Philly's Hero vs Villains

Chris Bush

Algebra 1

Some people born into this world come here with special abilities. Some use these abilities for good but others don't. The world is ravaged by villains and only 1 group of people can stop them. **HEROES**. These heroes protect their respective cities with their lives, but lately as more heroes in Philly join the fight, so do more villains. The heroes and villains clash more than ever, but the villains have begun to outnumber the heroes.

One hero, named Captain Calculus, has recently been doing some mathematical equations to help out his fellow heroes. He noticed an uptick in villain activity throughout the city. He realized that for every month that passes, the more the activity increases. He decided to make an equation to show to his friend Captain Addition. He also realized that every month, one villain enters the city. As Captain Calculus started to go to Captain Addition's home base, he ran into trouble. His nemesis, Multiple Man.

# of months (x)	Calculations	# of new villains per month
0	1	1
2	$1 + 2\left(\frac{2}{2}\right)$	3

4	$1 + 2\left(\frac{4}{2}\right)$	5
6	$1 + 2\left(\frac{6}{2}\right)$	7
8	$1 + 2\left(\frac{8}{2}\right)$	9

Equation: $y = 2\left(\frac{x}{2}\right) + 1 \rightarrow y = x + 1$

Slope = 1, which represents the number of new villains per month

Y-intercept = 1

(Y, # OF Villains per month)
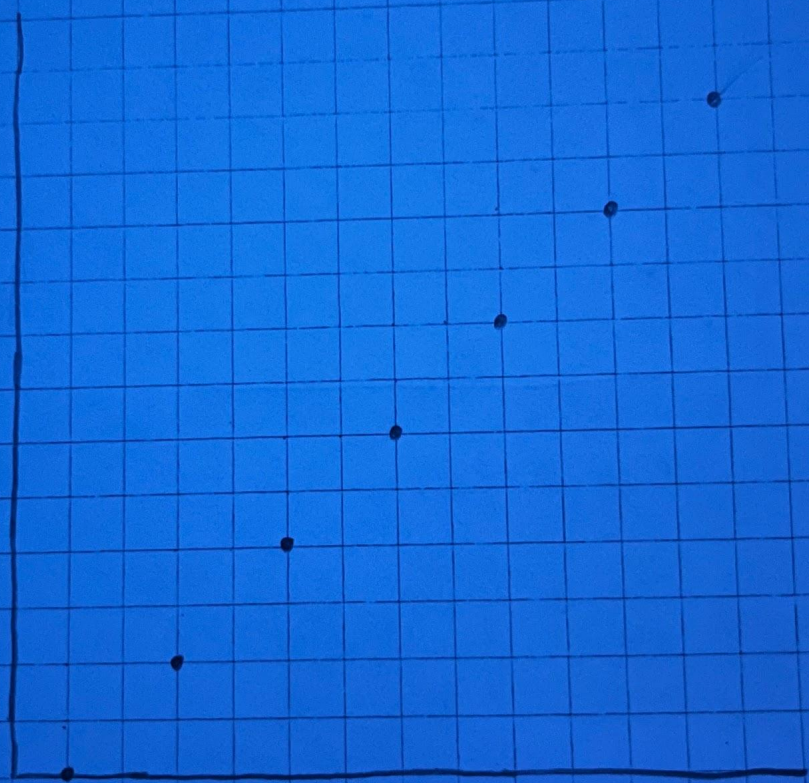
(x, months)

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The fight between Captain Calculus and Multiple Man was a fierce one. Their fight took place all across the city and Captain Calculus wasn't winning. Multiple Man threw him through multiple buildings. When Captain Calculus finally landed, Multiple Man explained his evil plan. "I have found a way to destroy your entire city. A machine I built is set to **destroy 11 blocks per 10 minutes**." Captain Calculus was shocked and didn't know what to do. Then before he knew it, the device went off. "Haha, I have won and you will see your city fall!" As Multiple Man flew away, a piece of paper fell out of his pocket. It was the equation of the machine.

Minutes (x)	Calculations	# of blocks destroyed
1	1	0
10	10(1) + 1	11
20	10(2) + 2	22
30	10(3) + 3	33
40	10(4) + 4	44

Equation: $y = 10x + 1$

Slope: 11, which represents how many blocks are destroyed per 10 minutes.
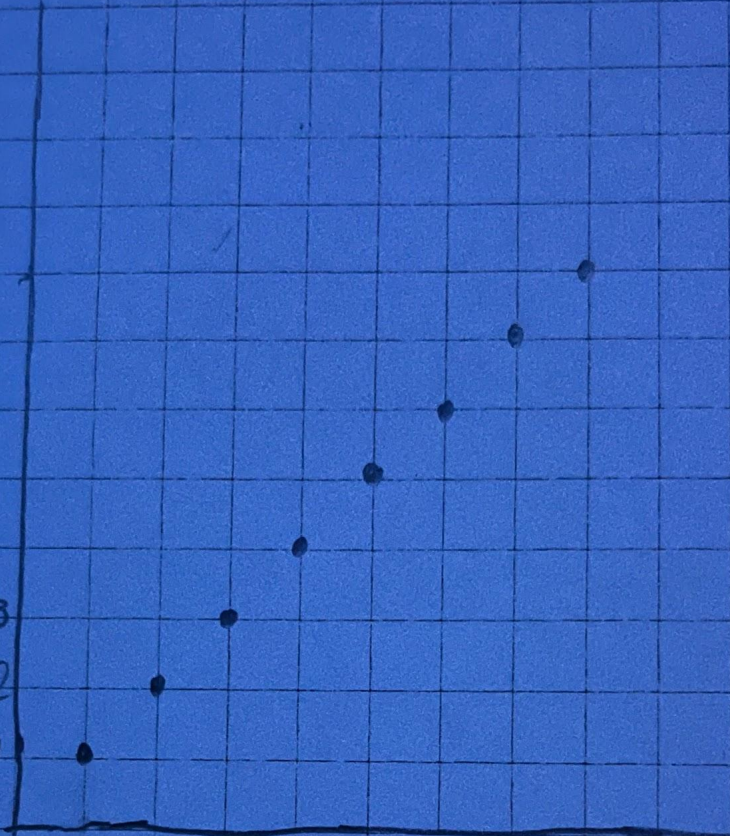
Y-intercept: 1

(X, # of blocks destroyed)

33
22
11

2 3

(X, minutes)

After most of the city falls, Captain Calculus comes up with a plan. He plans to bring more heroes into the city to help the fight. He decides that he will bring in **1 hero every 4 minutes. He is already in the city helping the fight.**

Time (x)	Calculations	# of heroes per 4 minutes (y)
0	2	1
2	2 + 1	3
4	2(2) + 1	5
8	2(3) + 1	7

After the heroes learn how to destroy the machine, they shut it down and save the city.

The remaining villains are then given to the police for processing.

Slope: 1, 1 hero joins in the fight every 4 minutes.