every two minutes while David stuffed  $1\frac{1}{4}$  hot dogs a minute.

a. What equations could you use to compare David and James' hot dog eating?

JAMES  $n = .5M + 6$

let M = # of minutes

DAVID  $n = 1.25M$

n = # of hot dogs

b. Between David and James, who would win the contest if it lasts 12 minutes?

JAMES  
 $n = .5(12) + 6$   
 $= 12$

DAVID  
 $n = 1.25(12)$   
 $n = 15$

David would win

c. How many minutes does it take David to catch up with James?

$$\begin{array}{r} .5M + 6 = 1.25M \\ - .5M \quad - .5M \\ \hline 6 = .75M \\ 8 = M \end{array}$$

8 minutes



5) Anna has a pocket of dimes and quarters. If she has 10 coins worth \$1.45, how many of her coins are quarters?

let  $d = \#$  of dimes  
 $q = \#$  of quarter

$$d + q = 10 \rightarrow d = 10 - q$$

$$.10d + .25q = 1.45$$

$$.10(10 - q) + .25q = 1.45$$

$$1 - .1q + .25q = 1.45$$

$$1 + .15q = 1.45$$

$$\frac{.15q}{.15} = \frac{.45}{.15}$$

$$q = 3$$

**3 quarters**

6) For a fundraiser, you must raise at least \$30 by selling cookies for \$2 a box, and doughnuts for \$5 a box. You must sell more than 10 boxes.

- Graph a system of inequalities to show all the ways you can do this.
- Name two possible solutions.

