

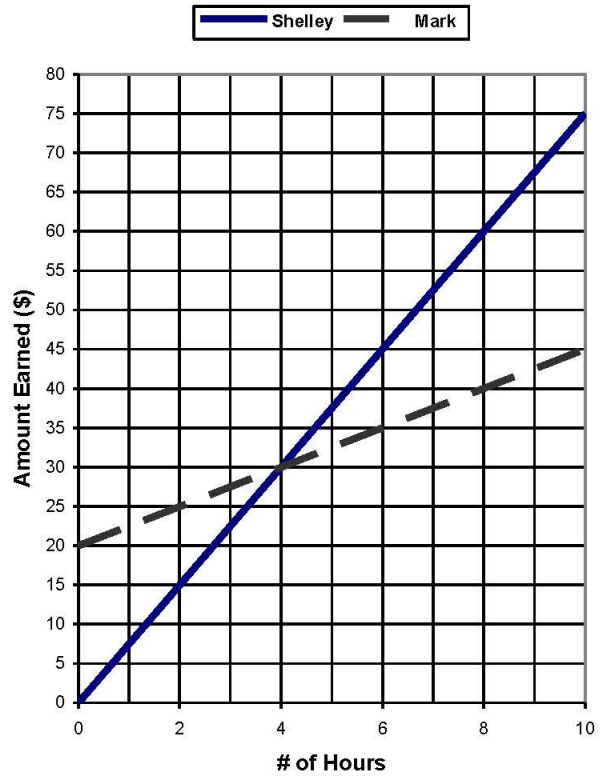
## Intersection of Lines

1. The following graph shows Shelley and Mark's babysitting earnings:

a) Whose earnings are an example of partial variation? Explain.

b) Determine the equation for Shelley's earnings.

c) Determine the equation for Mark's earnings.

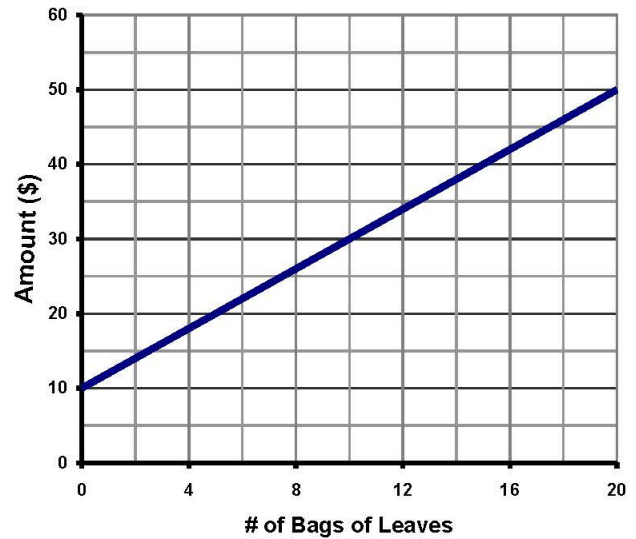


d) Determine the point of intersection of the two graphs. What does this point represent?

e) Describe under what conditions you should hire each person.

2. Alex rakes leaves to earn some extra cash.

a) Describe how Alex gets paid.



b) Alex's Mom thinks that he should just charge a flat rate of \$25 to rake leaves, no matter how many bags he rakes. Add this to your graph.

# of Bags	Amount

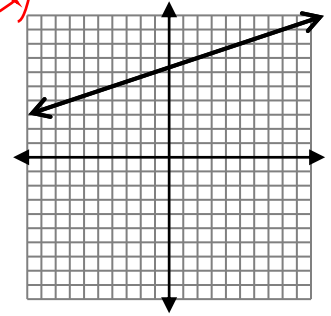
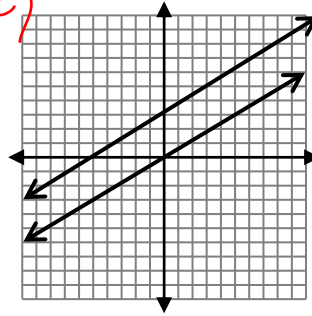
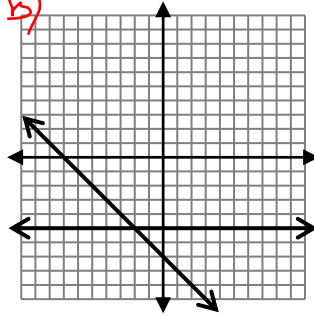
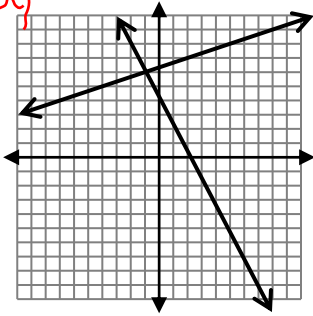
c) Alex's Dad thinks that he should just charge \$5 per bag with no starting fee. Add this to your graph.

