

Homework Help



Please use the list below as a way to demonstrate the ‘Big Ideas’ to your class or post as a list for the class to see where they can get help on a specific topic. All Session titles are web linked to make this process easier for you and your students. Remember too, that the students have the ability to log in and ‘Ask a Tutor’ specific questions that may not be answered in the lists below. A [Glossary of Terms](#) is also available on the Homework Help site to help with clarifying terms as the students require. Currently there are no direct ties to Listen and Learn or Interactives on Homework Help.

** This is a working list which will be updated as resources become available.

Grade 10 Principles of Mathematics (MPM2D)

Unit One: Quadratic Relations of the Form $y = ax^2 + bx + c$

Big Idea	Resource Type	Session Title
parabola	Best Sessions	Parabola: definition Understand how a parabola relates to a quadratic relation. Parabola: Determine an equation, given the zeroes and y-intercept Determine the equation of a parabola given the zeroes and y intercept.
	Listen and Learns	
	Interactive	
Axis of symmetry, vertex, y-intercept	Best Sessions	The zeros of a quadratic equation are -2 and 5 and the second differences are all negative. What value of the independent variable will produce the optimal value? How do you find the optimal value given two points on a parabola?
	Listen and Learns	
	Interactive	

FOIL	Best Session	<p>Special Products Part 1 of 3 (seminar) What are the special products? Explore squaring binomials and difference of squares.</p> <p>Special Products: Part 2 of 3 (seminar) How do you use the Special Products to expand?</p> <p>Special Products: Part 3 of 3 (seminar) How do you use Special Products in an application?</p>
	Listen and Learn	
	Interactive	
Exponents	Best Sessions	<p>Negative and Zero Exponents: Part 1 of 3 (seminar) What does a negative or zero exponent mean?</p> <p>Negative and Zero Exponents: Part 2 of 3 (seminar) What does a negative or zero exponent mean?</p> <p>Negative and Zero Exponents: Part 3 of 3 (seminar) How do you simplify or evaluate powers with negative or zero exponents?</p>
	Listen and Learns	
	Interactive	
Factoring	Best Sessions	<p>How do you multiply polynomials? (seminar) Learn to expand polynomials be using arrows to organize your work.</p> <p>How to Factor Part 1: Common Factoring and Factoring by Grouping (seminar) Part 1 of a series of seminars about factoring.</p> <p>How to Factor Part 2: Factoring Trinomials (seminar) Part 2 of a series of seminars about factoring.</p> <p>How to Factor Part 3: How do you factor the Special Products? (seminar) Part 3 of a series of seminars on factoring.</p> <p>How do you common factor? (seminar) The first step in factoring is always to look for a common factor.</p> <p>Factor: 5pqr-pqs-10pqt (common factoring) Remember when factoring to always start with the Greatest Common Factor (GCF).</p> <p>How do you factor by grouping? (seminar) Learn to factor polynomials by grouping.</p> <p>How do you factor $x^2 + bx + c$? (seminar) Learn to factor trinomials $x^2 + bx + c$.</p> <p>Factor: $x^2-8x+16-4y^2$ (multi-step) Use grouping and perfect squares to factor this polynomial.</p> <p>Factor: $x^3 + 11x^2 + 10x$ (common factoring) Factor this trinomial.</p>

