

# Principles of Mathematics, Grade 9 (MPM1D)

## Course Description

---

**Course Title:** Principles of Mathematics  
**Course Code:** MPM1D  
**Grade:** 9

**Course Type:** Academic  
**Credit Value:** 1.0  
**Prerequisite:** None

- **This course builds on** your knowledge from grade 8 mathematics
- **It leads you to** MPM2D
- **You will also have the option to take** MFM2P

**Official Ontario Ministry of Education secondary curriculum available here:**  
<http://www.edu.gov.on.ca/eng/curriculum/secondary/math.html>

### **This course focuses on four main strands:**

Number Sense and Algebra

Linear Relations

Analytic Geometry

Measurement and Geometry

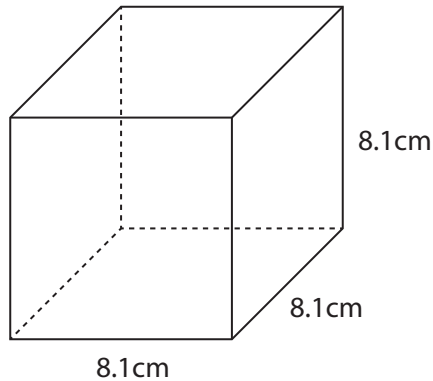
# Principles of Mathematics, Grade 9 (MPM1D)

## Course Description

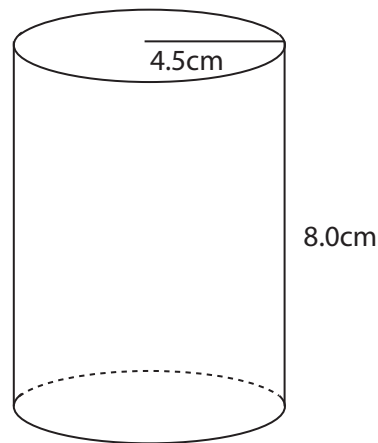
---

### Number sense and algebra:

Students will solve problems that require formulas and operations with exponents. For example: A movie theatre wants to compare the volumes of popcorn in two containers. One is a cube with an edge length of 8.1 cm and the other is a cylinder with a radius of 4.5 cm and height of 8.0 cm. Which should they sell and why?



$$\begin{aligned}V_{\text{cube}} &= L \times W \times H \\ &= 8.1 \text{ cm}^3 \\ &= 531.441 \text{ cm}^3\end{aligned}$$



$$\begin{aligned}V_{\text{cylinder}} &= \pi r^2 h \\ &= \pi (4.5 \text{ cm})^2 8.0 \text{ cm} \\ &= 508.938 \text{ cm}^3\end{aligned}$$

$\therefore$  the cube holds more popcorn.

# Principles of Mathematics, Grade 9 (MPM1D)

## Course Description

---

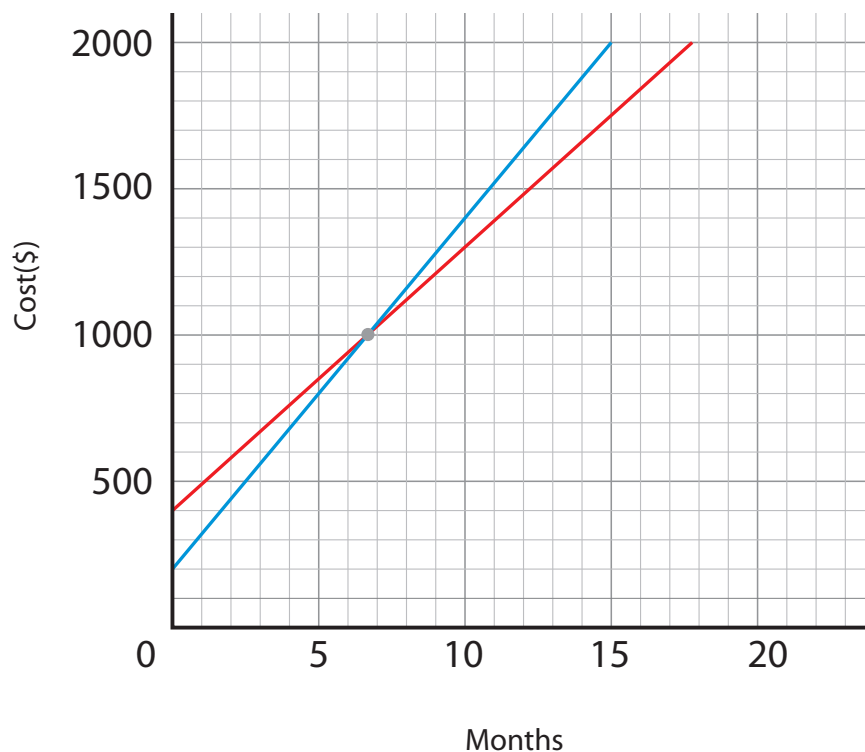
### Linear relations:

Students will make connections among graphs, tables and charts to solve problems, such as the problem Tellme (a new cell phone company), is selling the iCell 7 for \$400.00 on a \$90.00/month contract over two years. Dodgers (a competing cell phone company) is selling the iCell 7 for \$200.00 on a \$120.00/month plan with no contract.