# of Bags	Amount

d) Who do you think has the best plan? Justify your answer

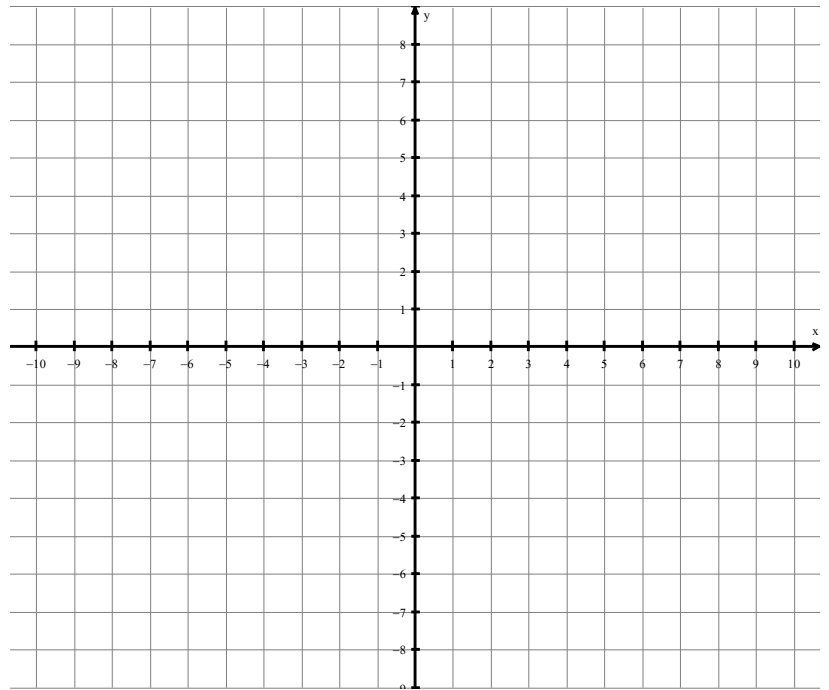
# Intersection of Lines

3 a) Determine the point of intersection of each of the following pairs of lines



4 Graph each of the following lines and determine the point where they intersect (cross).

~~10~~  $y = x - 3$  and  $y = -\frac{3}{2}x + 2$



## Intersection of Lines

1. The following graph shows Shelley and Mark's babysitting earnings:

a) Whose earnings are an example of partial variation? Explain.

Mark. His line does not start at zero.

b) Determine the equation for Shelley's earnings.

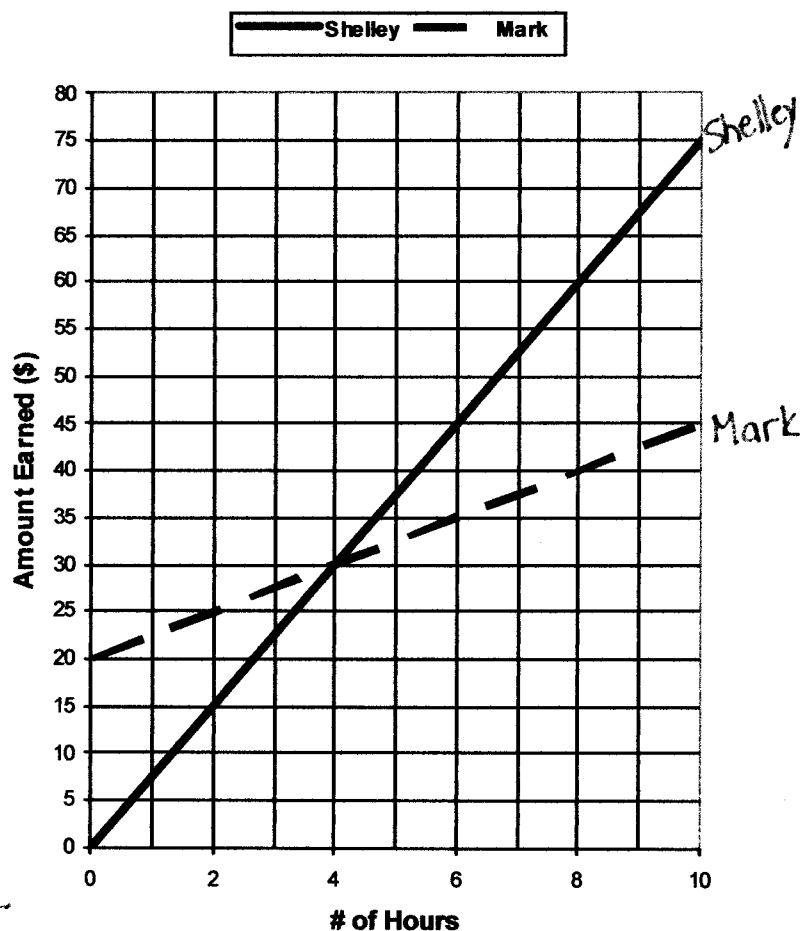
$$IV = 0 \quad \begin{array}{c|c} x & y \\ \hline 0 & 0 \\ 8 & 60 \end{array} \quad \begin{aligned} \text{Rate} &= \frac{\Delta y}{\Delta x} \\ &= \frac{60}{8} \\ &= 7.5 \end{aligned}$$

