Option 1 (7 marks)

	Amount at start of year	Value of Scholarships	Amount remaining at end of year
1	20000	3000 (6 x 500)	17000
2	17000	3000	14000
3	14000	3000	11000
4	11000	3000	8000
5	8000	3000	5000
6	5000	3000	2000
7	2000 ✓	2000 (4 x 500) ✓	0 ✓
8			
9			
10			

Complete the table above for Option 1.

How long will the trust fund last for this option?

It will last 7 years The first 6 yrs will allow 6 scholarships per year to be awarded and in the 7th year only 4.

7 ✓
explanation ✓

How many scholarships can be awarded in this time?

6 x 6 + 4 = 40 scholarships
✓ ✓

Option 2 (11 marks)

	Amount at start of year	Interest	Interest + principal	Value of Scholarships	Amount remaining at end of year
1	20 000	1200	21200	3000 (6×500)	18 200
2	18 200	1092	19292	3000	16 292
3	16 292	977.52	17269.52	3000	14269.52
4	14269.52	856.17	15125.69	3000	12125.69
5	12125.69	727.54	12853.23	3000	9853.23
6	9853.23	591.19	10444.43	3000	7444.43
7	7444.43	446.67	7891.09	3000	4891.09
8	4891.09	293.47	5184.56	3000	2184.56
9	2184.56 ✓	131.07 ✓	2315.63 ✓	2000 (4×500) ✓	315.63 ✓ (final amt)
10					

Show your calculations for the first row in the table above and then complete the table.

$0.06 \times 20000 = 1200$ $20000 + 1200 = 21200$

$21200 - 3000 = 18200$ ✓ (must show all calcs).

How long does the trust fund last?

9 years ✓ The first 8 years will allow 6 scholarships per year to be awarded and in the 9th year only 4. ✓ (explanation)

How many scholarships can be awarded in this time?

$6 \times 8 + 4 = 52$ scholarships

✓ ✓

Option 3 (This table shows how much is left in the trust fund after 5 years) (9 marks)

		Amount at start of year	Interest	Interest + principal	Value of Scholarships	Amount remaining at end of year
After 5th year	9	11806.17	324.67	12130.84		12130.84
	10	12130.84	333.60	12464.44	3000 (500x6)	9464.44
6th	11	9464.44	260.27	9724.71		9724.71
	12	9724.71	267.43	9992.14	3000	6992.14
7th	13	6992.14	192.28	7184.43		7184.43
	14	7184.43	197.57	7382.00	3000	4382
8th	15	4382	120.50	4502.50		4502.50
	16	4502.50	123.82	4626.32	3000	1626.32
9th	17	1626.32	44.72	1671.05	✓	1671.05
	18	1671.05	45.95 ✓	1717	1500 (500x3)	$217 left. ✓

Show how Line 10 of this table has been calculated and complete the table for this option. ✓

12130.84 × 0.0275 = 333.60
12130.84 + 333.6 = 12464.44
12464.44 − 3000 = 9464.44 ✓

How long does the trust fund last?

9 years ✓ The first 8 years will allow 6 scholarships per year to be awarded and in the 9th year only 3 ✓explanation.

How many scholarships can be awarded in this time?

8 × 6 + 3 = 51
✓ ✓

PART B (6 marks)

Consider how many scholarships could be awarded and the 'life' of the trust fund.

What do you think would happen with each option if the only change was:

a) the scholarship value for **Option 1** was increased by $100 each year?

Scholarships now worth $600. So 6 scholarships would now be worth $3600/yr. Will last 6 years + in the 6th year with $2000 left only 3 can be awarded with $200 left. So will last less time

b) the interest rate in **Option 2** was increased to 7% p.a.?

Interest would now be $1400 instead of $1200. So it may mean more scholarships could be given out and may last another year (longer)

c) the compounding period in **Option 3** was changed to 'compounding monthly'?

There would be more money in the trust fund after the 9 years but not enough to award any more scholarships than before.

END OF APPLICATION