		<p><u>Factor by grouping: $mx+my+2x+2y$</u> Learn to factor a polynomial by grouping.</p> <p><u>How do you factor $x^2 + bx + c$?</u> Successful factoring depends on knowing why factoring works. This seminar explores both the how and why of factoring trinomials.</p> <p><u>How do you factor $ax^2 + bx + c$ using decomposition? (seminar)</u> Factor trinomials using decomposition.</p> <p><u>Factor: h^2-100 (difference of squares)</u> Factor this binomial h^2-100.</p> <p><u>Factoring Perfect Square Trinomials (seminar)</u> Learn to identify and factor perfect square trinomials.</p> <p><u>Factoring Quadratics Part 1 (seminar)</u> Learn to factor quadratics by working through examples.</p> <p><u>Factoring Quadratics Part 2: How do you solve a problem with a quadratic equation using factoring? (seminar)</u> In previous seminars we have developed factoring skills. In this seminar we apply them to a word problem.</p> <p><u>Factoring and graphing $y= -x^2+2x+24$</u> Factor this trinomial. Remember to start with GCF!</p> <p><u>Factoring Quadratics: How to determine which form of factoring to use.</u> Given any algebraic expression, describe the steps you would take to decide what type of factoring to use</p> <p><u>Common Factors Part 1 of 2</u> Learn how to common factor an expression.</p> <p><u>Common Factors Part 2 of 2</u> Building on the skills learned in part 1 of this seminar, practice common factoring these expressions.</p> <p><u>Factoring The Difference of Two Squares (seminar)</u> Learn how to recognize and factor difference of squares.</p> <p><u>Factoring Difference of Squares with two variables</u> Factor this multi-variable binomial using the difference of squares.</p>
	Listen and Learns	
	Interactive	

Quadratic function

Best Sessions

[**Differences: How do you use finite differences to determine if a relation is quadratic? \(seminar\)**](#)

Learn how to use differences to decide if a relation is linear or quadratic.

[**Discriminate - Quadratic roots: none, one or two**](#)

Determine the number of roots for a quadratic equation.

[**Quadratic Formula - Find the roots of \$6x^2 + x = 0\$ using the quadratic formula**](#)

Learn the basics of how to use the quadratic formula to find the roots of an equation.

[**Explain the difference between a quadratic function and a quadratic equation, with an example?**](#)

Understanding the difference between functions and equations helps when factoring or graphing quadratics.

[**Quadratic Formula Part 1: How do you use the quadratic formula to solve a quadratic equation? \(seminar\)**](#)

When a quadratic equation isn't easily factorable, the quadratic equation can help to find the roots.

[**Quadratic Formula Part 2: How do you solve equations using the quadratic formula? \(seminar\)**](#)

Learn how to apply what we learned about the quadratic formula in Part 1, by working through two examples.

[**Quadratic Formula Part 3: How do you use the quadratic formula to find when a projectile hits the ground? \(seminar\)**](#)

Use the skills learned in Part 1 and 2 to solve a word problem using the quadratic formula.

[**Factored Form: Using intercepts Part 1 \(seminar\)**](#)

How do you use intercepts to graph a parabola?

[**Factored Form: Using intercepts Part 2 \(seminar\)**](#)

How do you use intercepts to graph a parabola?

[**Factored Form: Part 3 Finding equations. \(seminar\)**](#)

How do you find an equation for a parabola using intercept form?

[**Quadratic Transformations: Part 1 of 4 \(seminar\)**](#)

How do you use transformations of quadratic functions to solve problems?

[**Quadratic Transformations: Part 2 of 4 \(seminar\)**](#)

What are the features of vertical translations of quadratic functions (parabolas)?

[**Quadratic Transformations: Part 3 of 4 \(seminar\)**](#)

What are the features of transformations (horizontal shift) of parabolas?

[**Quadratic Transformations: Part 4 of 4 \(seminar\)**](#)

What are the features of transformations (vertical stretch of quadratic functions (parabolas)?

Completing the square	Best Sessions	<p>Completing the Square: Part 1 of 4 (seminar) How do you use completing the square to put a quadratic equation in vertex form?</p> <p>Completing the square: Part 2 of 4 (seminar) How do you use completing the square to put a quadratic equation in vertex form?</p> <p>Completing the Square: Part 3 of 4 (seminar) How do you use completing the square to put a quadratic equation in vertex form when 'a' is not equal to 1?</p> <p>Completing the Square: Part 4 of 4 (seminar) How do you use completing the square to solve a maximum/minimum problem?</p> <p>Completing the square: $9y^2 + 54y + 4$ Learn how to factor a quadratic by completing the square.</p> <p>Quadratic word problem - complete square and quadratic formula Determine the height of the y intercept in this quadratic word problem.</p>
	Listen and Learns	
	Interactive	
Graphing quadratics	Best Sessions	<p>Graphing quadratics - an easy method Learn to graph quadratics without a table of values.</p> <p>Graphing Quadratics Part 1: Graph $y = ax^2 + bx + c$ using a table of values. (seminar) Graph two quadratic relations using a table of values.</p> <p>Graphing Quadratics Part 2: Graph $y = a(x - r)(x - s)$. (seminar) A word problem is used to model how to graph a quadratic in the form $y = a(x - r)(x - s)$.</p> <p>Graphing Quadratics Part 3: Graphing information from a word problem (seminar) Use a Cartesian plane to graph the arch of a bridge.</p> <p>Graphing Vertex Form Part 1: $y = a(x - h)^2 + k$ (seminar) When given an equation in vertex form, we can graph it using the key properties of the parabola.</p> <p>Graphing Vertex Form Part 2: How do you find the vertex form equation from the graph of a parabola? (seminar) When given a graph of a parabola use the coordinates from the vertex and another point to create the equation.</p> <p>Graphing Vertex Form Part 3: How do you use vertex form to solve a problem? (seminar) Use the skills you have learned in Part 1 and Part 2 to solve a problem using vertex form</p>
	Listen and Learns	
	Interactive	

