

Lesson 26 – Investigating Sequences

Exploration 1 – Earning Simple Interest on an Investment

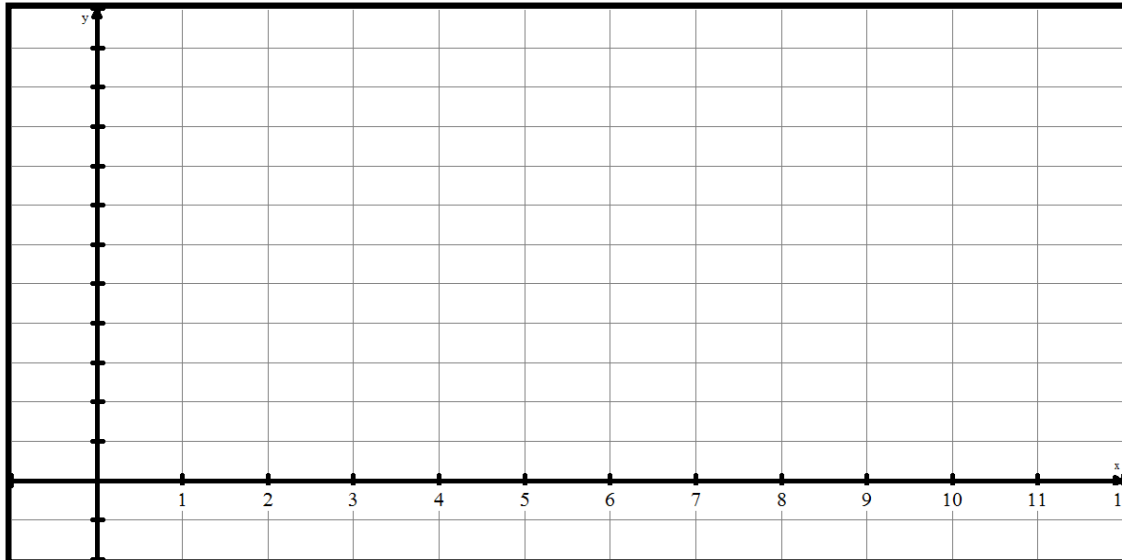
The formula for simple interest is $I = Prt$ and the formula to determine the amount of the investment is $A = P + I$. If we combine the 2 formulas, we get $A = P + Prt = P(1 + rt)$

So you will explore the following investment scenario → you invest \$10,000 on which you earn 10% simple interest. You invest the money for 10 years.

- (a) Complete the following table, in which you show the relationship between how much interest you earn and then the value of your total investment

Years	0	1	2	3	4	5	6	7	8	9	10
Amount											

- (b) Prepare a scatter plot that shows the relationship between the number of years invested (time) and value of the investment.



- (c) Determine an equation that summarizes the relationship between time of investment and value of the investment

Exploration 2 – Earning Compound Interest on an Investment

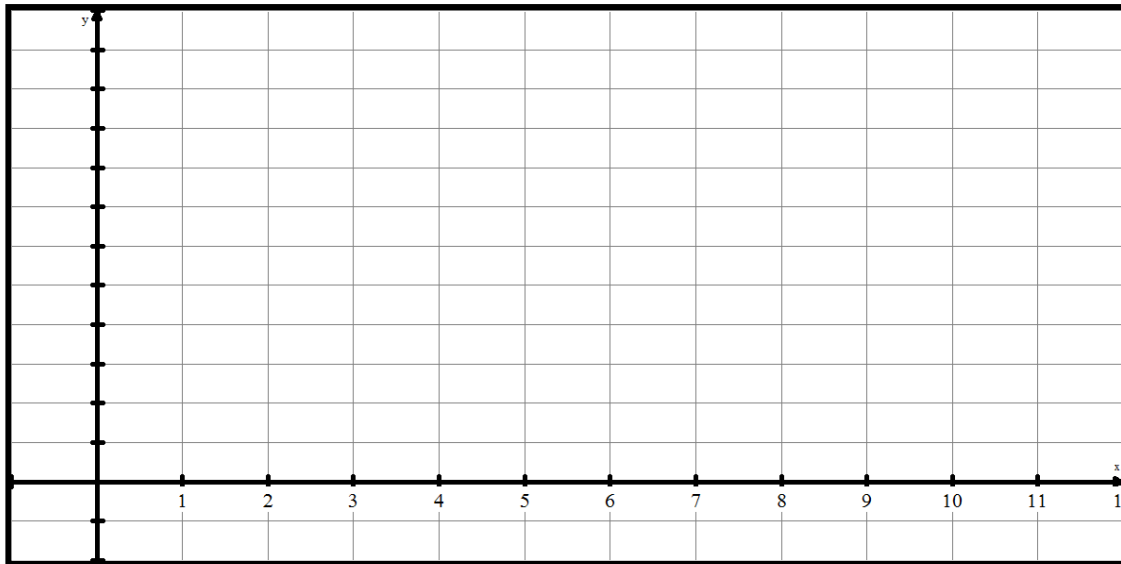
The formula for the total value of an investment earning compound interest is $A = P\left(1 + \frac{r}{n}\right)^{nt}$, where r is the annual interest rate, n is the number of times per year that interest is compounded, and t is the time of the investment.

