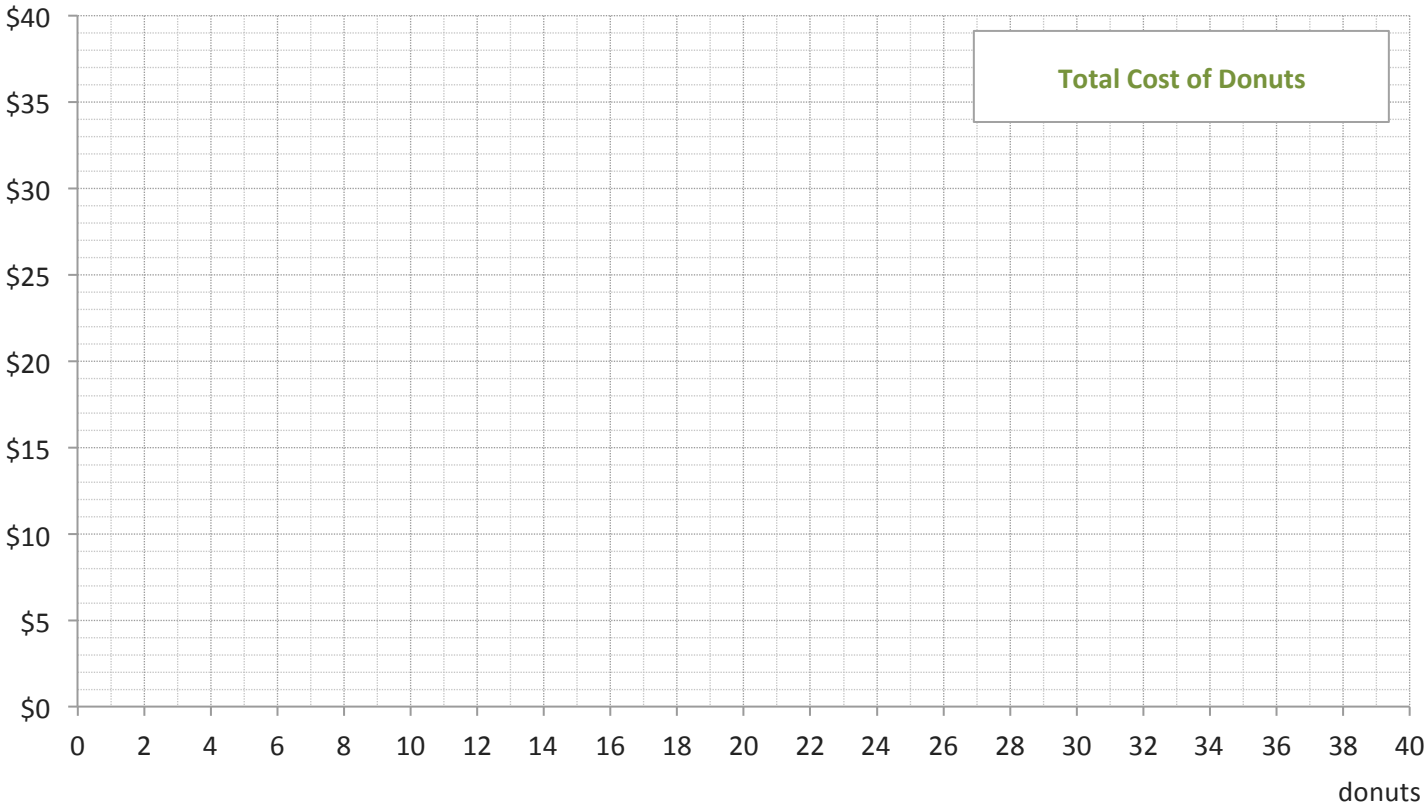
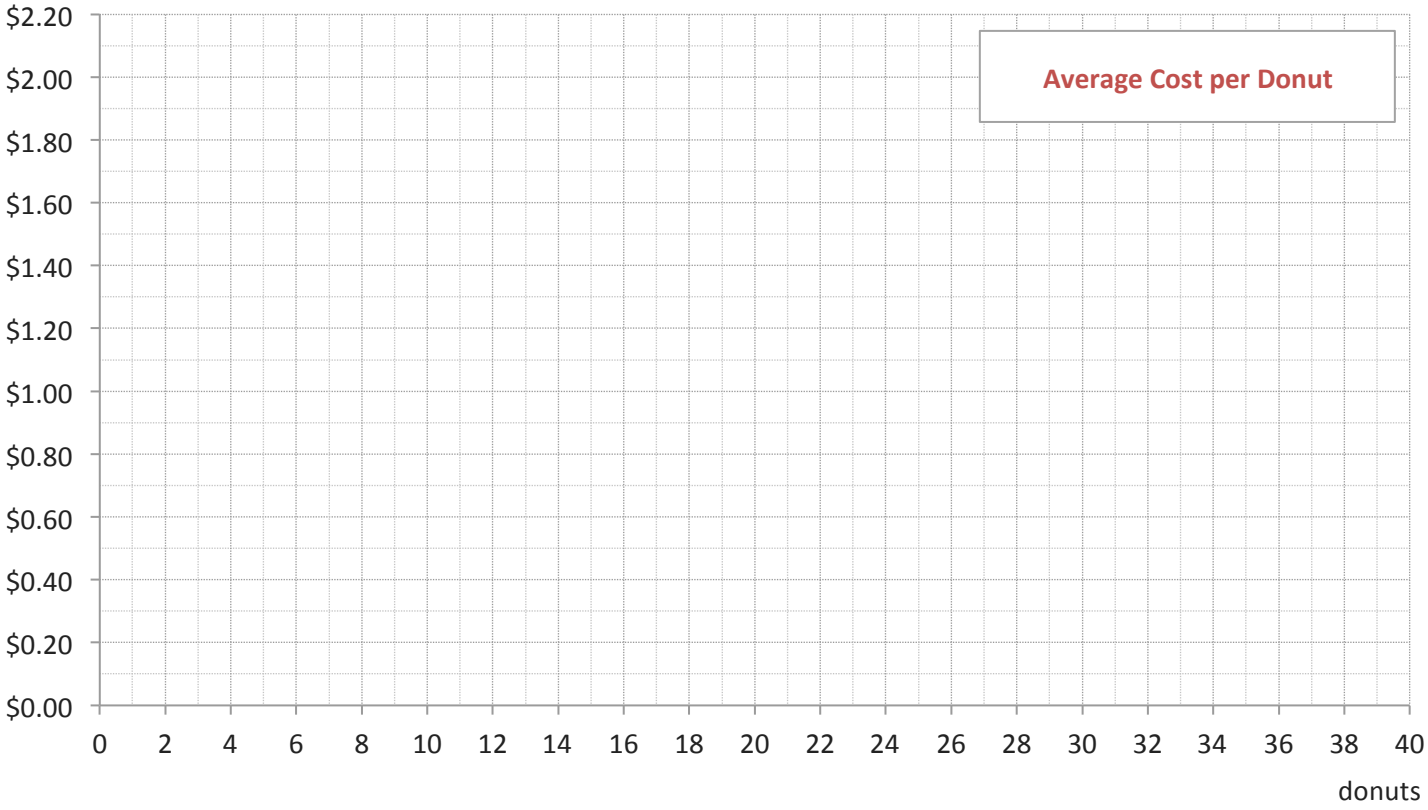
CARPE DONUT

