**Syllabus**

**Math 10 Common**

**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:** @mathe10C

**Google Classroom:** code: 8dn8ba

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

**Grading Scheme**

Class Work 10% *Show me you can expand on what you learn*

Projects 20% *Show me you can apply and expand on what you learn*

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/tests 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)

You have already learned the basics of math. You can find percent, measure accurately, use proportional reasoning, recognize patterns, and do arithmetic. These are the skills that you can use in your daily lives.

Going into math 10 C, you are now beginning to learn some of the more abstract math along with the utilitarian. This is a course designed to prepare you for post-secondary education in careers both calculus related (-1) and non-calculus related (-2). Be prepared to learn math that will have no practical day to day application, but will introduce skills that relate to the study of computer science, biology, engineering, accounting, psychology, geomatics, physics, astronomy, hydrology, and so much more. Many skills by themselves may seem pointless, but everything we study this year will lead up to further studies not only next year, but into University.

See <https://www.math.uci.edu/math-majors/math-career-resources> math related jobs, their descriptions, and potential salaries.



**Outcome Checklist and Timeline: 10 C**

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

*\*\*Anything written in italics after this point is optional and will depend on the pace of the class*

Rational vs. Irrational Numbers (10 classes)

\_\_\_\_\_\_I can identify the prime factors of a number ……………………………………... Q1

\_\_\_\_\_\_I can explain why 0 and 1 have no prime factors…………………………………. Q2

\_\_\_\_\_\_I can calculate the GCF and LCM of a set of numbers……………………………. Q3

\_\_\_\_\_\_I can explain how to calculate the GCF and LCM………………………………… Q4

\_\_\_\_\_\_I can use GCF, LCM, and prime factors to solve problems……………………….. Q5

\_\_\_\_\_\_I can determine if a number is a perfect square, perfect cube or neither…………....Q6

\_\_\_\_\_\_I can calculate the square root of a perfect square…………………………………..Q7

\_\_\_\_\_\_I can calculate the cube root of a perfect cube…………………………………….. Q8

\_\_\_\_\_\_I can explain the process used to calculate and approximate square and cube roots.Q9

\_\_\_\_\_\_I can solve problems involving square roots and cube roots………………………..Q10

\_\_\_\_\_\_I can sort numbers into rational and irrational and explain the difference………… Q11

\_\_\_\_\_\_I can determine the approximate value of a given irrational number……………….Q12

\_\_\_\_\_\_I can locate approximately where a irrational number will fit on a number line…...Q13

\_\_\_\_\_\_I can express entire radicals as mixed radicals……………………………………...Q14

\_\_\_\_\_\_I can express mixed radicals as entire radicals…………………………………….. Q15

\_\_\_\_\_\_I can explain what the index of a radical is and how it is used……………………..Q16

\_\_\_\_\_\_I understand how N, W, Z, Q and ~Q are related to R *and C…………………………Q17*

Exponents (6 classes)

\_\_\_\_\_\_I can explain why $a\ne 0 $when $a^{-n}$…………………………………………………E1

\_\_\_\_\_\_I can explain why $a^{\frac{1}{n}}=\sqrt[n]{a}, n>0$………………………………………………….E2

\_\_\_\_\_\_I can convert radicals to rational exponents and vice versa…………………………E3

\_\_\_\_\_\_I understand and can apply the exponent laws

\_\_\_\_\_\_ Multiplication/Division……………………………………. E4

\_\_\_\_\_\_ Exponents of Exponents…………………………………… E5 \_\_\_\_\_\_ $a^{0}=1$………………………………………………………E6

\_\_\_\_\_\_ Negative Exponents……………………………………… E7

\_\_\_\_\_\_ Fractional Exponents……………………………………… E8

\_\_\_\_\_\_I can solve problems using exponents and radicals…………………………………E9

\_\_\_\_\_\_I can find the mistakes in an exponent simplifications…………………………….. E10

