Grade 8 Unpacked Math Standards - Algebra

8.A.1.1. Students are able to **use** properties to **expand, combine,** and **simplify** 1st degree algebraic expressions with the set of integers.

Webb Level: 1
Bloom:Application

Verbs Defined:
Use: apply
Expand: distribute
Combine: join like terms
Simplify: replace with an equivalent expression that has as few terms as possible

Key Terms Defined:
Properties: A set of mathematical rules or laws that result in an equivalent expression
1st degree algebraic expressions: an expression with a variable(s) to the 1st power (linear).
Set of integers: whole numbers and their opposites (…, -2, -1, 0, 1, 2, …)

Teacher Speak:
Students are able to use (apply) properties to expand (distribute), to combine (join like terms), and to simplify (replace with an equivalent expression using as few terms as possible) 1st degree algebraic expressions with the set of integers.

Student Speak:
Using the set of integers (...,-2, -1, 0, 1, 2,…), I can replace algebraic expressions with equivalent expressions that have as few terms as possible (simplify) by using:
**the distributive property*
*the associative property
*the commutative property
*the identity property
*the order of operations including exponents and nested parentheses
*the combination of like terms

8.A.2.1. Students are able to **write** and **solve** two-step 1st degree equations, with one variable, and one-step inequalities, with one variable, using the set of integers.

Webb level: 2
Bloom: Application

Verbs Defined:

Working Document

Write: translate words into mathematical symbols
Solve: find the solution

Key Terms Defined:
Integers: whole numbers and their opposites
Inequality: A comparison between two quantities involving one of the following relationships: <, >, ≤ *or* ≥ .
1st degree: an expression with a variable(s) to the 1st power (linear).
One-step inequalities: inequalities involving one operation
Two-step equations: equations involving two operations
Variable: a letter or symbol used to represent a number

Teacher Speak:
Students are able to write (translate words into mathematical symbols) and solve (find the solution) for two-step 1st degree equations and one-step inequalities, with one variable, using the set of integers.

Student Speak:
I can
*translate (write) words into mathematical symbols.
*find the solution (solve) using operations that undo each other (inverse operations) for two-operation (two-step) equations involving whole numbers and their opposites (integers …-2, -1, 0, 1, 2…).
*find the solution (solve) using operations that undo each other (inverse operations) for one-operation (one-step) inequalities (<, >, ≤ *or* ≥) involving whole numbers and their opposites (integers …-2, -1, 0, 1, 2,…).
*translate (write) words into equations.
*translate (write) words into inequalities.
*find the solution (solve) using inverse operations for two-operation (two-step) equations involving integers (…-2, -1, 0, 1, 2…).
*find the solution (solve) using inverse operations for one-operation (one-step) inequalities (<, >, ≤ *or* ≥) involving integers (…-2, -1, 0, 1, 2,…).

8.A.3.1. Students are able to **describe** and **determine** linear relationships.

Webb level: 2
Bloom: Comprehension

Verbs Defined:
Describe: identify positive/negative slope
Determine: find the slope and intercepts

Key terms defined:
Linear relationship: an equation with the variable raised to the 1st power (1st degree)

Working Document

Teacher Speak:
Students are able to describe linear relationships (identify positive/negative slope).
Students are able to determine (find the slope and x and y intercepts) from a graph.

Student Speak:
I know that the slope of a line is change in y (rise)/change in x (run).
I know that the x intercept is where the graph of the line crosses the x axis.
I know that the y intercept is where the graph of the line crosses the y axis.
I can identify (describe) if a line (linear relationship) has a positive or negative slope.
I can find (determine) the change in y/change in x (slope) of a line on a coordinate plane.
I can find (determine) the where the graph of the line crosses the x axis (x intercepts) on a coordinate plane.
I can find (determine) the where the graph of the line crosses the y axis (y intercepts) on a coordinate plane.
I can identify (describe) if a line (linear relationship) has a positive or negative slope.
I can find (determine) the slope of a line on a coordinate plane.
I can find (determine) x intercept of a line on a coordinate plane.
I can find (determine) y intercepts of a line on a coordinate plane.

8.A.4.1. Students are able to **create** rules to **explain** the relationship between numbers when a change in the first variable **affects** the second variable.

Webb level: 3
Bloom: Synthesis

Verbs Defined:
Create: write
Explain: describe
Affect: change

Key terms defined:
Rules: description
Relationship: correlation
Change: increase or decrease
Variable: letter or symbol used to represent one or more numbers

Teacher Speak:
Students are able to create (write) rules to explain (describe) the relationship between numbers when a change in the first variable changes the second variable.

Student Speak:
I can write (create) a description (rule) of what happens to the second letter (variable) when the first letter (variable) changes.
I can write (create) a rule of what happens to the second variable when the first variable changes.

Working Document

8.A.4.2. Students are able to **describe** and **represent** relations using tables, graphs, and rules.

Webb level: 2
Bloom: Analysis

Verbs Defined:
Describe: explain/predict
Represent: write or create

Key terms defined:
Relations: equations that express the relationship between two variables
Tables: charts
Graphs: scatterplot (two sets of data plotted as ordered pairs in the coordinate plane)
line graph (graph that connects data points)
Rules: equations

Teacher Speak:
Students are able to describe (explain/predict) and represent (write or create) relations using tables, graphs, and rules**.**

Student Speak:
I can
*write or create (represent) a chart (table), scatterplot or line graph (graph) or equation (rule)
* use a chart (table), scatterplot or line graph (graph) or equation (rule) to explain/predict a relationship

Working Document