



## Problem of the Week

### Problem B and Solution

### Interest-ing!

#### Problem

Monique and Tyrel were born on the same day. On the day they turned one year old, Monique's parents opened a savings account for her that earned 10% interest per year. Starting that day, Monique's parents put \$100 in her account every year on her birthday, stopping just after she turned six. After that, the money remained in the account but Monique's parents did not put in any more money.

Tyrel's parents opened a similar savings account for him, however it wasn't until the day he turned six years old. Starting that day, his parents put \$100 in his account each year on his birthday, earning 10% interest per year.

Complete the two given tables to find the total amount of money in Monique's and Tyrel's savings accounts. Who had the better saving strategy over 15 years?

For simplicity, round the interest to the nearest dollar for each year.

#### Solution

Examining the total amount of money put into the accounts, and the results in the tables on the following page, we make the following observations.

Monique's parents' put \$100 into her account every year for 6 years, which is a total of  $\$100 \times 6 = \$600$ . At the end of 15 years, she had \$2000 in her account, which means her account earned a total of  $\$2000 - \$600 = \$1400$  in interest over 15 years.

Tyrel's parents put \$100 into his account every year for 10 years, which is a total of  $\$100 \times 10 = \$1000$ . At the end of 15 years, he had \$1752 in his account, which means his account earned a total of  $\$1752 - \$1000 = \$752$  in interest over 10 years.

Clearly, Monique's parents had the better savings strategy. Even though her parents put only \$600 into her account in the first 6 years, her account earned significantly more interest because the money was in the account for a longer period of time.

**Monique**

Year	Amount at Beginning of Year (\$)	Interest Earned (\$)	New Total at End of Year (\$)
1	100	10	110
2	210	21	231
3	331	33	364
4	464	46	510
5	610	61	671
6	771	77	848
7	848	85	933
8	933	93	1026
9	1026	103	1129
10	1129	113	1242
11	1242	124	1366
12	1366	137	1503
13	1503	150	1653
14	1653	165	1818
15	1818	182	2000

**Tyrel**

Year	Amount at Beginning of Year (\$)	Interest Earned (\$)	New Total at End of Year (\$)
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	100	10	110
7	210	21	231
8	331	33	364
9	464	46	510
10	610	61	671
11	771	77	848
12	948	95	1043
13	1143	114	1257
14	1357	136	1493
15	1593	159	1752