\_\_\_\_\_\_*I can work with and simplify scientific notation……………………………………… E11*

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Polynomials (10 classes)

\_\_\_\_\_\_I can recognize a polynomial in many forms……………………………………… P1

\_\_\_\_\_\_I can model the multiplication of two binomials………………………………….. P2

\_\_\_\_\_\_I can use the area model to represent the multiplication of binomials……………...P3

\_\_\_\_\_\_I can explain how binomial multiplication is the same as two digit multiplication.. P4

\_\_\_\_\_\_I can verify binomial multiplication using substitution…………………………….P5

\_\_\_\_\_\_I can multiply binomials and simplify the result……………………………………P6

\_\_\_\_\_\_I can explain strategies for multiplying binomials and polynomials………………. P7

\_\_\_\_\_\_I can find errors in binomial multiplication…………………………………………P8

\_\_\_\_\_\_*I can solve problems using the multiplication of binomials……………………………P9*

\_\_\_\_\_\_I can determine the common factors of a polynomial and factor them out………... P10

\_\_\_\_\_\_I can model trinomial factoring …………………………………………………… P11

\_\_\_\_\_\_I can factor trinomials……………………………………………………………….P12

\_\_\_\_\_\_I can factor and recognize a difference of squares………………………………… P13

\_\_\_\_\_\_I can find mistakes in trinomial factoring………………………………………. P14

\_\_\_\_\_\_I can verify factoring using *substitution* and multiplication……………………….. P15

\_\_\_\_\_\_I can explain how multiplication and factoring are related………………………… P16

\_\_\_\_\_\_I can explain strategies for factoring a trinomial……………………………………P17

\_\_\_\_\_\_I can express a polynomial as a product of its factors………………………………P18

\_\_\_\_\_\_*I can solve problems using the factoring of trinomials………………………………….P19*

Functions (7 classes)

\_\_\_\_\_\_*I can understand and use the relationship between equations, tables of values, ordered pairs and graphs.(Review)………………………………………………………………. F1*

\_\_\_\_\_\_I can apply what I know about data to decide if a function is discrete or continuous. F2

\_\_\_\_\_\_I can identify independent and dependent variables in a context………………… F3

\_\_\_\_\_\_I can describe a possible situation for a graph………………………………………F4

\_\_\_\_\_\_I can sketch a possible graph for a situation……………………………………….. F5

\_\_\_\_\_\_I can explain what it means to be a function……………………………………… F6

\_\_\_\_\_\_I can explain why all functions are relations, but not all relations are functions….. F7

\_\_\_\_\_\_*I can recognize and use piecewise functions…………………………………………… F8*

\_\_\_\_\_\_*I can write an equation in two variables as a function……………………………….. F9*

\_\_\_\_\_\_*I can write a function as an equation in two variables……………………………… F10*

\_\_\_\_\_\_I can identify domain and range of functions and relations using number lines, set notation and interval notation…………………………………………………….. F11

\_\_\_\_\_\_*I can use function notation to find corresponding range value (y-value) when given a value in the domain (x-value) and vice versa………………………………………….. F12*

\_\_\_\_\_\_I can use the vertical line test to test if a relation is a function…………………… F13

\_\_\_\_\_\_I can determine if a set of ordered pairs is a function…………………………….. F14

\_\_\_\_\_\_I can sort graphs as functions or not functions…………………………………….. F15

\_\_\_\_\_\_*I can write functions using function notation…………………………………………… F16*

\_\_\_\_\_\_*I can use function notation to solve problems………………………………………… F17*

 Linear Functions (15 classes)

\_\_\_\_\_\_I understand what a linear relation is……………………………………………… L1

\_\_\_\_\_\_I can determine if a situation represents a linear relation and explain my reasoning.L2

\_\_\_\_\_\_I can determine if a table of values or set of ordered pairs represent a linear relation and explain my reasoning. ……………………………………………………………. L3

