**Syllabus**

**Math 20-2**

**Miss Gibbon**

**Classroom Expectations**

**Be Open-minded** *~ If you see the worst in any situation or idea without first considering its merits, you only impede your own growth.*

**Be positive** ~ *Attitude is everything. Salt, like math, may not be so good on its own, but it can definitely make everything else that little bit more flavourful.*

**Be respectful** ~ *Others have the right to a quality education, same as you. Don't mess with that.*

**WORK IS EXPECTED TO BE NEAT.** (Use pencil and eraser or buy erasable pens)

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**Materials Required**

Binder

loose-leaf

graphing paper

Pencils and Erasers

Pens/Highlighters

**GRAPHING CALCULATOR**

**Lockdown/Fire drill Discussion**

**Classroom Routines**

**Late** – Sign in when you arrive. Send me a Remind with the reason for your late or you will remain absent.

Format: Late – A bear was standing on my keys. (3:05)

**Bathroom/Drink** – Sign out and sign in to the binder by the door. I need to know where you are AT ALL TIMES. Only one student may be out of the room at a time. When you leave you will close the binder so that others know someone is already out. Open it when you get back.

**Hand in** – There is a bin with your class name on it. **All** work is handed in here unless told otherwise.

**Can and Can’t Do’s**

**Technology** – Will only be used in my classroom at designated times. Parked at all other times in basket on my desk. This is a school wide policy.

Exceptions: When I give you permission (Access to keys, Bluetooth headphones during work time…

**Food and Drink –** You may eat and drink **healthy, quiet food** in my class.

Should you choose to bring a Slurpee to class, you bring me one as well, or I toss yours. Not healthy. (This includes Iced coffee or Iced Cappuccino)

 NO: Chips, Cookies, Carbonated beverages…

\*If I find food on the floor after your class, food privileges will be lost for the entire class.

**Contact Information:**

**Teacher:** Miss Paige Gibbon

**e-mail:** paige.gibbon@pallisersd.ab.ca

**Remind:** @mathe202

**Google Classroom:** code: 067x4as

 Will be used to post assignments, keys, and digital lessons

**Grading Scheme**

Class Work 5% *Show me you can expand on what you learn*

Projects 15% *Show me you can apply and expand on what you learn*

Research Project 10% *Show me that you can apply what we have learned to your life*

Tests 40% *Show that you can combine and remember processes*

Final Exam 30% *Show you can remember what you have learned in this course*



**Study**

**\*1 Rewrite may be earned\***

100 points and a test mark under 60%

5 – Bellwork Mark over 80%

3 – Puzzle completion

5 – Early Project Turn in (and earn over 60%)

10 – No more than 7 lates before review

10 – No more than 7 absences before review

Study strategies.

- Flash cards

- Note condensing

- Rework examples

- Teach a friend/sibling/parent…

- **Complete and review past assignments and read comments**

Reduce anxiety

 - Breathing Exercises

 - Stretching

 - Know the material

 - Go for a run

 - 5 senses

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**Course Rationale**

“Mathematics is a broad-ranging field of study in which the properties and interactions of idealized objects are examined. Whereas mathematics began merely as a calculational tool for computation and tabulation of quantities, it has blossomed into an extremely rich and diverse set of tools, terminologies, and approaches which range from the purely abstract to the utilitarian.” (Wolfram MathWorld)

In 10 common you began to work in more abstract mathematics by using functions, studying polynomials and studying linear equations. In math 20-2 we expand on our studies of linear functions by applying them to the world around us, we use our knowledge of surface area and volume to study similar shapes and use scale factors accurately, we use our knowledge of trigonometry and angles to create proofs, solve problems and build a process for logic that relates to computer programming and law, we will study patterns related to quadratics and radicals to expand our knowledge of algebra, functions and formula use, and we will delve into the realm of statistics to see how numbers are used to make predictions in markets, warranties, and insurance.