Unit Two: Analytic Geometry

Big Idea	Resource Type	Session Title
Substitution and elimination	Best Sessions	<p><u>Elimination Part 1: Solving systems of equations (seminar)</u> Learn to solve a system of equations using elimination.</p> <p><u>Elimination Part 2: Solving systems of equations (seminar)</u> Continuing from Part 1, practice using elimination to solve linear systems.</p> <p><u>Linear systems: Solving Problems Part 2 of 3 (seminar)</u> How do you solve word problems using linear systems? This example involves speed and the process of elimination.</p> <p><u>Linear systems: Solving Problems Part 3 of 3 (seminar)</u> How do you solve word problems using linear systems? Solve the percentage of a solution by creating equations and substituting them into each other.</p> <p><u>Substitution Part 1: Solving systems of equations (seminar)</u> Learn how to solve a linear system using substitution.</p> <p><u>Substitution Part 2: How do you solve a system of equations by substitution when no equations are solved for a variable? (seminar)</u> Substitution to solve a linear system involves subbing one equation into the other. Learn how to isolate a variable so that you can do this.</p> <p><u>Substitution: Find the point of intersection</u> Find the point of intersection (poi) of two lines.</p> <p><u>Substitution: Solving a linear system. Part 2 of 2</u> Building on the methods learned in Part 1, practice your algebra skills to solve this linear system.</p> <p><u>Substitution Part 3: How do you solve a word problem with systems of equations by substitution?</u> Use your knowledge of substitution to solve word problems.</p> <p><u>Word problems Part 1: How do you change words into math terms? (seminar)</u> Learn how to take a word problem and convert it from language into a mathematical expression.</p> <p><u>Word Problems Part 2: Using equations of lines to solve problems (seminar)</u> Work through an example that teaches you how to translate a language based word problem into a system of equations that can be solved graphically.</p>

Midpoint, length of line, area	Best Sessions	<p><u>Determine the midpoint of the line segment with endpoints J(3,-5) and K(-5,-6)</u> Use a graph or the midpoint formula to find the midpoint of a line segment.</p> <p><u>Determine the shortest distance from the point D(5,4) to the line represented by $3x+5y-4=0$ (AUDIO)</u> The shortest distance between a line and a point is always perpendicular. Learn how to find it the equation of this line.</p> <p><u>Distance Formula: How do you find the length of a line segment? (seminar)</u> Learn how to develop and use the distance formula to find the length of a line segment. A great review if you missed the class or don't quite understand the concept yet.</p> <p><u>Distance formula: How do you use the distance (or length) formula to prove a geometry property? (seminar)</u> Use the distance formula to determine if two triangles have the same area</p> <p><u>How do you find the shortest distance from a point to a line? (seminar)</u> Learn five steps to find the shortest distance between any point and a line.</p> <p><u>Quadrilaterals: Proving a parallelogram Part 1 of 2 (seminar)</u> How do you use Analytic Geometry to demonstrate properties of quadrilaterals?</p> <p><u>Quadrilaterals: Proving a Kite Part 2 of 2 (seminar)</u> How do you use Analytic Geometry to demonstrate properties of a kite?</p> <p><u>Find the equation of the line: a) slope = 5, y intercept = 3. b) through the points A(5,7) and B(8,4). c) through the point P(3,7) with slope = 5</u> A three part question that shows you how to find the equation of the line, using different strategies.</p> <p><u>Midpoint Part 1: How do you find the midpoint of a line segment? (seminar)</u> The middle of a line segment is called the midpoint. Learn how to use the midpoint formula to find this point.</p> <p><u>Midpoint Part 2: How do you find the equation of a median? (seminar)</u> Use the midpoint formula to find the median of a given triangle.</p> <p><u>Midpoint Part 3: How do you find the equation of a right bisector? (seminar)</u> Use the skills learned in part 1 and 2 to find the right bisector of a triangle's side.</p> <p><u>Optimization: Find the maximum area given a set perimeter.</u> Use the given perimeter for find the maximum area of a rectangle.</p> <p><u>Analytic Geometry: Given the triangle A(-1,-2) B(6,0) C(2,10), determine the equation of the line through B, parallel to AC. (AUDIO)</u> Use slope and a graph to find the equation of this line.</p>
	Listen and Learns	
	Interactive	