Under what conditions should you choose Tellme or Dodgers? Illustrate your answer using a graph.

### Solution:

Comparing the costs of owning a cell phone based on Carrier fees



6 months and under Dodgers is the cheaper option.  
7 months and over Tellme is the cheaper option.

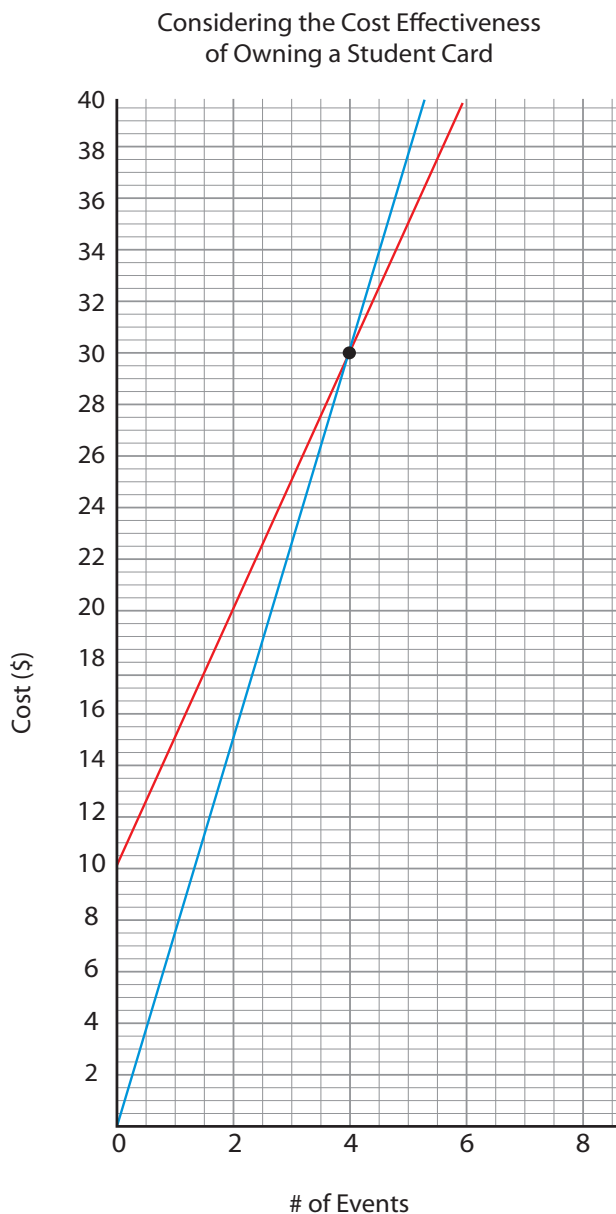
# Principles of Mathematics, Grade 9 (MPM1D)

## Course Description

---

### Analytic geometry (also called coordinate geometry):

Students will use information about graphs of lines, such as steepness and direction, to answer questions like this: Every student at Bridgewater High School has the option of purchasing a \$10 student card. With a card, each event costs \$5. Without a student card, each event costs \$7.50. Under what conditions should a student at Bridgewater High choose to purchase a card?



If a student is going to attend 3 or less events it is cheaper to not buy a student card. If a student attends 4 events it does not matter if they bought a student card or not as the price cost for 4 events is the same. If a student attends more than 4 events it is cheaper to buy a student card.

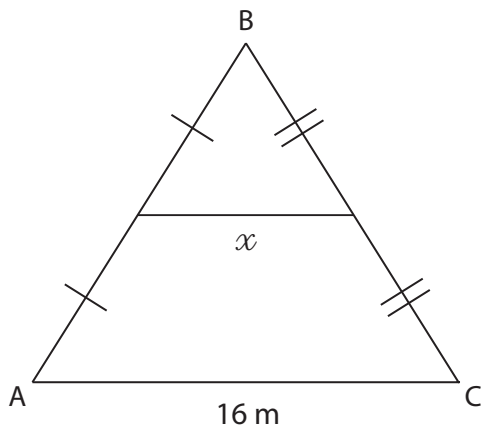
# Principles of Mathematics, Grade 9 (MPM1D)

## Course Description

---

### Measurement and geometry:

Students will solve real-world problems involving perimeter, area, surface area and volume. For example: Given the width of the base of an A-frame treehouse is 16 metres, determine the length of a horizontal support beam that is attached halfway up the sloping sides



Determine  $x$

Since  $x$  is the line that connects the midpoint of AB to the midpoint BC then:

$$\begin{aligned}x &= \frac{1}{2}(16 \text{ m}) \\ &= 8 \text{ m}\end{aligned}$$