Math 20-2 may not be as heavily algebraic as math 20-1, but the concepts presented in this course are geared toward mathematical learning at the university level. This is a good course to be in if you are leaning toward any field that requires university education, but is not a calculus based course. Some potential education would be marketing, business, nursing, physio, psychology, sociology, linguistics, nursing, marketing, business…



**Outcome Checklist and Timeline: 20-2**

*\*All timelines are tentative due to possible class disruptions and need for reviewing past concepts.*

Proportional Reasoning (13 classes)

­­­\_\_\_\_\_\_I can interpret a rate in context…………………………………………………… P1

*\_\_\_\_\_\_I can convert between units in rates……………………………………………….. P2*

\_\_\_\_\_\_I can solve problems involving rates and unit rates……………………………… P3

\_\_\_\_\_\_I can solve a rate problem that requires me to isolate a variable………………… P4

\_\_\_\_\_\_I can calculate unit rates…………………………………………………………. P5

\_\_\_\_\_\_I can compare unit rates………………………………………………………….. P6

\_\_\_\_\_\_I can justify a decision made using unit rates…………………………………….. P7

\_\_\_\_\_\_I can graph a rate………………………………………………………………….. P8

*\_\_\_\_\_\_*I can calculate the slope of a graph…………………………………………….. *P9*

\_\_\_\_\_\_I can explain the relationship between the slope of a graph and a rate…………… P10

\_\_\_\_\_\_I can describe a context for a given rate…………………………………………. P11

\_\_\_\_\_\_I can identify and explain factors that may affect a rate………………………….. P12

\_\_\_\_\_\_I can explain how a scale diagram is used to model 2D and 2D shapes…………. P13

\_\_\_\_\_\_I can determine the scale factor used to draw a representation…………………… P14

\_\_\_\_\_\_I can use a scale factor to determine and unknown dimension ………………….. P15

\_\_\_\_\_\_I can draw a scale diagram of a 2D shape using a given scale factor……………. P16

\_\_\_\_\_\_I can solve problems that involve scale factor…………………………………….. P17

\_\_\_\_\_\_I can determine the area of a 2D shape given the scale diagram………………….. P18

\_\_\_\_\_\_I can determine the surface area of a 3D object given the scale diagram…………. P19

\_\_\_\_\_\_I can determine the volume of a 3D object given the scale diagram…………….. P20

\_\_\_\_\_\_I can explain how a linear scale factor is related to an area scale factor…………. P21

\_\_\_\_\_\_I can explain how a linear scale factor is related to a volume scale factor………. P22

\_\_\_\_\_\_I can solve spatial problems that require the manipulation of formulas…………… P23

\_\_\_\_\_\_I can solve spatial problems using SA, Volume and scale factors……………….. P24



Puzzles and Logic (9 classes)

\_\_\_\_\_\_I understand terminology like conjecture, inductive, deductive, counterexample… L1

\_\_\_\_\_\_I can make conjectures by observing patterns and identifying properties………… L2

\_\_\_\_\_\_I can justify the reasonableness of my conjecture………………………………… L3

\_\_\_\_\_\_I can compare inductive and deductive reasoning using examples……………… L4

\_\_\_\_\_\_I can provide and explain a counterexample to a conjecture……………………… L5

\_\_\_\_\_\_I can use deductive reason to prove a conjecture…………………………………. L6

\_\_\_\_\_\_I can build a deductive proof that includes my reasoning………………………… L7

\_\_\_\_\_\_I can use let statements……………………………………………………………. L8

\_\_\_\_\_\_I can algebraically portray number properties (odd, even, multiple…)……………. L9

\_\_\_\_\_\_I can prove algebraic and number relationships such as…

\_\_\_\_\_\_ Divisibility rules………………………………………………………….. L10

\_\_\_\_\_\_ Number properties……………………………………………………….. L11

\_\_\_\_\_\_ Number tricks…………………………………………………………….. L12

\_\_\_\_\_\_I can determine if an argument is valid and justify the reasoning……………….. L13

\_\_\_\_\_\_I can identify errors in a given proof……………………………………………… L14

\_\_\_\_\_\_I can solve contextual problems that involve inductive or deductive reasoning… L15