Equation of a circle	Best Sessions	<p><u>Circle Properties Part 1: Proving the properties of circles. (seminar)</u> How do you use geometric properties to prove properties of circles?</p> <p><u>Circle Properties Part 2: Determining the centre of a circle.</u> If you are given three points on a circle, how do you determine if its center is a specific point?</p> <p><u>Circles: Equations of Circles Part 1 (seminar)</u> How do you find the equation of a circle, $C(0,0)$, with a certain radius?</p> <p><u>Circles: Equation of a circle Part 2 (seminar)</u> How do you find the equation of a circle through a specific point and how do you check if points are inside, on or outside a circle?</p> <p><u>Circles: State the radius and give the coordinates of one point on the circle for the equation $x^2+y^2=20$</u> Find the radius of a circle given its equation.</p> <p><u>Orthocentre, circumcentre and centroid</u> Learn the difference between circumcentre, orthocentre and centroid.</p> <p><u>Orthocentre: find the orthocentre of $p(0,-2)$ $q(4,4)$ and $r(-4,5)$ (AUDIO)</u> Find the orthocenter of a triangle with the given vertices.</p> <p><u>Tangent of a line: A tangent is a line that touches a circle at exactly one point. For what values of k will the line $y= x+k$ be tangent to the circle $x^2+ y^2 = 25$?</u> Determine if when a line becomes a tangent by using the discriminant.</p>
	Listen and Learns	
	Interactive	

Unit Three: Trigonometry

Big Idea	Resource Type	Session Title
Similar and congruent triangles	Best Sessions	<p><u>Similar Triangles</u> Use the properties of a similar triangle to find missing information <u>Similar Triangles: How do you use similar triangles to solve problems? Part 1 (seminar)</u> This seminar looks at how similar triangles can be used to solve problems. <u>Similar Triangles: How do you use similar triangles to solve problems? Part 2 (seminar)</u> Use the concepts of similar triangles to find the area of a triangle. <u>Similar Triangles: How do you use similar triangles to solve problems? Part 3 (seminar)</u> If you know the area of one triangle, how can you find the area of a triangle similar to it? <u>Similar Triangles - Determining similarity with angles</u> Prove that these two triangles are similar using angles. <u>Similar Triangles: comparing sides and area</u> When two triangles are similar there is a relationship between the ratio of their sides and the ratio of their area. <u>Similar Triangles Part 2: How do you show that two triangles are similar? (seminar)</u> Show that two triangles are similar using their angles. <u>Similar Triangles Part 3: Similarity statements (seminar)</u> Similarity statements need to be set up carefully. Learn how in this seminar. <u>Similar Triangles Part 3: What are the properties of similar and congruent triangles? (seminar)</u> This seminar focuses on how to identify whether two triangles are similar or congruent.</p>
	Listen and Learns	
	Interactive	