So you will explore the following investment scenario → you invest \$10,000 on which you earn 10% interest, compounded annually for a period of 10 years.

- (a) Complete the following table, in which you show the relationship between how much interest you earn and then the value of your total investment

Years	0	1	2	3	4	5	6	7	8	9	10
Amount											

- (b) Prepare a scatter plot that shows the relationship between the number of years invested (time) and value of the investment.



- (c) Determine an equation that summarizes the relationship between time of investment and value of the investment

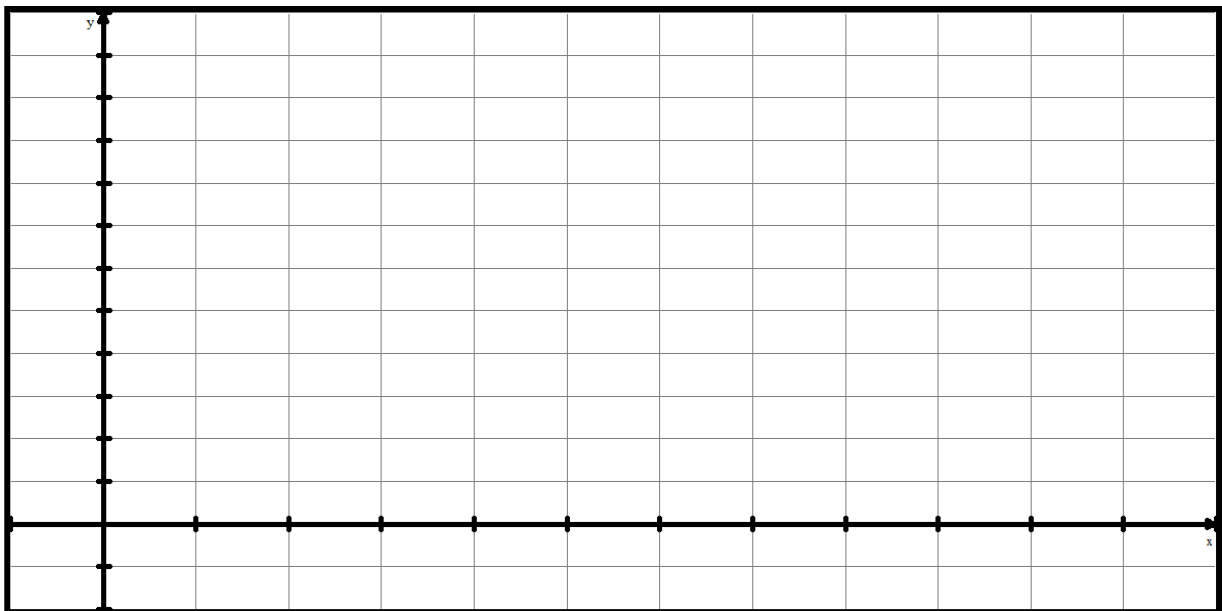
Exploration 3 – Earning Salary on Commission

So you will explore the following salary scenario → you are a salesperson and you sell motorcycles. Your salary is \$500 per month but you earn a commission of \$500 for every motorcycle you sell.

- (a) Complete the following table, in which you show the relationship between how many motorcycles you sell and much salary you earn.

# of motorcycles	0	1	2	3	4	5	6	7	8	9	10
salary											

- (b) Prepare a scatter plot that shows the relationship between the number of motorcycles sold and your salary.



- (c) Determine an equation that summarizes the relationship between the number of motorcycles you sell and your salary.