\_\_\_\_\_\_I can graph a table of values and determine if it is a linear relation……………….. L4

\_\_\_\_\_\_I can determine if an equation represents a linear relation and explain my reasoning…………………………………………………………………………… L5

\_\_\_\_\_\_*I can use my graphing calculator to graph and access the table of values ………… L6*

\_\_\_\_\_\_I can determine the x and y intercepts of a linear equation……………………….. L7

\_\_\_\_\_\_I can determine the domain and range of a linear relation………………………… L8

\_\_\_\_\_\_I can sketch and recognize linear relations with one, two or infinite intercepts….. L9

\_\_\_\_\_\_I can identify a graph that corresponds to a given slope and y-intercept…………..L10

\_\_\_\_\_\_I can identify the slope and y-intercept of a graph………………………………. L11

\_\_\_\_\_\_I can solve problems using the x and y intercepts, slope, domain and range of a linear equation…………………………………………………………………………… L12

\_\_\_\_\_\_*I can use my graphing calculator to calculate x and y intercepts…………………… L13*

\_\_\_\_\_\_I can determine slope …………………………………………………………….. L14

\_\_\_\_\_\_I can classify slopes as negative or positive………………………………………. L15

\_\_\_\_\_\_I can explain the meaning of vertical and horizontal slopes………………………. L16

\_\_\_\_\_\_I can explain why slope can be found using any two points on a line…………… L17

\_\_\_\_\_\_I can use and recognize slope as a rate of change……………………………….. L18

\_\_\_\_\_\_I can draw a line given a point on a line and its slope…………………………….. L19

\_\_\_\_\_\_Determine other points on a line (may be partially specified or not) given the slope and one point on the line……………………………………………………………….. L20

\_\_\_\_\_\_I can recognize when two lines are parallel or perpendicular……………………… L21

\_\_\_\_\_\_I can identify equivalent linear relations from in a set of linear relations………… L22

\_\_\_\_\_\_I can solve problems using slope………………………………………………….. L23

\_\_\_\_\_\_I can recognize a linear equation in general, slope-intercept and slope-point form.. L24

\_\_\_\_\_\_I can rewrite a linear equation in general and slope-intercept form……………… L25

\_\_\_\_\_\_I can graph equations from slope-intercept form………………………………….. L26

\_\_\_\_\_\_I can graph equations from slope-point form………………………………………. L27

\_\_\_\_\_\_I can graph equations from general form………………………………………… L28

\_\_\_\_\_\_I can explain my strategy for graphing equations in each form……………………. L29

\_\_\_\_\_\_I can match linear relations to their graphs…………………………………………L30

\_\_\_\_\_\_I can create the equation of a linear relation slope-intercept and/or slope-point form from it’s graph …

\_\_\_\_\_\_ When given slope and y-intercept………………………… L31

\_\_\_\_\_\_ When given slope and a point……………………………… L32

\_\_\_\_\_\_ When given two point on the line…………………………. L33

\_\_\_\_\_\_ When given a point on the line and equation parallel or perpendicular to the line……………………………………. L34

\_\_\_\_\_\_I can create the equation of a line generated from a context……………………… L35

\_\_\_\_\_\_*I can create the equation of a line of best fit……………………………………………. L36*

\_\_\_\_\_\_*I can use a regression on my calculator to find the line of best fit………………….. L37*

\_\_\_\_\_\_I can solve problems using the equation generated from linear data……………… L38

\_\_\_\_\_\_I can use function notation to represent linear relations…………………………… L39

\_\_\_\_\_\_I can use function notation to solve for needed domain(x) and range(y) values in linear functions…………………………………………………………………………… L40

\_\_\_\_\_\_I can graph a linear function expressed in function notation………………………. L41

\_\_\_\_\_\_I can match various representations of linear relations (table of values, equations, ordered pairs, graphs…) …………………………………………………………………… L42