\_\_\_\_\_\_I can use the following strategies to win a puzzle or game

­\_\_\_\_\_\_ Guess and check………………………………………………………….. L16

\_\_\_\_\_\_ Look for a pattern………………………………………………………… L17

\_\_\_\_\_\_ Make a list……………………………………………………………….. L18

\_\_\_\_\_\_ Draw or model……………………………………………………………. L19

\_\_\_\_\_\_ Eliminate possibilities……………………………………………………. L20

\_\_\_\_\_\_ Simplify the problem……………………………………………………… L21

\_\_\_\_\_\_ Work backward……………………………………………………………. L22

\_\_\_\_\_\_ Create my own…………………………………………………………….. L23

\_\_\_\_\_\_I can identify and correct errors in a solution to a puzzle………………………… L24

\_\_\_\_\_\_I can identify and correct errors in a strategy for winning a game……………….. L25

\_\_\_\_\_\_I can create a variation in a puzzle or a game and describe a strategy for solving/winning…………………………………………………………………… L26

Geometry & Trigonometry (12 classes)

\_\_\_\_\_\_I can determine the measures of angles in a diagram that includes parallel lines, angles and triangles……………………………………………………………………….. G1

\_\_\_\_\_\_I can justify the measures of angles in a diagram that includes parallel lines, angles and triangles……………………………………………………………………………. G2

\_\_\_\_\_\_I can identify and correct errors in a solution involving angles and triangles…….. G3

\_\_\_\_\_\_I can solve problems involving angles and triangles…………………………….. G4

\_\_\_\_\_\_I can construct parallel lines given a compass, protractor, or *geometry program…. G5*

\_\_\_\_\_\_I can explain how to construct parallel lines given a compass, protractor, or *geometry program……………………………………………………………………………………. G6*

\_\_\_\_\_\_I can determine if lines are parallel given the measure of angles at the transversal…………………………………………………………………………. G7

\_\_\_\_\_\_I can use inductive reasoning to explain the relationships between parallel lines and transversals……………………………………………………………………….. G8

\_\_\_\_\_\_I can use deductive reasoning to prove properties of angles formed by transversals and parallel lines……………………………………………………………………….. G9

\_\_\_\_\_\_I can use the sum of angles in a triangle to help build deductive geometric proofs……………………………………………………………………………… G10

\_\_\_\_\_\_I can use inductive reasoning to relate the degrees in a polygon to the number of sides in the polygon……………………………………………………………………….. G11

\_\_\_\_\_\_I can identify and correct errors in a deductive geometric proof………………… G12

\_\_\_\_\_\_I can use inductive reasoning to verify that if lines are not parallel, transversal relationships do not apply…………………………………………………………. G13

\_\_\_\_\_\_I can use deductive reasoning to prove that triangles are congruent…………….. G14

\_\_\_\_\_\_I can draw diagrams to represent problems involving the sine and cosine laws… G15

\_\_\_\_\_\_I can explain the steps in a proof of the sine or cosine law………………………. G16

\_\_\_\_\_\_I can solve problems involving the sine law…………………………………….. G17

\_\_\_\_\_\_I can solve problems involving the cosine law………………………………….. G18

\_\_\_\_\_\_I can solve problems that involve more than one triangle……………………….. G19

Quadratics (15 classes)

