

Hillel Academy High School



Grade 8 Mathematics End of Year Study Guide September 2013- June 2014

Examination	Duration	Date
The exam consists of <u>2 papers</u> :		
<u>Paper 1</u> : Short Response <i>No Calculators Allowed</i>	1 ½ hours	June 2014
<u>Paper 2</u> : Structured Response <i>Calculators Allowed</i>	2 hours	

Materials Needed

- ⊗ Pens
- ⊗ Pencils
- ⊗ Eraser

- ⊗ Compass
- ⊗ Protractor
- ⊗ 12 inch ruler.

- ⊗ Calculator
(Paper 2 only)

How to study:




- ✓ Start now! Do not wait until exam week!
- ✓ Plan your study time systematically. Set aside at least 40 minutes every day to revise and practice mathematics.



- ✓ Read the notes in your text book and practise some of the "Review Set" questions at the end of each chapter. (The answers are at the end of the book, so that you can check that what you are doing is right.)
- ✓ Make sure that you understand and can apply all mathematical vocabulary.



- ✓ Remember that the showing of all working is very important. Many of the questions will be worth more than one mark. **You will only be awarded full marks if all your work is set out clearly and ALL work is shown.**
- ✓ Use your own exercise book(s) to help you revise. Go over your own work. Look at the mistakes you have made. Do you know how to do this work correctly now? If not, ask your teacher for help.

Course Content	Page Reference
<p><u>Number Theory</u></p>  <ul style="list-style-type: none"> • Natural Numbers • Divisibility tests • Fractions and Rational Numbers • Decimal numbers • Prime numbers and index notation • Calculate the negative square roots, cubes and cube roots; use the notation $\sqrt[3]{64}$ and index notation for positive integer powers. • Factorize squares and square roots, including decimals; example: 0.02^2, $\sqrt{0.0025}$ 	<p>See notes / Worksheets & Chapter 1 Pages 27 - 52</p>
<p><u>Algebra & Inequalities</u></p> <ul style="list-style-type: none"> • Simplify algebraic expressions using the <i>order of operations</i>- including brackets and exponents. • Construct linear expressions and simple formulae from <i>worded questions</i> • Simplify, using the <i>distributive property</i>, a single term over a bracket, i.e. monomial times a polynomial, including fractional forms and variable with exponents. • Simplify and solve <i>algebraic fractions</i> • Calculating the numerical value of algebraic expressions by <i>substitution</i> - positive and negative integers into formulae, linear expressions and expressions involving powers; example: $3x^2 + 4$ or $2x^3$ • Identify laws on indices • Expand terms in order to simplify • Use the laws of indices to simplify an expression • Factorise expressions involving powers and fractions. • Solve linear equations and formulae including algebraic fractions. • Construct and solve linear equations from worded questions (unknown on either or both sides, with or without brackets.) • Change the subject for the indicated variable (transposition) • Identify and use inequality signs. • Construct inequalities from worded questions. • Solve inequalities and represent answers on a number line and Cartesian plane. 	<p>See notes / Worksheets & Chapter 1 Pages 34-36 & Chapter 2 Pages 55 – 70 & Chapter 4 Pages 99-112 & Chapter 6 Pages 133-147 & Chapter 8 Pages 173-182 & Chapter 9 Pages 195- 196, Page 211 & Chapter 11 Pages 243-258 & Chapter 17 Pages 353 – 363 & Chapter 21 Pages 421 - 435</p>
<p><u>Ratio, Proportion & Percentages</u></p> <ul style="list-style-type: none"> • Calculate and solve problems involving percentages or quantities. • Find the percentage increase and decrease. • Calculate original amount • Calculate simple interest. • Calculate compound interest • Calculate reverse percentages. • Solve real life problems involving percentages and simple interest. • Solve simple problems involving ratio and direct proportion –unitary, ratio, algebraic methods 	<p>See notes/ Worksheet & Chapter 1 Pages 46-49 & Chapter 3 Pages 73 - 96</p>

<p><u><i>Geometry</i></u></p> <ul style="list-style-type: none"> • Know the properties of 2D shapes - congruent, corresponding sides and angles are equal. • Know and use the angle properties of triangles, quadrilaterals, and polygons – including diagonal properties where necessary. • Identify all the symmetries of 2D shapes – line and order of rotational symmetry. • Identify alternate, corresponding, and co-interior angles made with transversal and parallel lines. • Solve geometrical problems using properties of angles, or parallel and intersecting lines, and of triangles and special quadrilaterals – explaining reasoning with diagrams. • Find the sum of interior and exterior angles regular polygons. • Find the size of each interior and exterior angles of regular polygons. 	<p>See notes / Worksheets & Chapter 7 Pages 149-164 , 167-169</p>
<p><u><i>Coordinate Geometry</i></u></p> <ul style="list-style-type: none"> • Recognise and draw the equations of lines in the form $y = mx + c$ • Write equations of straight line graphs – point-slope form ($y - y_1 = m(x - x_1)$) and slope intercept form ($y = mx + c$). • Recognise and draw the equation of lines parallel to the x-axis or y-axis. • Find equation of lines given its graph • Given a point find a line parallel and perpendicular to etc... • Interpret distance time graphs. 	<p>See notes / Worksheets & Chapter 13 Pages 277 - 300</p>
<p><u><i>Mensuration</i></u></p> <ul style="list-style-type: none"> • Calculate metric conversions – length, area, volume, & capacity • Derive and use the formulae for the area of 2D shapes – square, rectangle, parallelogram,, trapezoid, kite, rhombus. • Name the parts of a circle; know and use the formulae for the circumference and area of a circle. • Calculate the area of a sector and the length of the arc. • Calculate perimeter and area of compound 2D shapes. • Use geometric reasoning to find missing measurements. • Calculate the volume of cubes, cuboids, cylinders, prisms, pyramids and spheres. • Draw and use simple nets of solids to work out the surface area of cubes, cuboids, cylinders, prisms and pyramids. 	<p>See notes / Worksheets & Chapter 10 Pages 213-239 & Chapter 12 Pages 261 - 273</p>
<p><u><i>Transformational Geometry</i></u></p> <ul style="list-style-type: none"> • Transform 2D shapes reflection and translation – about the origin / different points • Transform combinations of these transformations. 	<p>See notes / Worksheets & Pages 329 - 337</p>

<p><u>Sequences</u></p> <ul style="list-style-type: none"> • Writing sequences from flow charts • Devise number patterns from sequences of geometrical shapes. • Recognise and describe linear and quadratic sequences. • Arithmetic and geometric sequences. • Recognise and continue number patterns. • Writing sequences given term to term rule. • Writing the rule for the nth term. • Linear sequences. • Write the nth term of linear and quadratic sequences. 	<p>See notes & Worksheets</p>
<p><u>Right Angled Triangle</u></p> <ul style="list-style-type: none"> • State the theorem of Pythagoras • Recall Pythagorean triples • Solve problems using Pythagoras 	<p>See notes / Worksheets & Chapter 9 Pages 196-199, Pages 202-208</p>

Here is a checklist for your studying

<u>Topics</u>	<u>Done</u>
Number Theory	
Algebra & Inequalities	
Ratio, Proportion & Percent	
Geometry	
Coordinate Geometry	
Mensuration	
Transformational Geometry	
Sequences	
Right Angle Triangles	