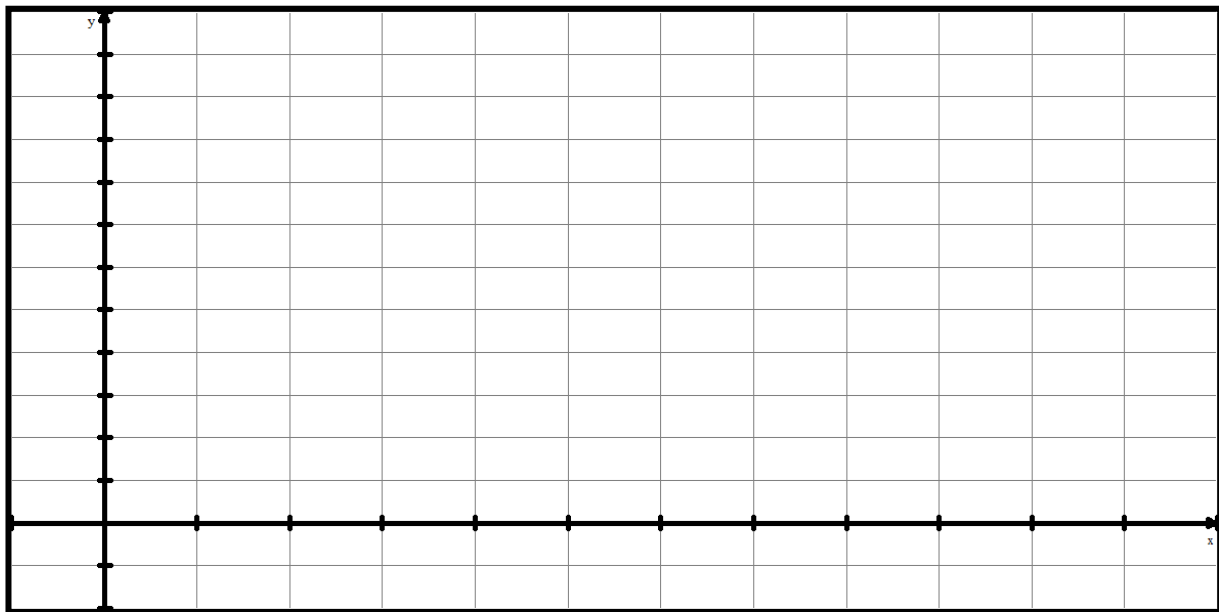
Exploration 4 – Modelling the rebound height of a bouncing ball

So you will explore the following salary scenario → you release a ball from a height of 3 meters. As it bounces off the floor, it returns to a maximum rebound height of 60% of its previous maximum rebound height.

- (a) Complete the following table, in which you show the relationship between how many bounces the ball has made and the maximum rebound height.

# of bounces	0	1	2	3	4	5	6	7	8	9	10
Rebound height											

- (b) Prepare a scatter plot that shows the relationship between how many bounces the ball has made and the maximum rebound height.



- (c) Determine an equation that summarizes the relationship between how many bounces the ball has made and the maximum rebound height.

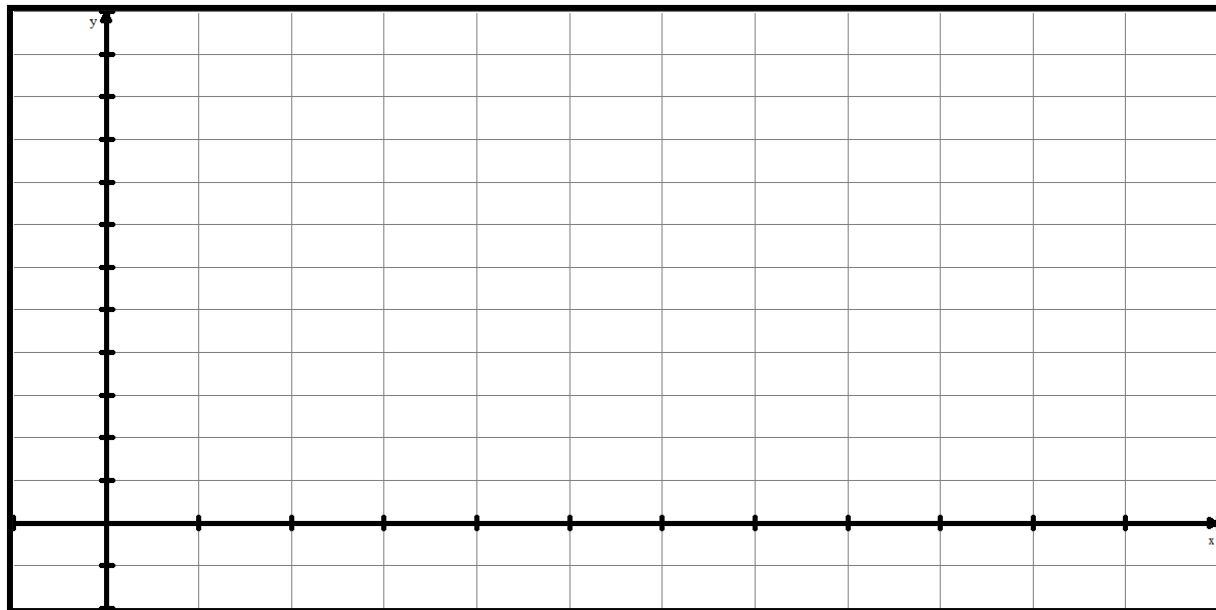
Exploration 5 – Modelling the revenues earned when changing admission prices.

So you will explore the following salary scenario → Given a ticket price of \$25.00, you know you will sell 4000 seats to a charity performance. You also know that for every \$1.00 price increment, you sell 50 less seats.

- (a) Complete the following table, in which you show the relationship between the number of price increments you make and the revenues made by the charity performance.

# price increments	0	1	2	3	4	5	6	7	8	9	10
revenue											

- (b) Prepare a scatter plot that shows the relationship between the number of price increments you make and the revenues made by the charity performance.



- (c) Determine an equation that summarizes the relationship between the number of price increments you make and the revenues made by the charity performance.