\_\_\_\_\_\_I can recognize quadratics in any form………………………………………….. Q1

\_\_\_\_\_\_I can use vertex form to find the…

\_\_\_\_\_\_ Vertex……………………………………………………………………… Q2

\_\_\_\_\_\_ X intercepts………………………………………………………………… Q3

\_\_\_\_\_\_ Y intercepts……………………………………………………………….. Q4

\_\_\_\_\_\_ Domain and range…………………………………………………………. Q5

\_\_\_\_\_\_ Axis of symmetry…………………………………………………………. Q6

\_\_\_\_\_\_I can use technology to find the …

\_\_\_\_\_\_ Vertex……………………………………………………………………… Q7

\_\_\_\_\_\_ X intercepts………………………………………………………………… Q8

\_\_\_\_\_\_ Y-intercepts……………………………………………………………….. Q9

\_\_\_\_\_\_ Domain and range………………………………………………………… Q10

\_\_\_\_\_\_ Axis of symmetry………………………………………………………… Q11

\_\_\_\_\_\_I can use factored form to find the …

\_\_\_\_\_\_ Vertex………………………………………………………………………. Q12

\_\_\_\_\_\_ X-intercepts……………………………………………………………….. Q13

\_\_\_\_\_\_ Y-intercepts……………………………………………………………….. Q14

\_\_\_\_\_\_ Domain and range………………………………………………………….. Q15

\_\_\_\_\_\_ Axis of symmetry…………………………………………………………. Q16

\_\_\_\_\_\_I can determine the axis of symmetry when given the x-intercepts……………….. Q17

\_\_\_\_\_\_I can determine the coordinates of the vertex given the equation and the axis of symmetry…………………………………………………………………………… Q18

\_\_\_\_\_\_I can determine if the y-coordinate of the vertex is a max or min………………… Q19

\_\_\_\_\_\_I can sketch the graph of a quadratic function using its characteristics………….. Q20

\_\_\_\_\_\_I can sketch the graph of a quadratic function using technology…………………. Q21

\_\_\_\_\_\_I can factor a quadratic…

\_\_\_\_\_\_ Using GCF………………………………………………………………… Q22

\_\_\_\_\_\_ Using multiply to the end, add to the middle……………………………… Q23

\_\_\_\_\_\_ Using decomposition………………………………………………………. Q24

\_\_\_\_\_\_I can factor to find the x-intercepts of a quadratic…………………………………. Q25

\_\_\_\_\_\_I can use technology to find the x-intercepts of a quadratic……………………….. Q26

\_\_\_\_\_\_I can explain why roots, zeros, x-intercepts, solutions are the same thing……….. Q27

\_\_\_\_\_\_I can use substitution to verify the roots of a quadratic…………………………… Q28

\_\_\_\_\_\_I can determine the roots of a quadratic using the quadratic formula……………… Q29

\_\_\_\_\_\_I can use examples to explain why a quadratic may have 0, 1 or no solutions……. Q30

\_\_\_\_\_\_I can create the equation of a quadratic using

\_\_\_\_\_\_ the roots………………………………………………………………..… Q31

\_\_\_\_\_\_ vertex form……………………………………………………………….. Q32

\_\_\_\_\_\_I can model a situation with a quadratic equation………………………………… Q33

\_\_\_\_\_\_I can solve a quadratic equation to solve a problem……………………………… Q34

Radicals (10 classes)

 *Square roots only*

\_\_\_\_\_\_I can recognize a radical expression………………………………………………. R1

\_\_\_\_\_\_I can compare and order radical expressions with numerical radicands…………. R2

\_\_\_\_\_\_I can express a mixed radical as an entire radical……………………………….. R3

\_\_\_\_\_\_I can express an entire radical as a mixed radical…………………………………. R4

\_\_\_\_\_\_I can add and subtract radical expressions……………………………………….. R5

\_\_\_\_\_\_I can multiply radical expressions……………………..…………………………. R6

\_\_\_\_\_\_I can divide radical expressions……………………………………………………. R7

\_\_\_\_\_\_I can rationalize a monomial denominator……………………………………….. R8

*Square and cube roots, only one radical*

\_\_\_\_\_\_I can determine the values for which a square root is defined…………………….. R9

\_\_\_\_\_\_I can determine the values for which a cube root is defined………………………. R10

\_\_\_\_\_\_*I can use my graphing calculator to help me determine the restrictions…………… R11*

\_\_\_\_\_\_I can understand the difference between restrictions and NPV’s………………… R12

\_\_\_\_\_\_I can algebraically calculate the roots of a radical equation……………………… R13

\_\_\_\_\_\_*I can use my graphing calculator to verify the solution to a radical equation……. R14*

