

Grade 8H End of Semester 1 Exam Study Guide

Subject: Advanced Math (Algebra 1)

Date & Time of Test: Sunday, December 15

Duration of Test: 90 minutes

You are expected to study from: All materials mentioned

1. Textbook:

Chapters	Topic	Pages
1-1	Variables and Expressions <ul style="list-style-type: none">• Write verbal expressions for algebraic expressions• Write algebraic expressions for verbal expressions	5-9
1-2	Order of Operations <ul style="list-style-type: none">• Evaluate numerical and algebraic expressions by using the order of operations	10-15
1-3	Properties of Numbers <ul style="list-style-type: none">• Recognize the properties of equality and identity properties• Recognize the Commutative and Associative Properties	16-22
1-4	Distributive Property <ul style="list-style-type: none">• Use the Distributive Property to evaluate and simplify expressions	23-29
1-6	Relations <ul style="list-style-type: none">• Represent relations• Interpret graphs of relations	42-48
1-7	Functions <ul style="list-style-type: none">• Determine whether a relation is a function• Find function values	49-56
2-1	Writing Equations <ul style="list-style-type: none">• Translate sentences into equations• Translate equations into sentences	79-84

2-2	Solving One-Step Equations <ul style="list-style-type: none"> • Solve equations by using addition, subtraction, multiplication, and division 	87-93
2-3	Solving Multi-Step Equations <ul style="list-style-type: none"> • Solve equations involving more than one operation • Solve equations involving consecutive integers 	95-100
2-4	Solving Equations with the Variable on Each Side <ul style="list-style-type: none"> • Solve equations with the variable on each side • Solve equations involving grouping symbols 	101-106
2-5	Solving Equations Involving Absolute Value <ul style="list-style-type: none"> • Evaluate absolute value expressions • Solve absolute value equations 	107-113
3-1	Graphing Linear Functions <ul style="list-style-type: none"> • Determine whether an equation is linear • Write equations in Standard Form • Find intercepts from a graph • Graph by using intercepts • Graph by making a Table of Values 	143-149
3-2	Zeros of Linear Functions <ul style="list-style-type: none"> • Find zeros of a linear function algebraically • Find zeros of a linear function graphically 	151-155
3-3	Rate of Change and Slope <ul style="list-style-type: none"> • Find the slope of a graph • Find the slope from a table of values • Find the slope given two coordinate points 	160-167
3-4	Slope-Intercept Form <ul style="list-style-type: none"> • Write an equation in slope-intercept form • Graph an equation in slope-intercept form 	171-177

3-7	Piecewise and Step Functions <ul style="list-style-type: none"> Graph piecewise-defined functions Find the domain and range of piecewise functions 	*Step Functions will not be tested *Review Questions from Homework Worksheet and Quiz
3-8	Absolute Value Functions <ul style="list-style-type: none"> Create a table of values for absolute value functions Graph absolute value functions Find the domain and range of absolute value functions 	205-210
4-1	Writing Equations in Slope-Intercept Form <ul style="list-style-type: none"> Write an equation given the slope and y-intercept Write an equation given the slope and a point Write an equation given two points 	225-230
4-2	Writing Equations in Standard and Point-Slope Form <ul style="list-style-type: none"> Write and graph an equation in standard form Write and graph an equation in point-slope form Write and graph an equation in slope-intercept form Find an equation of a line 	232-237
4-3	Parallel and Perpendicular Lines <ul style="list-style-type: none"> Write equations of parallel lines Write equations of perpendicular lines Find the slope of perpendicular lines 	239-244
2. Types of Questions: <ol style="list-style-type: none"> Multiple Choices. Definitions. (Matching or fill in the blank questions) Calculations. Graphing. Word Problems. 		3. You are expected to: <ol style="list-style-type: none"> Review mid-checks. Review mid-unit assessments. Review homework. Review word problems. Review students' notes. IXL: Q2, Q3, J4, J5, J6, O3, L1S14, S19, S3, S4, S8, S9, S23, S25, S26

Keywords: (Definitions should not be memorized it should be understood)

Algebraic expression:

Consists of sums and/or products of numbers and variables.

Variables:

Symbols used to represent unspecified numbers or values.

Like Terms:

Terms that contain the same variables, with corresponding variables having the same power.

Ordered Pair:

A set of numbers, or *coordinates*, written in the form (x, y) .

Relation:

A set of ordered pairs.

Domain:

The set of the first numbers of the ordered pairs in a relation.

Range:

The set of the second numbers of the ordered pairs in a relation.

Function:

A relationship between input and output. In a function, there is exactly one output for each input.

Discrete Function:

A function that consists of points that are not connected.

Continuous Function:

A function that consists of points that are connected.

Vertical Line Test:

A test to see if a graph represents a function – if a vertical line intersects the graph more than once, then the graph is not a function. Otherwise, the relation is a function.

***Properties of Equality (Page 16)**

- Reflexive Property
- Symmetric Property
- Transitive Property
- Substitution Property

***Addition Properties (Page 16)**

- Additive Identity
- Additive Inverse

***Multiplication Properties (Page 17)**

- Multiplicative Identity
- Multiplicative Property of Zero
- Multiplicative Inverse

Linear Equation:

An equation that forms a straight line when it is graphed.

x-intercept:

The point at which the graph of an equation crosses the x -axis. At the x -intercept, $y=0$.

y-intercept:

The point at which the graph of an equation crosses the y -axis. At the y -intercept, $x=0$.

Slope-intercept form:

$y = mx + b$, where m is the slope and b is the y -intercept.

Point-slope form:

$y - y_1 = m(x - x_1)$ where (x_1, y_1) is a given point on a nonvertical line and m is the slope of the line.

Standard form:

$Ax + By = C$ where $A \geq 0$, A and B are not both zero, and A , B , and C are integers with a greatest common factor of 1.

Zeros:

Values of x for which $f(x) = 0$ of the function. The zero of a function is also be referred to as the **x-intercept** or the **solution** or **root** of an equation.

Rate of change:

refers to the ratio that describes, on average, how much one quantity changes with respect to a change in another quantity.

Piecewise-defined function:

A function that includes two or more expressions. Each expression in the rule for a piecewise-defined function applies to a different interval of the function's domain.

Absolute value function:

A type of piecewise linear function that can be written in the form $f(x) = a|x - h| + k$, where a , h , and k are constants. When graphed, absolute value functions are V-shaped.

Parallel lines:

Lines in the same plane that do not intersect. Parallel lines have the same slope.

Perpendicular lines:

Lines that intersect at right angles. The slopes of nonvertical perpendicular lines are opposite reciprocals. That is, if the slope of a line is 4, the slope of the line perpendicular to it is $-\frac{1}{4}$.