Matthew Halton High School
Math 8
Course Outline
2019-2020

General Information

- Instructors – Colton Garner & Tara Tanner
- garnerc@lrsd.ab.ca
- Room 131

Course Content

The learner outcomes for Math 8 (as outlined later in the course outline) will be covered by studying four main topics.

- Topic 1: Number
- Perfect Squares, Square Roots, Percents, Ratio and Rate, Proportional Reasoning, Multiplying and Dividing Fractions, Multiplying and Dividing Integers
- Topic 2: Patterns and Relations
- Graphing Linear Relations, Solving Linear Equations
- Topic 3: Shape and Space
- Pythagorean Theorem, Nets and 3D Objects, Surface Area, Volume, Dimensional Congruence of Polygons
- Topic 4: Statistics and Probability
- Critiquing Graphs, Probability of Independent Events

Evaluation

Final grades will be calculated as follows:

Number	35%
Patterns and Relations	15%
Shape and Space	25%
Statistics and Probability	10%
Final Exam	15%

Resources

Math Makes Sense 8 – Pearson Education (2008)
Math Focus 8 – Nelson (2008)
Supplemental resources will also be used throughout the year.

Expectations
- One Classroom Rule - RESPECT
  - For Self
  - For Others (Classmates, Teacher, Custodial and Other Staff)
  - For the Classroom
- Use of personal electronic devices, such as ipods, cell phones, gaming devices, tablets, ipads, etc.is **NOT** permitted in class without prior permission.

Personal Supplies
- Pencils, Pencils, Pencils…and erasers!
- Work Binder – Binder, paper and dividers
- Scientific Calculator – TI-30XII is great, TI-30Xa is NOT as great!
- Wipe Erase Markers
- Other supplies such as geometry sets, rulers, etc. may be needed at various times.

Timeline
An approximate timeline can be found on the next page. This timeline is subject to change as needed.

Long Range Plans
Math 8
2019-2020

September

S	M	T	W	T	F	S	
		3	4	5	6	7	Course Intro
8	9	10	11	12	13	14	8N1 – Perfect Squares
15	16	17	18	19	20	21	8N2 – Square Roots
22	23	24	25	26	27	28	8N6 - Fractions
29	30						

October

S	M	T	W	T	F	S	
		1	2	3	4	5	
6	7	8	9	10	11	12	8N7 – Integers
13	14	15	16	17	18	19	Project and Exam
20	21	22	23	24	25	26	8SP1 – Critiquing Graphs
227	28	29	30	31			ELW

November

S	M	T	W	T	F	S	
					1	2	
3	4	5	6	7	8	9	8SP2 – Probability
10	11	12	13	14	15	16	Project and Exam
17	18	19	20	21	22	23	8N3 – Percents
24	25	26	27	28	29	30	8N4 – Rate and Ratio

December

S	M	T	W	T	F	S	
1	2	3	4	5	6	7	8N5 – Proportional Reasoning
8	9	10	11	12	13	14	Project - If the World Were a Village/Christmas Wish List
15	16	17	18	19	20	21	Review and Exam
22	23	24	25	26	27	28	Christmas Break
29	30	31					

January

S	M	T	W	T	F	S	
			1	2	3	4	
5	6	7	8	9	10	11	8PR1 – Graphing Linear Relations
12	13	14	15	16	17	18	8PR2 – Solving Linear Equations
19	20	21	22	23	24	25	
26	27	238	29	30	31		Project -

February

S	M	T	W	T	F	S	
						1	
2	3	4	5	6	7	8	Review and Exam
9	10	11	12	13	14	15	Flex
16	17	18	19	20	21	22	Family Day and Teachers Conv.
23	24	25	26	27	28		8SS1 – Pythagorean Theorem

March

S	M	T	W	T	F	S	
1	2	3	4	5	6	7	Project – Park Design
8	9	10	11	12	13	14	8SS4 - Volume
15	16	17	18	19	20	21	Project – Ice Cream Part I
22	23	24	25	26	27	28	8SS2 – Nets and 3D Objects
29	30	31					

April

S	M	T	W	T	F	S	
		1	2	3	4		8SS3 – Surface Area (Prisms)
5	6	7	8	9	10	11	8SS3 – Surface Area (Cylinders)
12	13	14	15	16	17	18	Easter Break
19	20	21	22	23	24	25	Project – Ice Cream Part II
26	27	28	29	30			8SS5 – Dimensional Views