$$C = 60 + 7.50h$$

c) Determine the equation for Mark's earnings.

$$IV = 20 \quad \begin{array}{c|c} x & y \\ \hline 0 & 20 \\ 10 & 45 \end{array} \quad \begin{aligned} \text{Rate} &= \frac{\Delta y}{\Delta x} \\ &= \frac{25}{10} \\ &= 2.5 \end{aligned}$$

$$C = 20 + 2.5h$$



d) Determine the point of intersection of the two graphs. What does this point represent?

They intersect at (4,30)

This is when they charge the same amount for the same number of hours.

e) Describe under what conditions you should hire each person.

I would hire Shelley if you need someone for 4 hours or less

I would hire Mark if you need someone for 4 hours or more.

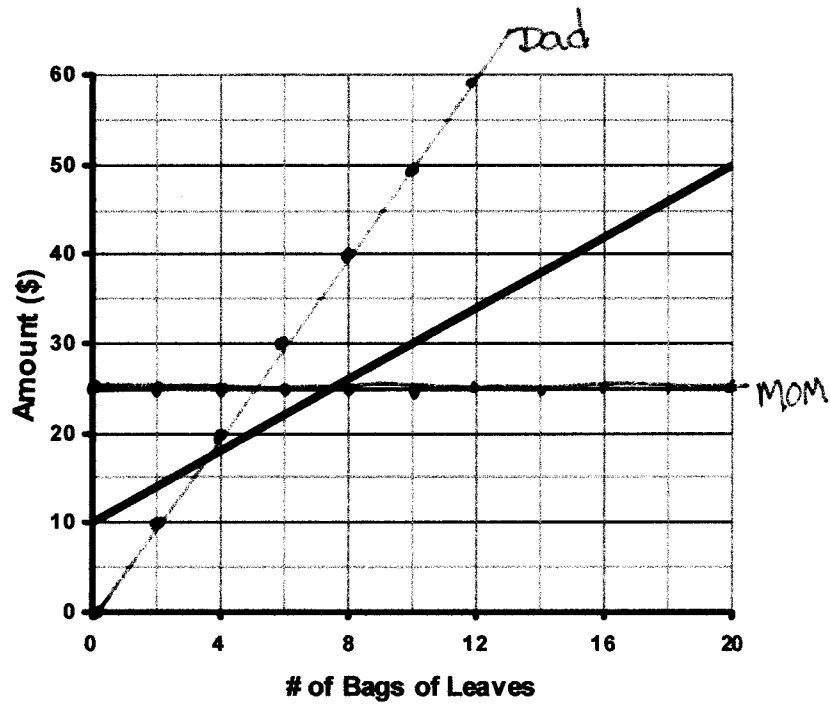
2. Alex rakes leaves to earn some extra cash.

a) Describe how Alex gets paid.

$$IV = 10 \quad \begin{array}{r|l} x & y \\ \hline 0 & 10 \\ 20 & 50 \end{array} \quad \text{Rate} = \frac{\Delta y}{\Delta x}$$

$$= \frac{40}{20} = 2$$

Alex charges a \$10 initial fee plus \$2 per bag.



b) Alex's Mom thinks that he should just charge a flat rate of \$25 to rake leaves, no matter how many bags he rakes. Add this to your graph.

# of Bags	Amount
0	25
2	25
4	25
6	25
8	25
10	25

c) Alex's Dad thinks that he should just charge \$5 per bag with no starting fee. Add this to your graph.

