

Comparing Compounds

You go to the bank and are offered a choice: How many times a year do you want your money to be compounded? You make tables to compare the different compounding periods. Assume you have \$1000 and earn 12% interest.

If you have 12% interest, that becomes 0.12 as a decimal. That is your ANNUAL interest. To change it to your compound interest, divide by "n" (the number of compounds in a year).

Compounded Semi-Annually (n=2) 0.12 ÷ 2 = 0.06				Compounded Quarterly (n=4) 0.12 ÷ 4 = 0.03			
Month	Start	Interest	End	Month	Start	Interest	End
1	1000	0	1000	1	1000	0	1000
2	1000	0	1000	2	1000	0	1000
3	1000	0	1000	3	1000	30	1030
4	1000	0	1000	4	1030	0	1030
5	1000	0	1000	5	1030	0	1030
6	1000	60	1060	6	1030	30.90	1060.90
7	1060	0	1060	7	1060.90	0	1060.9
8	1060	0	1060	8	1060.9	0	1060.9
9	1060	0	1060	9	1060.9	31.83	1092.73
10	1060	0	1060	10	1092.73	0	1092.73
11	1060	0	1060	11	1092.73	0	1092.73
12	1060	63.6	1123.60	12	1092.73	32.78	1125.51

Please notice that there are a lot of months where you DO NOT earn interest. This is what the words "semi-annually" and "quarterly" mean. You do not earn interest every month. For semi-annually, you earn interest every 6 months. That is why the majority of months have the number 0 in the interest column. For quarterly, you earn interest every 3 months.

You can verify the final row in the table by using the compound interest formula: $F = P(1 + \frac{r}{n})^{nx}$

$F = 1000(1 + \frac{0.12}{2})^{2 \cdot 1} = 1123.6$	$F = 1000(1 + \frac{0.12}{4})^{4 \cdot 1} = 1125.51$
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