May

S	M	T	W	T	F	S	
					1	2	
3	4	5	6	7	8	9	ELW
10	11	12	13	14	15	16	8SS6 – Congruent Polygons
17	18	19	20	21	22	23	Project – Apartment Design
24	25	26	27	28	29	30	Review and Strand Exam

June

S	M	T	W	T	F	S	
			1	2	3	4	
5	6	7	8	9	10	11	Year End Review
12	13	14	15	16	17	18	
19	20	21	22	23	24	25	Final Exam
26	27	28					

Math 8

Specific Outcomes, I Can Statements, and Vocabulary

Strand: Number

8N1. Perfect Squares – Demonstrate an understanding of perfect squares and square roots, concretely, pictorially, and symbolically (limited to whole numbers).
- I can show that a number is a perfect square concretely, pictorially, and symbolically.
- I can determine if a number is a perfect square.
- I can identify the square root of a perfect square.

8N2. Square Roots – Determine the approximate square root of numbers that are not perfect squares (limited to whole numbers).
- I can estimate the square root of a whole number.
- I can use technology to determine the square root of a whole number.

8N3. Percents – Demonstrate an understanding of percents greater than or equal to 0%, including greater than 100%.
- I can provide a context where a percent may be more than 100% or between 0% and 1%.
- I can express a given number as a fraction, decimal, and percent.
- I can calculate a percentage.
- I can calculate percent of a number.
- I can use percent calculations appropriately in problem situations (such as determining sales tax, discount, tips, total cost, percent increase and decrease, and combined percents, etc.)

8N4. Ratio & Rate – Demonstrate an understanding of ratio and rate.
- I can express two and three term ratios from a given context using words and or symbols. (Ex. 3:5 or 3 to 5, 20L per 100km or 20L/100km)
- I can express a part to part ratio as a part to whole fraction.
- I can calculate unit rates.
- I can identify rates and ratios from real-life examples.
- I can express a given ratio as a percent, and explain why a rate cannot be represented as a percent.

8N5. Proportional Reasoning – Solve problems that involve rates, ratios, and proportional reasoning.
- I can give an example of when $\frac{a}{b}$ represents a: fraction, rate, ratio, quotient, probability.
- I can determine the missing number in a proportion.
- I can solve a given problem involving rate, ratio, or percent.

8N6. Multiplying & Dividing Fractions – Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically.
- I can model multiplication of positive fractions concretely and record the process.
- I can model division of positive fractions concretely and record the process.
- I can estimate the product of two positive proper fractions.

- I can estimate the quotient of two positive proper fractions.
- I can identify in a problem situation when to multiply and when to divide fractions.
- I can multiply fractions.
- I can divide fractions.
- I can express mixed numbers as improper fractions and vice versa.
- I can multiply and divide mixed numbers.
- I can develop and apply personal strategies for multiplying and dividing fractions and mixed numbers.

8N7. Multiplying & Dividing Integers – Demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically.
- I can model multiplication and division of integers concretely and record the process.
- I can multiply and divide integers.
- I can identify in a problem situation when to multiply and when to divide integers.
- I can develop and apply personal strategies for multiplying and dividing integers.
- I can use order of operations appropriately.

Strand: Patterns & Relations

8PR1. **Graphing Linear Relations –** Graph and analyze two-variable linear relations.
- I can substitute into an equation to create a table of values or set of ordered pairs.
- I can write ordered pairs from a given equation.
- I can graph a table of values or set of ordered pairs.
- I can use a graph to solve problems.
- I can explain how constant terms, numerical coefficients, and variables are related to a graph and an equation.

8PR2. **Solving Linear Equations –** Model and solve problems, concretely, pictorially, and symbolically, using linear equations of the form:
- $ax = b$
- $\dfrac{x}{a} = b, a \neq 0$
- $ax + b = c$
- $\dfrac{x}{a} + b = c, a \neq 0$
- $a(x + b) = c$

where a, b, and c are integers.
- I can represent a given problem with an algebraic equation and solve concretely, pictorially, and symbolically.
- I can apply the distributive property to solve equations.

- I can verify the solution to an algebraic equation.

Strand: Shape & Space

8SS1. Pythagorean Theorem – Develop and apply the Pythagorean Theorem to solve problems.
- I can model and explain Pythagorean Theorem concretely or pictorially.
- I can explain why the Pythagorean Theorem can only be used for right triangles.
- I can determine the measure of the third side of a right triangle, given the measures of the two other sides.
- I can determine if a triangle is a right triangle using Pythagorean Theorem.
- I can solve problems involving right triangles using Pythagorean Theorem.