# of Bags	Amount
0	0
2	10
4	20
6	30
8	40
10	50

d) Who do you think has the best plan? Justify your answer

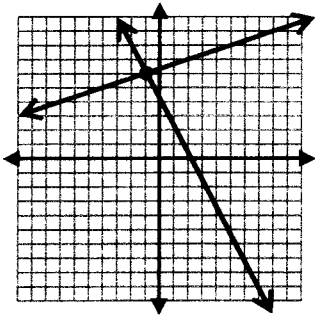
Mom's plan is the best if ~~you~~ <sup>he</sup> rakes less than 5 bags

Dad's plan is the best if he rakes ~~to~~ more than 5 bags.

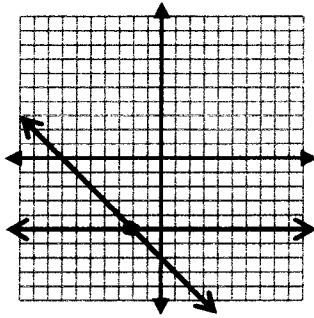
Alex's plan is never the best.

# Intersection of Lines

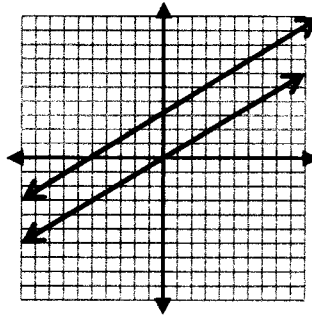
Determine the point of intersection of each of the following pairs of lines



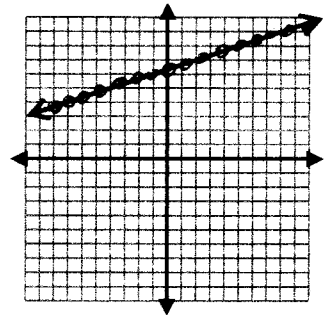
$(-1, 6)$



$(-2, -5)$



No Intersection  
(Parallel)



Intersect  
Everywhere  
(same line)

Graph each of the following lines and determine the point where they intersect (cross).

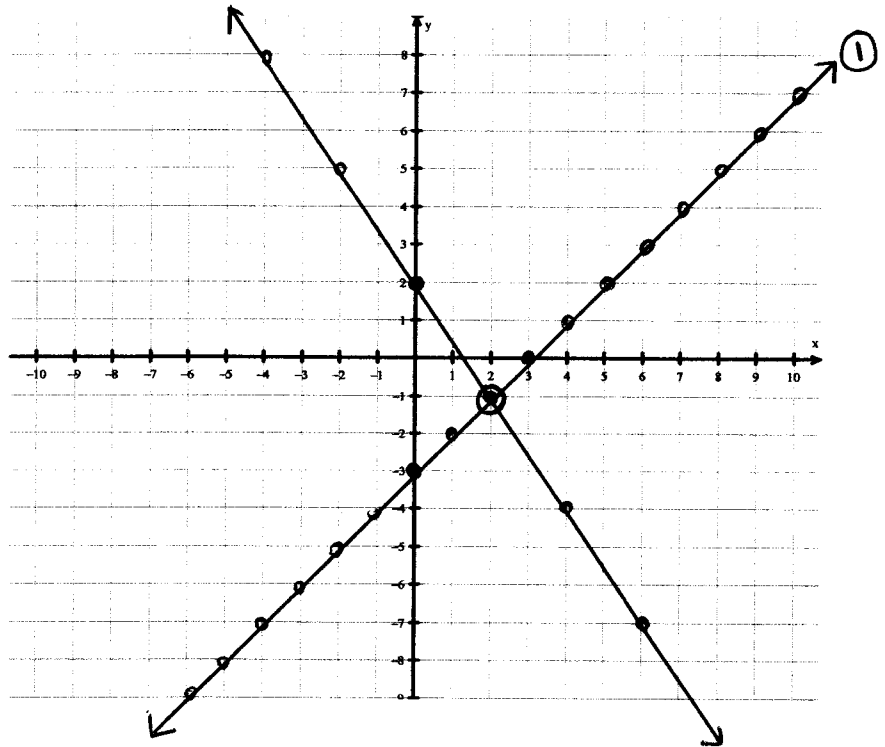
a) ①  $y = x - 3$  and ②  $y = -\frac{3}{2}x + 2$

$b = -3$

$b = 2$

$m = 1$

$m = -\frac{3}{2}$



The lines intersect at  $(2, -1)$