

2) Plant A and Plant B are on different watering schedules. This affects their rate of growth. Compare the growth of the two plants to determine when their heights will be the same.

Define Variables: *W* - amount of weeks
H - height of plant

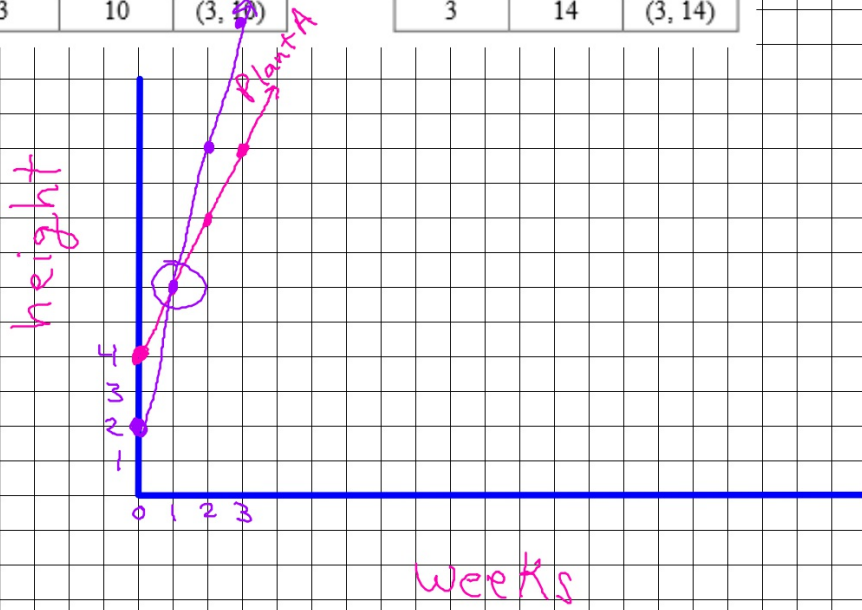
Plant A		
W	H	
0	4	(0, 4)
1	6	(1, 6)
2	8	(2, 8)
3	10	(3, 10)

Plant B		
W	H	
0	2	(0, 2)
1	6	(1, 6)
2	10	(2, 10)
3	14	(3, 14)

Based on the coordinates from the table, graph lines to represent each plant.

Plant A		
W	H	
0	4	(0, 4)
1	6	(1, 6)
2	8	(2, 8)
3	10	(3, 10)

Plant B		
W	H	
0	2	(0, 2)
1	6	(1, 6)
2	10	(2, 10)
3	14	(3, 14)



Write an equation that represents the growth rate of Plant A and Plant B.

$$\text{Plant A} - m = \frac{\Delta y}{\Delta x} = \frac{2}{1} = 2, b = 4$$

$$y = 2x + 4$$

$$\text{Plant B} - m = \frac{\Delta y}{\Delta x} = \frac{4}{1} = 4, b = 2$$

$$y = 4x + 2$$

At which week will the plants have the same height?

$$\begin{cases} y = 2x + 4 \\ y = 4x + 2 \end{cases}$$

$$2x + 4 = 4x + 2$$

$$4 = 2x + 2$$

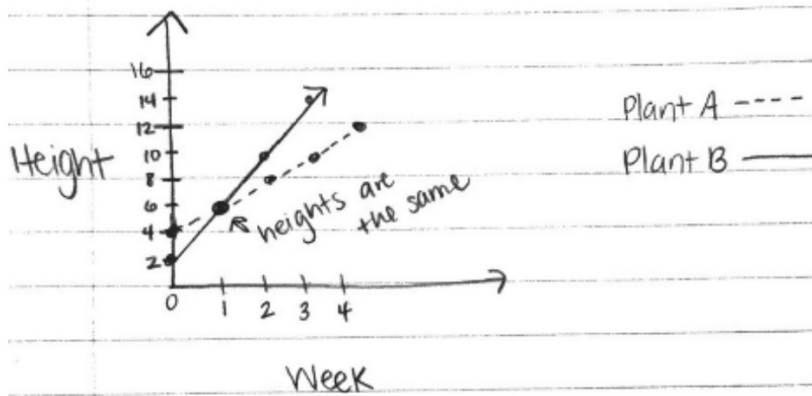
$$2 = 2x$$

$$1 = x$$

At week one they will have the same height.

② $W = \#$ of weeks

$h =$ height of the plant after W weeks



Plant A Equation:

$$m = \frac{2}{1}$$

$$b = 4$$

$$y = 2x + 4$$

Plant B Equation:

$$m = \frac{4}{1}$$

$$b = 2$$

$$y = 4x + 2$$

At week 1 the plants have the same height.

3) Victor is half as old as Maria. The sum of their ages is 54. How old is Victor?

Define variables. x - Maria's age y - Victor's age

Write equations.
$$\begin{cases} y = \frac{1}{2}x \\ x + y = 54 \end{cases}$$

Use preferred method to solve.

$$\begin{aligned} x + y &= 54 \\ x + \frac{1}{2}x &= 54 \\ \frac{3}{2}x &= 54 \\ x &= 36 \end{aligned}$$

$$\begin{aligned} y &= \frac{1}{2}x \\ y &= \frac{1}{2}(36) \\ y &= 18 \end{aligned}$$

Victor is 18 years old.

③ $V = \text{Victor's age}$
 $m = \text{Maria's age}$

$$V = \frac{1}{2}m$$
$$V + m = 54$$

$$\frac{1}{2}m + m = 54$$

$$1.5m = 54$$

$$\frac{1.5m}{1.5} = \frac{54}{1.5}$$

$$1.5 \quad 1.5$$

$$m = 36$$

$$V = \frac{1}{2}(36)$$

$$V = 18$$

Victor is 18 years old.