

Introduction to Substitution

Score _____ Per _____

Suppose two friends, Ron and Harry, each have a cell phone plan. Ron pays \$40 to start the plan, and pays \$10 per month for his plan. Harry pays \$25 to start the plan and pays \$15 per month for his plan.

1. Complete the table modeling how much Ron and Harry have each spent after x months.

Time (months)	0	1	2	3	4	5
Ron's Plan (\$)						
Harry's Plan (\$)						

2. After how many months have they invested the same amount of money in their cell phone plan? _____
3. At that time, how much have they each invested for their cell phone plan? _____
4. Write an equation to represent how much Ron spends on his cell phone plan over time: _____
5. Write an equation to represent how much Harry spends on his cell phone plan over time: _____
6. What do the variables represent in your equations? x is _____ and y is _____
7. How could you use the equations to find when Ron and Harry "tie?" (how many months and how much money they spent at the time they spent the same amount)

Suppose twin brothers Fred and George are running a race. Fred can run 4 meters per second. George runs only 3 meters per second, so he gets a head start of 5 meters.

8. Complete the table modeling Fred and George's distance from the starting line after x seconds.

Time (seconds)								
Fred's Distance from the Starting Line (m)								
George's Distance from the Starting Line (m)								

9. After how many seconds are they the same distance from the starting line? _____
10. At that time, how far are they each from the starting line? _____
11. Write an equation to represent Fred's distance from the starting line over time: _____
12. Write an equation to represent George's distance from the starting line over time: _____
13. What do the variables represent in your equations? x is _____ and y is _____
14. Use the equations to find when Fred and George tie.

Suppose Darth Vader has \$20 in his bank account. He starts saving \$5 each week. Voldemort has \$5 in his account and is saving \$10 each week. Assume neither villain takes any money out.

15. Complete the table modeling how much Darth Vader and Voldemort have saved after x weeks.

Time (weeks)	0	1	2	3	4	5
Darth Vader's Account (\$)						
Voldemort's Account (\$)						

16. After how many weeks have they saved the same amount of money in their bank account? _____

17. At that time, how much have they each saved in their bank account? _____

18. Define variables representing the situation:

Let x represent _____ and let y represent _____

19. Write an equation to represent how much Darth Vader saved in his account over time: _____

20. Write an equation to represent how much Voldemort saved in his account over time: _____

21. Use **substitution** to find the solution to your system of equations that model the situation.

Answer: _____

Check answer in Darth Vader's Equation:	Check answer in Voldemort's Equation:

22. What does your solution mean about Darth Vader's and Voldemort's bank accounts?