Systems of Linear Equations (6 classes)

\_\_\_\_\_\_I can model situations using systems of linear equations…………………………. S1

\_\_\_\_\_\_I can relate a system of linear equations to the context of a problem………………S2

\_\_\_\_\_\_I can graphically determine the solution to a system of equations with and without my calculator…………………………………………………………………………… S3

\_\_\_\_\_\_I can explain the meaning of a point of intersection in a system of equations……. S4

\_\_\_\_\_\_I can algebraically determine the solution to a system of linear equations………. S5

\_\_\_\_\_\_I can explain why a system may have one, none or infinite solutions……………... S6

\_\_\_\_\_\_I can explain a strategy to solve a system of linear equations and why it works….. S7

\_\_\_\_\_\_I can solve problems involving systems of linear equations and relate the solution to the question…………………………………………………………………………….. S8

\_\_\_\_\_\_I can find errors in a solution to a system of equations……………………………..S9



Trigonometry, Surface Area and Volume (10 classes)

\_\_\_\_\_\_I can relate the primary trig ratios to similar right triangles……………………….. T1

\_\_\_\_\_\_I can identify the hypotenuse of right triangles……………………………………. T2

\_\_\_\_\_\_I can identify the opposite adjacent and hypotenuse from any acute angle on a right triangle……………………………………………………………………………. T3

\_\_\_\_\_\_I can solve right triangles using the sine, cosine and tangent ratios, *Pythagorean theorem, and the sum of angles in a triangle……………………………………………………… T4*

\_\_\_\_\_\_I can solve problems involving more than one right triangle……………………… T5

\_\_\_\_\_\_*I can use a clinometer to measure inclination and declination……………………… T6*

\_\_\_\_\_\_I can solve problems that involve direct and indirect measurement………………. T7

\_\_\_\_\_\_I can sketch diagrams of 3D shapes to help me solve surface are and volume problems……………………………………………………………………………. T8

\_\_\_\_\_\_I can determine the surface area and volume of …

\_\_\_\_\_\_ Right comes……………………………………………… T9

\_\_\_\_\_\_ Right cylinder……………………………………………… T10

\_\_\_\_\_\_ Right prism……………………………………………….. T11

\_\_\_\_\_\_ Right pyramid…………………………………………….. T12

\_\_\_\_\_\_ Sphere…………………………………………………….. T13

\_\_\_\_\_\_I can determine a missing dimension when given volume or surface area and the remaining dimensions……………………………………………………………… T14

\_\_\_\_\_\_I can solve problems involving surface are and volume of a composite 3D object.. T15

\_\_\_\_\_\_I can describe the relationship between the volumes of right cones and cylinders, and right pyramids and right prisms with the same height…………………………….. T16

\_\_\_\_\_\_I can use the Pythagorean theorem to help solve trig, SA and Volume problems…. T17

Measurement (6 classes)

\_\_\_\_\_\_I can provide and recognize referents for various imperial and SI linear measures.. M1

\_\_\_\_\_\_I can compare imperial and SI units using referents……………………………… M2

\_\_\_\_\_\_I can estimate a linear measure using referents…………………………………… M3

\_\_\_\_\_\_I can justify my choice of linear measures for a particular measurement…………. M4

\_\_\_\_\_\_I can solve problems that involve measurement with rulers, calipers, tape-measures, dressmakers tape, trundle wheels………………………………………………….. M5

\_\_\_\_\_\_I can describe a strategy to calculate the linear measure of an irregular object……. M6

\_\_\_\_\_\_I can use and explain how proportional reasoning can be used to convert between units………………………………………………………………………………… M7

\_\_\_\_\_\_I can use and explain how unit analysis can be used to convert between units……. M8

\_\_\_\_\_\_I can solve problems that involve the conversion of units………………………….M9

\_\_\_\_\_\_I can justify the reasonableness of a solution to a conversion problem…………… M10

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