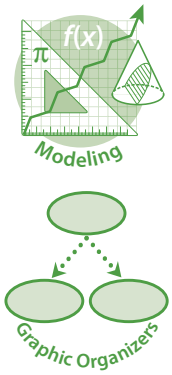
Name: **Date:**

Conceptual Task: Saving for a Boat

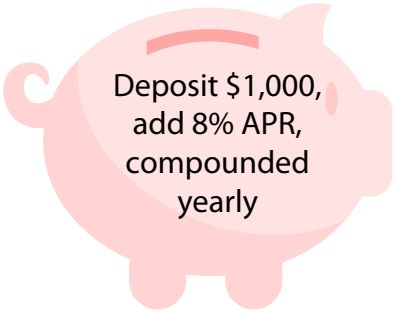


SMP	
1	2 ✓
3 ✓	4
5	6
7 ✓	8

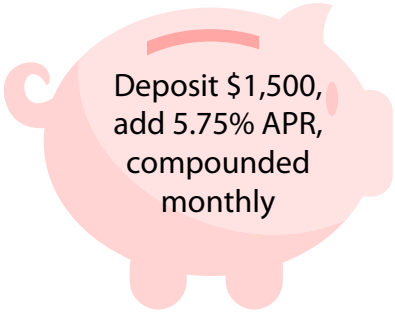
Malik wants to start saving money so he can buy a boat when he retires. He has done some research into savings accounts and come up with three options. For the first option, Malik would deposit $2,000 to open the account and add $10 per month thereafter. The second option would be to deposit $1,000 in an account that pays a simple interest rate of 8% per year. The third option requires a $1,500 deposit and has a compound interest rate of 5.75% per year, compounded monthly. Which option should Malik choose? Justify your answer using mathematical models.

Option 1

Option 2



Option 3



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Conceptual Task: Saving for a Boat

Exploration Questions

a. What is APR?

b. How is each option different? Predict which one you think will be worth the most after 30 years. Justify your answer.

c. Below are the tables for each option. How do they relate to the verbal description? How are the tables the same? How are they different? Which option do you think might be worth the most after 30 years? Is your choice the same as before? Why or why not?

Option 1

Number of years (x)	Account balance (y)
0	$2,000
4	$2,480
8	$2,960
12	$3,440
16	$3,920
20	$4,400

Option 2

Number of years (x)	Account balance (y)
0	$1,000.00
4	$1,360.49
8	$1,1850.93
12	$2,518.17
16	$3,425.94
20	$4,660.96

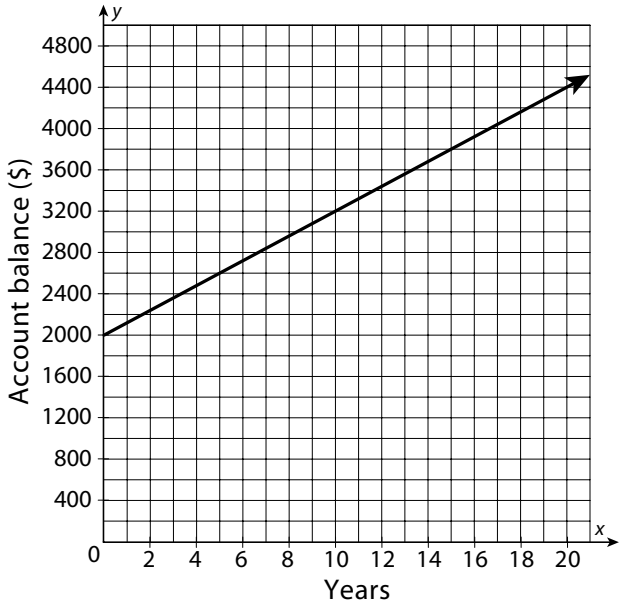
Option 3

Number of years (x)	Account balance (y)
0	$1,500.00
4	$1,886.86
8	$2,373.50
12	$2,985.65
16	$3,755.67
20	$4,724.30

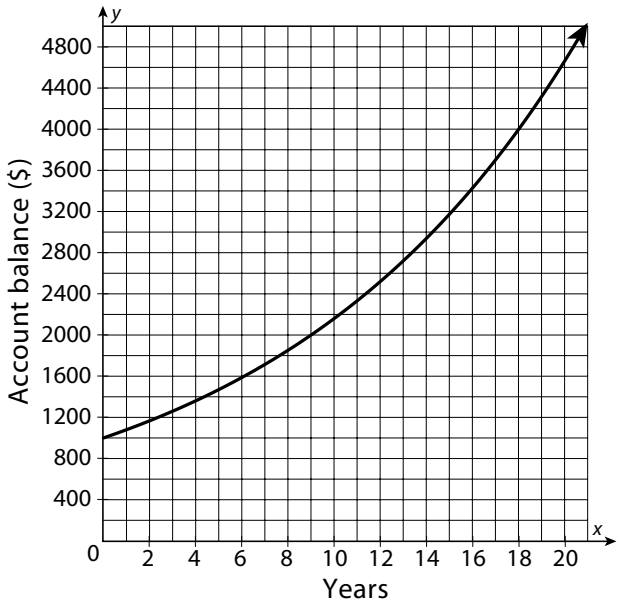
continued

d. Below are the graphs for each option. How are the graphs the same? How are they different? Would you keep the same option as your prediction for part c? Why or why not?

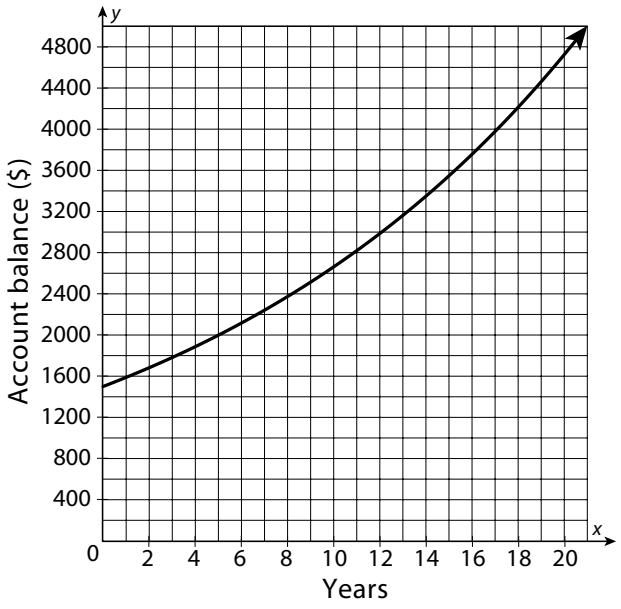
Option 1



Option 2



Option 3



continued

e. Which option would earn Malik the greatest amount after 10 years? After 20 years? After 30 years?

f. Using your mathematical models, determine which option Malik should choose and explain your reasoning.