How much should people pay for donuts?

name

date





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Act One: Donut Stand

1 There's a donut stand in Charlottesville, Virginia, that sells homemade donuts. It charges $2 for one donut, $3 for two donuts, $4 for three donuts, etc. Write a function to calculate the total cost of ***d*** donuts and graph it.

2 Imagine you're standing in line, and you're about to buy a single donut. Someone comes up to you and says, "I'll give you $1 if you buy me one, too." Would you accept the deal? If not, how much would you charge and why?

3 If everyone in a group of 10 friends wants a donut, how much should each person pay? 20 friends? ***n*** friends?

4 As you buy more and more donuts, what happens to the average cost of each donut, and how many donuts would you need to buy for the average cost to be $1?

Act Two: Baker's Dozen

5 Like many bakeries, Carpe Donut offers a special "**baker's dozen**:" if you buy thirteen donuts, they'll only charge you $12. After that, additional donuts cost $1, but every thirteenth donut is free. Based on this, how much will you pay for the following numbers of donuts?

1	2	3	4	5	6	7	8	9	10
$2	$3								
11	12	13	14	15	16	17	18	19	20
	$13	$12	$13						
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

6 Given the new "baker's dozen" scheme, write a function to calculate the total cost of *d* donuts and graph it.

7 As you buy more and more donuts, what happens to the average cost of each one? Be as specific as possible.