Math Learning in the Classroom

Math learning occurs in many ways in the classroom. Teachers observe students during daily work, have conversations with students about math ideas and look at the results of their math work.

If you have questions about math in the classroom or if your child needs additional support, please contact your child's teacher.

Online Resources for Grade 9 Math Students

These sites were active at the time of publication. Please review them to determine if they are appropriate for your child's needs and interests.

- **NRICH math** – interactive tasks and games for all grade levels: https://nrich.maths.org
- **Math is Fun** – games, puzzles, a math dictionary and more: www.mathsisfun.com
- **Mathpickle** – original math puzzles, games and problems: http://mathpickle.com

To view the entire Saskatchewan curriculum, go to *www.curriculum.gov.sk.ca*.

Building Math Success

GRADE 9

Be Positive and Supportive

When you talk about math ideas and show how math is part of daily life, you are showing how math is important. You can encourage your child to think positively and be persistent as you work together to build math confidence and math understanding.

The goal of this document is to support parents and caregivers as they promote positive math thinking. It also provides an overview of what Saskatchewan students will be taught in school in Grade 9.

Make Math Real at Home

- Discuss how math is part of everyday activities, such as sports, music and art.
- Comment on and discuss the meaning of charts and graphs that you may see online or in the news and discuss factors that might affect the data collected. For example, discuss data collected for election polls.
- Estimate and/or calculate mathematical "events" in the home, such as how much new flooring is needed or the cost of a family vacation.
- Calculate discounts and find the least expensive options for things such as cell phone plans.
- Interpret and compare sports statistics.
- Talk about how decisions are made based on probabilities. For example, does the probability of precipitation impact your decision about tomorrow's activities?

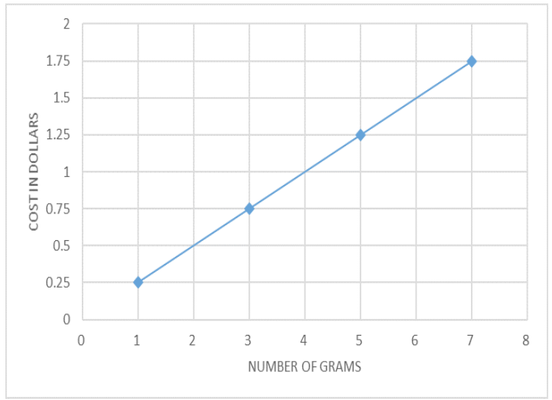
Overview of Grade 9 Math

NUMBER

- Understand numbers written with bases and exponents.
  - 6^3: the number 6 is the base; the 3 is the exponent. 6^3 (6 x 6 x 6, 6 to the 3rd or 6 cubed) is a power of 6.
  - Any base (except for 0) with an exponent of 0 is equal to 1. For example, $7^0 = 1$, $120^0 = 1$.
  - Compare, order and solve problems with rational numbers.
  - A rational number is any number that can be written as a fraction.
- Understand square roots, including the square roots of positive rational numbers.
  - $\sqrt{\frac{169}{100}} = \frac{\sqrt{169}}{\sqrt{100}} = \frac{13}{10}$; $\sqrt{0.81} = .9$
  - $\frac{8}{18}$ is a perfect square because $\frac{8}{18} = \frac{4}{9}$, and $\frac{4}{9}$ can be written as the product of $\frac{2}{3} \times \frac{2}{3}$.

PATTERNS AND RELATIONS

- Understand linear relations, and draw and analyze graphs and solve questions based on the linear relations.
  - Two variables have a linear relationship when a constant change in one quantity produces a constant change in the other quantity. For example, underwater pressure/depth is a linear relationship because at 5 metres the pressure is 50 kilopascals, at 10 metres the pressure is 100 kilopascals, and at 15 metres the pressure is 150 kilopascals.
  - Use the graph of a linear relation to determine data points between given points on the line, as well as points beyond given points on the line, assuming that the linear relation continues.
    - If total cost (c) = price per gram × number of grams (n), and the price per gram is $0.25, the following would be a correct graph for the linear equation $c = .25n$.

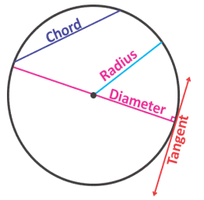


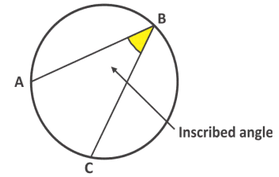
If the price remains constant, it would be correct to say that 8 grams will cost $2.00 (beyond the line), and 2 grams will cost $0.50 (between points on the line.)

- Solve equations and problems using linear relations.
  - Equation examples: $3.2d - 8.6 = -3.16$; $\frac{r}{3} + 7 = 8.6$
  - A cell phone company offers two text plans. The first plan is 150 free texts and a charge of $0.60 for any additional texts. The second plan is 50 free texts and a charge of $0.20 for any additional texts. How many texts would result in the same cost for both plans? Equation: $0.60(n - 150) = 0.20(n-50)$
- Use polynomials in addition, subtraction, multiplication and division.
  - An expression such as $4x^2 - 3x + 8$ is a polynomial containing the terms $4x^2$, $(-3x)$ and 8.

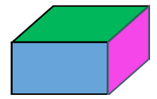
SHAPE AND SPACE

- Understand properties of a circle including chords, inscribed angles and tangents, and use knowledge of circle properties to solve problems.

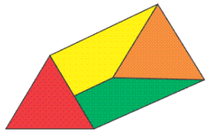




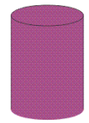
- Extend understanding of surface areas of right rectangular prisms, triangular prisms, and cylinders to understand surface area of composite 3-D objects.



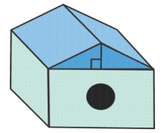
Rectangular prism



Triangular prism



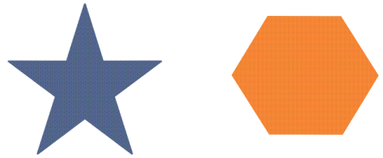
Cylinder



Composite 3-D object

- Determine the scale factor for 2-D shapes and create and explain enlargements and reductions of the shapes.
- Understand line and rotation symmetry.

These objects have line symmetry: They can be divided by a line into parts that are mirror images.



These objects have rotation symmetry: They can be rotated around a center point and the object appears the same.

STATISTICS AND PROBABILITY

- Understand the effect of factors such as bias, language, ethics and timing on data collection.
- Complete a project that involves the collection, display and analysis of data.
- Explain examples of probabilities in society that may influence decisions.
  - A decision to begin smoking may be influenced by research saying that the risk of developing lung cancer is 0.2 percent for males who have never smoked and 24.4 percent for males who smoke more than five cigarettes per day.