\_\_\_\_\_\_I can explain how to algebraically calculate the roots of a radical equation……… R15

\_\_\_\_\_\_I can explain why some roots are extraneous……………………………………… R16

\_\_\_\_\_\_I can solve problems by modelling with a radical equation……………………… R17



Statistics (11 classes)

\_\_\_\_\_\_I can use examples to explain the meaning of standard deviation……………. S1

\_\_\_\_\_\_I can use technology to calculate the standard deviation of a data set……………. S2

\_\_\_\_\_\_I can explain and calculate the properties of a normal curve

\_\_\_\_\_\_ Mean………………………………………………………………………..S3

\_\_\_\_\_\_ Median…………………………………………………………………….. S4

\_\_\_\_\_\_ Mode………………………………………………………………………. S5

\_\_\_\_\_\_ Standard deviation ………………………………………………………………………………………… S6

\_\_\_\_\_\_ Symmetry………………………………………………………………… S7

\_\_\_\_\_\_ Area under the curve……………………………………………………… S8

\_\_\_\_\_\_I can determine of a data set approximates a normal distribution…………………. S9

\_\_\_\_\_\_I can compare the properties of two or more normal data sets…………………….. S10

\_\_\_\_\_\_I can use standard deviation to make and justify decisions ………………………. S11

\_\_\_\_\_\_I understand how consistency relates to standard deviation…………………….. S12

\_\_\_\_\_\_I can solve problems that involve interpreting standard deviation……………….. S13

\_\_\_\_\_\_I can calculate a z-score………………………………………………………….. S14

\_\_\_\_\_\_I can use z-scores to compare normal distributions…………………………….. S15

\_\_\_\_\_\_I can use z-scores to calculate percentage……………………………………….. S16

\_\_\_\_\_\_I can use a percentage to find a z-score…………………………………………… S17

\_\_\_\_\_\_I can solve contextual problems involving normal distributions and z-scores…… S18

\_\_\_\_\_\_I can explain and calculate confidence levels……………………………………… S19

\_\_\_\_\_\_I can explain and calculate margin of error……………………………………….. S20

\_\_\_\_\_\_I can explain and calculate confidence intervals………………………………….. S21

\_\_\_\_\_\_I can explain how confidence levels, margin of error and confidence intervals are effected by the size of the sample…………………………………………………………… S22

\_\_\_\_\_\_I can make inferences about a population based on confidence intervals………… S23

\_\_\_\_\_\_I can provide examples from media where confidence intervals are used to support a decision/position…………………………………………………………………. S24

\_\_\_\_\_\_I can interpret and explain confidence intervals and margin of error using examples in media……………………………………………………………………………… S25

\_\_\_\_\_\_I can support a position by analyzing statistical data presented in media………… S26

\_\_\_\_\_\_I can draw a frequency polygon…………………………………………………….S27

\_\_\_\_\_\_I can draw a histogram……………………………………………………………. S28

\_\_\_\_\_\_I can interpret histograms and frequency polygons as related to standard deviation…………………………………………………………………………. S29

Research Project (5 classes)

\_\_\_\_\_\_I can collect primary or secondary data related to my topic………………….. RP1

\_\_\_\_\_\_I can assess the accuracy, reliability and relevance of my data by…

\_\_\_\_\_\_ Identifying bias and points of view………………………………………. RP2

\_\_\_\_\_\_ Identifying and describing methods of data collection…………………… RP3

\_\_\_\_\_\_ Determining if the data is relevant…………………………………………. R4

\_\_\_\_\_\_ Determining if the data is consistent with data obtained from other sources on the same topic…………………………………………………………………. RP5

\_\_\_\_\_\_If primary, I can interpret my data statistically…………………………………….. RP6

\_\_\_\_\_\_I can identify controversial issues, if present, and present multiple sides of the issue with supporting data…………………………………………………………………… RP7

\_\_\_\_\_\_I can organize and present my project, with or without technology………………. RP8

**Final Review & Final Exam (~ a week of January/June)**

