

Millionaire's Dilemma

Imagine you win £1,000,000. You decide to invest it, and not spend any until you retire.

There are a number of organisations that are keen for you to invest your money with them. They all pay compound interest (naturally), but they also charge fees for setting up the account.

Use the table below to investigate the best deal:

	Anna's Bank	Charlie's Dosh	Ethan's Finance
The Deal:	2% interest per year No fees: We even pay £50,000 into your account at the start!	4% interest per year Completely fee-free: nothing to pay to set up the account.	6% interest per year £200,000 fee, to be taken from the account at the start.
Starting balance:			
Year 1			
Year 2			
...
Year 10			
...
Year 20			
Year 50			

Example: If £1500 is invested at a rate of 3%, the formula 1500×1.03^n will calculate the total amount in the account after n years.

How much would you be willing to pay in account fees at the start to secure an interest rate of 7%? Assume you will invest the money without withdrawing any for 50 years.

In general, roughly how many years does it take to double your money if you earn an interest rate of:

1%	2%	5%	10%	20%	50%	100%

Millionaire's Dilemma SOLUTIONS

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Starting balance:	£1,050,000	£1,000,000	£800,000
Year 1	£1,071,000	£1,040,000	£848,000
Year 2	£1,092,420	£1,081,600	£898,880
...
Year 10	£1,279,944.14	£1,480,244.28	£1,432,678.16
...
Year 20	£1,560,244.77	£2,191,123.14	£2,565,708.38
Year 50	£2,826,167.43	£7,106,683.35	£14,736,123.42

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How much would you be willing to pay in account fees at the start to secure an interest rate of 7%? Assume you will invest the money without withdrawing any for 50 years.

Anything up to around £500,000. A fee of £499,741.63 would result in the same final value as 'Ethan's Finance' after 50 years, so anything below this would give you more in the long run (although in case you change your mind and want to cash out after 30 years, don't go above £400,000). You can use a spreadsheet to find out exactly what you would have in any given year. See over the page for a graph of the three accounts' totals over time.

In general, roughly how many years does it take to double your money if you earn an interest rate of:

1%	2%	5%	10%	20%	50%	100%
69 to 70 years	35 to 36 years	14 to 15 years	7 to 8 years	3 to 4 years	1 to 2 years	Exactly 1 year

The first few years: total balance for each account, in thousands

