Exercise 11.1

1 A student decides to save \$0.50 for next week, and each week afterwards \$0.20 more than that in the preceding week. If he can keep this for a year how much will he save ?

2 A girl wants to buy a piano that is sold for \$5600. If she can save each week \$20 more than the previous week, starting with \$30. How many weeks will it take her to save enough money for the piano, ignoring any interest?

3 A shop's profit was \$2350 in 1989, \$1950 in 1990, and \$1550 in 1991. If this trend continues, in how many years will the shop remain open? Assume the shop must close when its total profit over the years becomes negative.

4 A man is offered a choice: either an initial salary of \$20000 and an increase of \$500 per year, or an initial salary of \$10000 and an annual increase of \$1800. Calculate the total earning in the contracted period of 20 years and advise him what he should take.

5 An accountant is offered a choice between a yearly rise of \$2000 and a rise of \$9000 every four years. Calculate the total salary in each choice for the contracted period of 20 years and advise him which offer he should take.

6 Accountant A is given a rise of \$500 every six months. Accountant B is given a rise of \$2100 annually.
a) If their starting annual salary is \$10 000 each, calculate the number of years that must elapse before
   i) the two men have the same salary
   ii) the total money that each will receive is equal.
b) Also, calculate who receives more, and by how much, after 10 years of service.

7 A man set a task to his 12 children, each to receive a sum of money being \$200 less than that of the preceding one upon completion. If the man used \$15000 for the prizes how much did each of the two children who completed the task earliest and last receive ?

8 The profit of a business decreases at the constant rate of 20% per year. If the shop's initial profit is \$25000, find
a) the profit after 5 years.
b) the least number of years for which the profit becomes less than \$100.

9 a) The salaries of a woman in the 10th and 16th years working in a company are \$22000 and \$34000 respectively. If her salaries over the 16 years follow an arithmetic progression pattern, find her salaries in the first three years, and her total salary for the 16 years.
b) Repeat the question if her salaries over the years follow a geometric progression pattern.

10 The prices of children shoes of a brand form a GP while their weights form an AP. If size 1 shoes weigh 150 grams a pair and each pair is sold for \$2.50, and size 6 shoes weigh 500g a pair and each pair is sold for \$25.60. Find the weight and the price of a pair of size 5 shoes.

S 11 A woman borrowed \$7200 and agreed to repay \$200 plus a fee of 1% of unpaid balance every month. If the loan was paid off after 3 years, calculate the total amount she ended up paying for this loan.