8SS2. Nets & 3D Objects – Draw and construct nets for 3D objects.
- I can match a given net to the 3D object it represents.
- I can construct a 3D object from a given net.
- I can draw nets for cylinders and prisms.

8SS3. Surface Area – Determine the surface area of right rectangular prisms, right triangular prisms, and right cylinders to solve problems.
- I can identify the faces of prisms and cylinders.
- I can develop a strategy for determining the surface area of a 3D object.
- I can calculate the surface area of prisms and cylinders.
- I can solve problems involving surface area.

8SS4. Volume – Develop and apply formulas for determining the volume of right rectangular prisms, right triangular prisms, and right cylinders.
- I can explain the difference between surface area and volume.
- I can explain that the base and the height of a prism or cylinder are perpendicular.
- I can explain the connection between the area of the base and the volume of a prism or cylinder.
- I can develop a formula for determining the volume of a prism or cylinder.
- I can apply a formula for determining the volume of a prism or cylinder.
- I can solve problems involving volume.

8SS5. Dimensional Views – Draw and interpret top, front, and side views of 3D objects composed of right rectangular prisms.
- I can draw and label the top, front, and side views of a given 3D object.
- I can build a 3D object from a given top, front, and side view.

8SS6. Congruence of Polygons – Demonstrate an understanding of the congruence of polygons

Strand: Statistics & Probability

8SP1. **Critiquing Graphs –** Critique ways in which data is presented in circle graphs, line graphs, bar graphs, and pictographs.
● I can determine the most appropriate graph for a set of data.
● I can explain why one graph is better than another for a set of data.
● I can identify ways a graph can be misleading.

8SP2. **Probability of Independent Events –** Solve problems involving the probability of independent events.
● I can define and provide examples of independent and dependent events.
● I can display the sample space for independent events.
● I can generalize and apply a rule to calculate the probability of independent events.

Vocabulary: Number

Perfect Square	Approximate	Ratio
Square Root	Estimate	Rate
Factor	Rational	Unit Rate
Square	Irrational	Part to Part
Squared	Percent Of	Part to Whole
Benchmark	Percent Off	Proportion

(Students should be familiar with the following words from grade 7.)

Divisible	Sum	Concretely
Factor	Difference	Pictorially
Multiple	Place Value	Symbolically
Prime Number	Area	Equivalent Fraction
Composite Number	Expression	Denominator
Natural Numbers	Equivalent	Numerator
Whole Numbers	Percent	Improper Fraction
Product	Greater Than	Proper Fraction
Quotient	Less Than	Mixed Number
Remainder	Equal To	Lowest Terms
Even	Bar Notation	Reduce
Odd	Terminating Decimal	Simplify
Dividend	Repeating Decimal	Common Denominator
Divisor	Round	Integer
Undefined	Approximation	Positive

Negative   Opposite Integers   Descending
Zero Principle   Number Line
Zero Pairs   Ascending

Vocabulary: Patterns and Relations

Distributive Property
    (Students should be familiar with the following words from grade 7.)
Constant   Equation   Substitute
Variable   T-Chart   Equality
Algebraic Expression   Pattern   Preservation of Equality
Numerical Coefficient   Stage Number

Vocabulary: Shape and Space

Pythagorean Theorem	3 Dimensional Object	Surface Area
Hypotenuse	Prism	Volume
Legs	Cylinder	Capacity
Right Triangle	Faces	Vertex
Right Angle	Base	Polygon
Net	Height	Congruent

(Students should be familiar with the following words from grade 7.)

Radius	Parallel	Transformation
Diameter	Perpendicular	Translation
Circumference	Bisector	Reflection
Pi	Line	Rotation
Central Angle	Line Segment	Image
Compass	Cartesian Plane	Horizontal
Protractor	Axes	Vertical
Degree	Ordered Pair	Consecutive
Parallelogram	Coordinates	Clockwise
Formula	Quadrant	Counter-Clockwise
Area	Vertices	

Vocabulary: Shape and Probability

Interval	Misinterpret	Misrepresent

(Students should be familiar with the following words from grade 7.)

Central Tendency	Degrees	Likelihood
Mean	Circle Graph	Event
Median	Angle	Sample Space
Mode	Circle	Independent Events
Range	Portion	Dependent Events
Data	Legend	Theoretical Probability
Outlier	Probability	Experimental Probability
Compass	Ratio	Experiment
Protractor	Manipulate	
Proportion	Chance	