let  $x = \#$  of boxes of cookies  
 $y = \#$  of boxes of doughnuts

$$2x + 5y \geq 30$$

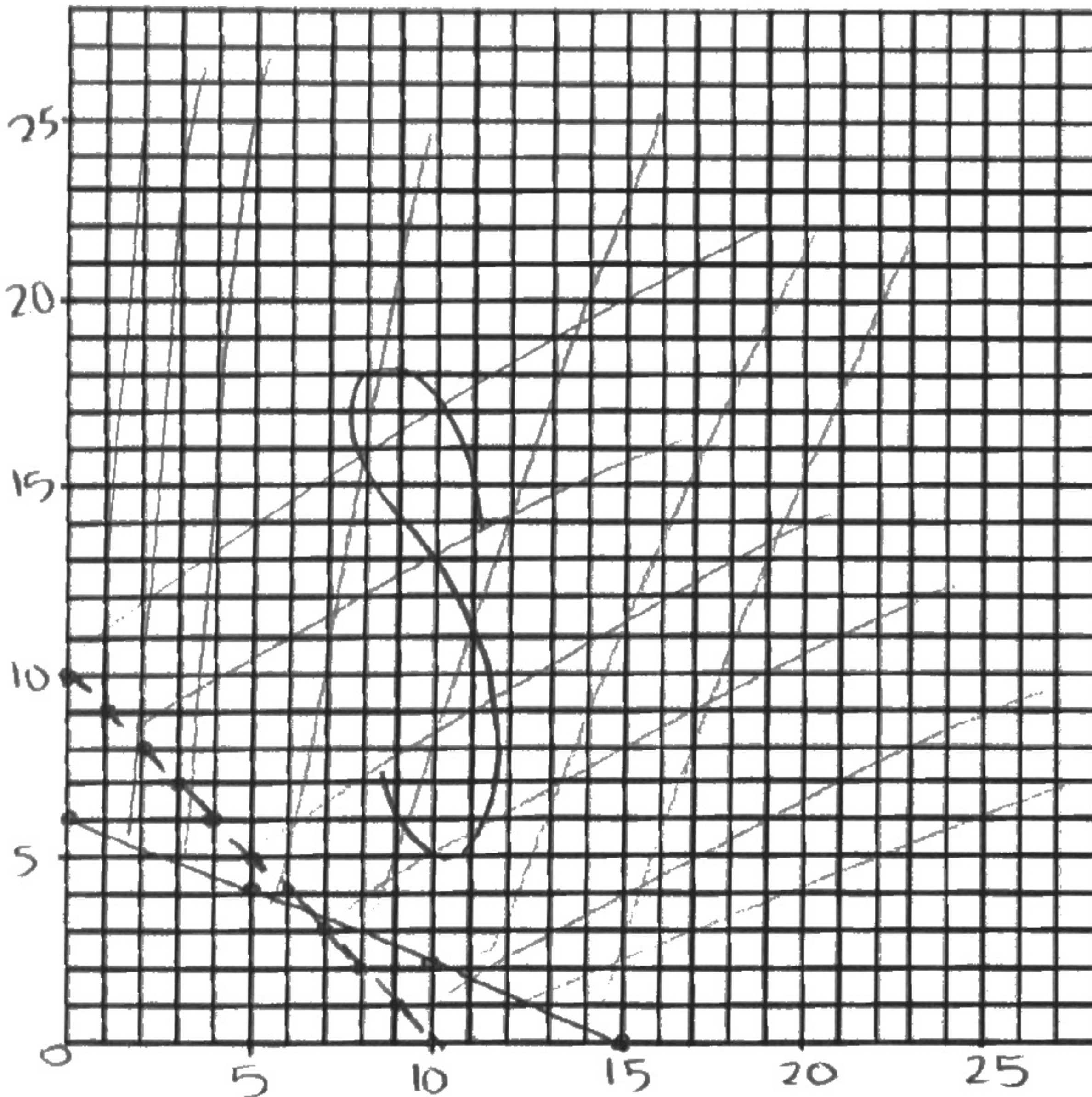
$$x + y > 10$$

$$\rightarrow y > -x + 10$$

$$\rightarrow \frac{5y}{5} \geq \frac{-2x + 30}{5}$$

$$y \geq -\frac{2}{5}x + 6$$

Boxes of Doughnuts Sold



Boxes of Cookies Sold

b) 10 boxes of cookies & 5 boxes of doughnuts OR

2 boxes of cookies & 15 boxes of doughnuts



7) Solve each equation and justify each step

a.  $4[2x-4]+9=8$

$$\begin{array}{r} 8x-16+9=8 \\ 8x-7=8 \\ +7 \quad +7 \\ \hline 8x=15 \\ \frac{8}{8} \quad \frac{8}{8} \\ x=15/8 \end{array}$$

DISTRIBUTIVE PROPERTY  
Simplify

Addition PROPERTY of equality

DIVISION PROPERTY of equality

b.  $\left(\frac{3}{2}\right)^2(3x+1)=5\left(\frac{3}{2}\right)$

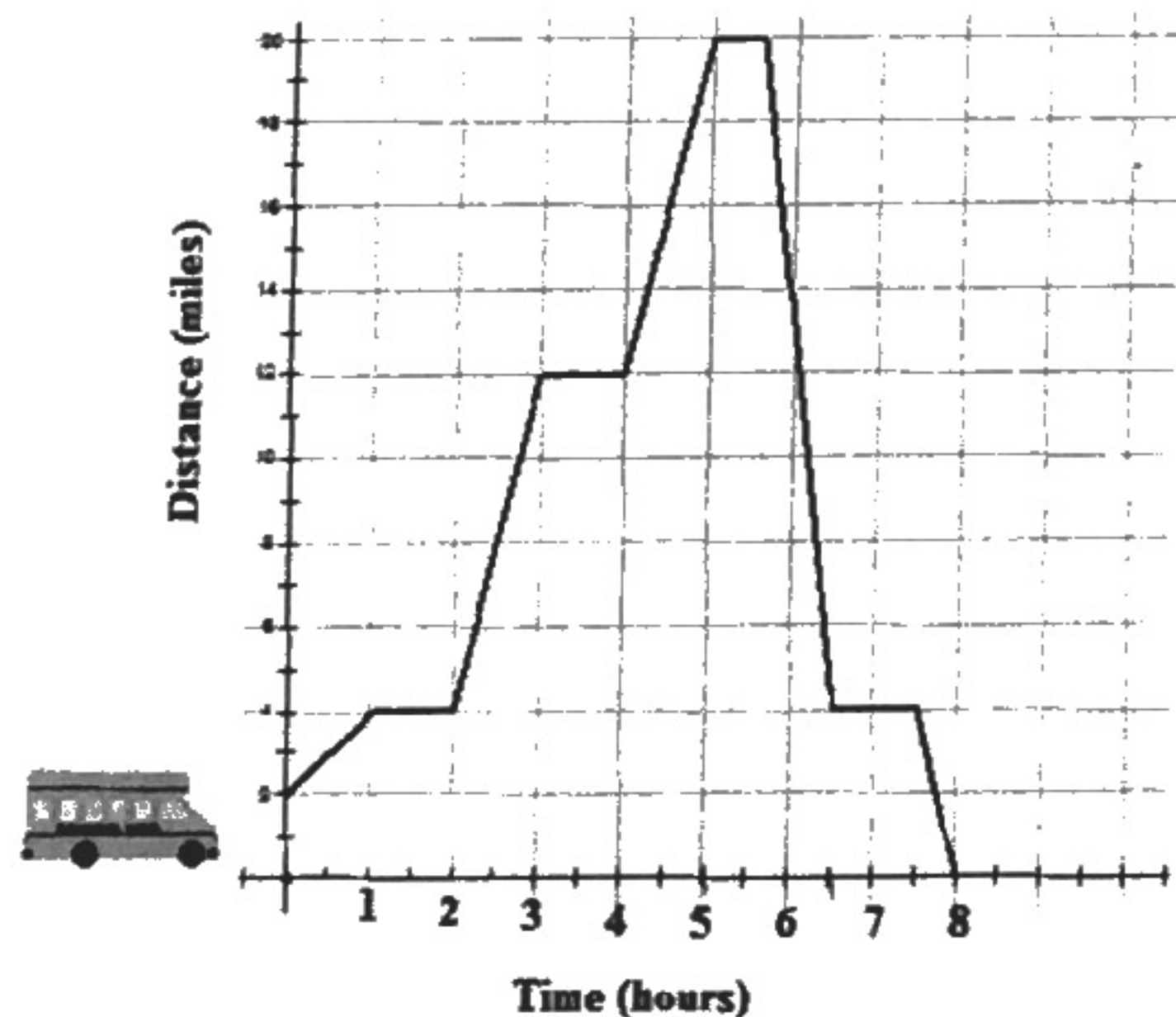
$$\begin{array}{r} 3x+1=7.5 \\ -1 \quad -1 \\ \hline 3x=6.5 \\ \frac{3}{3} \quad \frac{3}{3} \\ x=13/6 \end{array}$$