Triangle properties	Best Sessions	<p>Triangle Properties: How do you prove properties of triangles? Explore the geometric properties of an isosceles triangle.</p> <p>Triangle properties Part 1: How do you show properties of triangles using analytic geometry? (seminar) Properties of any polygon can be prove using techniques of analytic geometry - learn how!</p> <p>Triangle Properties Part 2: How do you show the line segment joining the midpoints of two sides of a triangle is parallel to the third side and half the length? (seminar) Prove that the line segment joining two midpoints of a triangle is parallel to the third side, and half its length.</p> <p>Median: The vertices of a triangle are A(-1,-1), B (8,3) and C(4,7). What is the equation of the median though the point (-1,-1)? (AUDIO) Find the median of a triangle passing through a given point.</p> <p>Tangent Ratios: Part 1 (seminar) Learn about the tangent ratio (tan) in right angle triangles.</p> <p>Tangent Ratios: Part 2 (seminar) Work through examples using tangent ratio.</p> <p>Centroid: A quick way to find the centroid of a triangle By averaging the x and y values of three points, you can find the centroid of a triangle.</p> <p>Centroid: A traditional method for finding the centroid of triangle using medians and equations of lines Find the centroid of a triangle using the definition of centroid to guide the steps.</p>
	Listen and Learns	
	Interactive	
Trigonometry	Best Sessions	<p>Cosine Law Part 1: What is the Cosine Law and how does it work? (seminar) Learn how the cosine law works and was created.</p> <p>Cosine Law Part 2: How do you use the Cosine Law to find sides in a triangle? (seminar) The Cosine Law allows us to find the sides of a non-right triangle, in this case, the width of a river.</p> <p>Cosine Law Part 3: Finding the sides in a triangle. (seminar) How do you use the Cosine Law to find sides in a triangle and then solve the rest of the triangle?</p> <p>Cosine Law: Find the missing angle Use the cosine law to find the missing angle of this triangle.</p> <p>Cosine Law or Sine Law? Which one should I use? A clear description of when to use Sine Law or Cosine law</p>

		<p><u>Sine and Cosine Ratios: Part 1 (seminar)</u> This seminar covers the basics of the trig ratios sine and cosine.</p> <p><u>Sine and Cosine Ratios: Part 2 (seminar)</u> Continuing from the theory learned in Part 1, learn how to use sine and cosine to find angles or sides in right triangles.</p> <p><u>How do you find an angle using trig? Part 2: Cosine (seminar)</u> Learn how to use the Cosine (cos) ratio.</p> <p><u>How do you solve problems with trigonometry? (seminar)</u> Solve two word problems using all of the trig tools</p> <p><u>How do you solve a triangle using trig? (seminar)</u> Use all of the trig ratios to solve all sides and angles in a right triangle.</p> <p><u>Trig Ratios: What is the Cos Ratio? (seminar)</u> The Cos Ratio is the length of the opposite side divided by the length of the hypotenuse.</p> <p><u>Trig ratios: How do you calculate trig ratios? (seminar)</u> Learn how to use trig ratios with right angled triangles.</p> <p><u>How do you solve problems with trigonometry? (seminar)</u> Solve two word problems using all of the trig tools</p> <p><u>Sine Law Part 1: What is the Sine Law? (seminar)</u> Learn what the Sine Law is and how to use it to find the sides of a triangle.</p> <p><u>Sine Law Part 2: How to use the Sine Law. (seminar)</u> How do you use the Sine Law to find a side and also an angle in a triangle?</p> <p><u>Sine Law Part 3: Solving a triangle (seminar)</u> How do you use the Sine Law when solving a triangle?</p> <p><u>Sine Law: In triangle PQR, Q=62 degrees, PQ=9 cm, and PR=10 cm, find angle R</u> Use the sine law to solve this triangle.</p> <p><u>Trigonometry: Solving Problems Part 1 (seminar)</u> How do you use right angle trigonometry to solve problems?</p> <p><u>Trigonometry: Solving Problems Part 2 (seminar)</u> How do you use right angle trigonometry to solve problems?</p> <p><u>Triangles: trigonometry using tan</u> Understand how to use tangent to find an angle within a right triangle.</p> <p><u>Trigonometry - SOH CAH TOA</u> Solve a right triangle using trig ratios.</p>
	Listen and Learns	
	Interactive	