Multiplication PROPERTY of eq.

Subtraction PROPERTY of eq.

DIVISION PROPERTY of eq.

8) Use the graph to answer the questions below.



a. What was the fastest speed of the bus?

5-6.5 hours  $\frac{4-20}{6.5-5} = \frac{-16}{1.5} = 10\frac{2}{3}$  Miles per hour

b. How many times did the bus stop on its trip? (Do not count the beginning and the end of the trip.)

4 times

c. What was the initial distance of the bus from the bus depot?

2 miles

d. What was the total distance traveled by the bus?

38 miles

- 9) Robin collected data on the number of hours she watched television on Sunday through Thursday nights for a period of 3 weeks. The data are shown in the table below.

	Sun	Mon	Tues	Wed	Thurs
Week 1	4	3	3.5	2	2
Week 2	4.5	5	2.5	3	1.5
Week 3	4	3	1	1.5	2.5

$$\text{MIN} = 1$$

$$Q_1 = 2$$

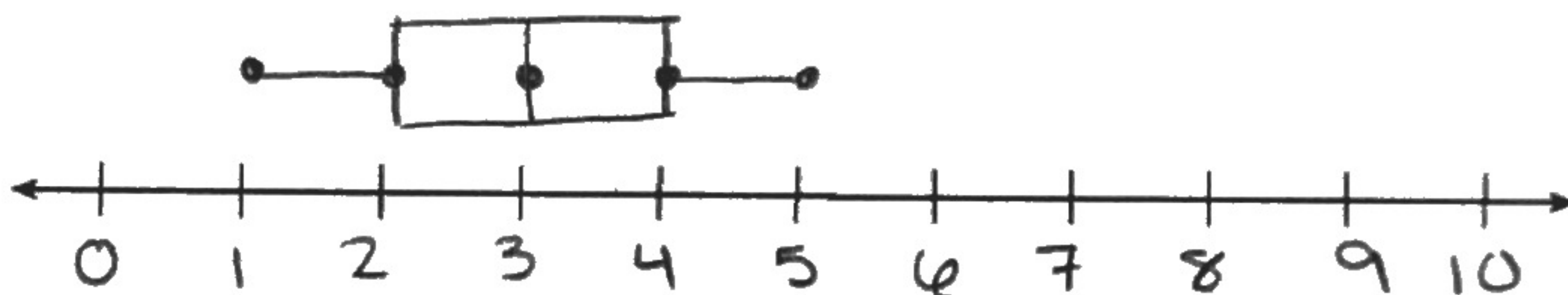
$$\text{MED} = 3$$

$$Q_3 = 4$$

$$\text{MAX} = 5$$

- a) Using an appropriate scale on the number line below, construct a box plot for the 15 values.

# of Hours Robin Watched TV



- b) What is the IQR for this distribution? What percent of students fell within this range?

$$\begin{aligned} Q_3 - Q_1 \\ 4 - 2 \\ = 2 \end{aligned}$$

$$\text{IQR} = 2$$

50% of students

- c) Do you think that data is skewed? Why or why not? If so, what direction is it skewed?

No, the median is in the center of the box & the whiskers are even.

- d) Estimate the typical number of hours that Robin watches TV. Explain why you chose this value.

$$2.8\bar{6}$$

The mean represents the typical number of hours because the data is symmetrical.