

MSAD #53 Mathematics Curriculum Grade 8

**Overarching Processes:
Problem Solving, Reasoning,
Connections, and Communication**

Universal Screening and State Achievement Test

| Content | Skills: students will . . . | Materials & Resources |
|--------------------------------------|---|---|
| September NECAP review | <ul style="list-style-type: none"> • Practice NECAP released items • Take NWEA MAP assessment for Math • Take Vmath Grade 8 Benchmark test • Take MCAP benchmark test for fall • Summer Math packet review | NECAP released items NWEA Map assessment Vmath benchmark test MCAP benchmark tests FASTT Math Summer Math Packet |
| October NECAP | <ul style="list-style-type: none"> • Take NECAP as scheduled | |

Geometry and Measurement: Student Learning Goals

Students will understand that . . .

- Volume is a measure of filling an object and surface area is a measure of wrapping an object
- The volume of prisms and cylinders can be found by multiplying the area of the base times the height of the solid
- The volume of pyramids can be found by multiplying the area of a base by $\frac{1}{3}$ the height of the solid.
- The surface area of a figure is the sum of the areas of its faces
- Three -dimensional figures may have the same volume but quite different surface areas
- Changes in one or more dimensions of a rectangular prism or cylinder will affect the prism's volume and surface area (percent change needs to be added)

| Content MLR & NECAP Alignment | Skills: students will . . . | Materials & Resources |
|---|--|---|
| September MLR C. 8-4 NECAP M(G&M) 8-5, 8-6 | <ul style="list-style-type: none"> • Design nets to visualize and calculate surface areas of prisms and cylinders • Explore patterns among the volumes of cylinders, cones and spheres | CMP2 <i>Filling and Wrapping</i> Glencoe <i>Pre Algebra</i> Saxon Special Ed Adaptations warsaw_math |

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| | <ul style="list-style-type: none"> • Compute surface areas and volumes of a variety of three dimensional figures using the correct formulas • Use surface area and volume to solve a variety of real-world problems • Extend understanding of similarity and scale factors to three-dimensional figures | portaportal Skills sheets* (TBD) Unit project/toy project revamped |
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Functions and Algebra: Student Learning Goals

Students will understand that . . .

- A linear relationship represents a constant rate of change
- Linear equations can be solved when written in the form $ax + b = cx + d$
- Graphs can be used to estimate solutions to equations and systems of equations, check algebraic approaches, provide alternative solution paths, and communicate the solution to a problem.
- Linear equations have just one solution—but know also that some linear equations can have no solution and those linear equations that are identities have every value of x as a solution.

| Content MLR & NECAP Alignment | Skills: students will . . . | Materials & Resources |
|--|--|--|
| MLR D 8.2, 8.4 NECAP M(F&A) 8-1, 8-2 | <ul style="list-style-type: none"> • Recognize linear and nonlinear patterns from verbal descriptions, tables and graphs and describe those patterns using words and equations • Write equations to express linear patterns appearing in tables, graphs and verbal contexts • Write linear equations when given specific information, such as two points or a point and the slope • Approximate linear data patterns with graph and equation models • Solve linear equations • Develop an informal understanding of inequalities • Write equations describing inverse variation • Use linear and inverse variation equations to solve problems and to make predictions and decisions • Solve any linear equation including linear equations of the form $ax + b = cx + d$. | CMP2 <i>Thinking with Mathematical Models</i> Glencoe <i>Pre Algebra</i> Saxon Special Ed Adaptations Warsaw_math portaportal Skills sheets* (TBD) Bridge Project* (to be developed) |

Geometry and Measurement: Student Learning Goals

Students will understand that . . .

- The sum of the squares of each leg of a right triangle is equal to the square of the hypotenuse

| Content MLR & NECAP Alignment | Skills: students will . . . | Materials & Resources |
|---|---|---|
| MLR C 8.3 NECAP: M(G&M) 8-2 M(N&O) 8-2, 8-4 | <ul style="list-style-type: none"> • Relate the area of a square to its side length • Develop strategies for finding the distance between two points on a coordinate grid • Understand and apply the Pythagorean Theorem • Estimate the values of square roots of whole numbers • Use the Pythagorean theorem to solve everyday problems • Locate irrational numbers on a number line | CMP2 <i>Looking for Pythagoras</i> Glencoe <i>Pre Algebra</i> Saxon Special Ed Adaptations Warsaw_math portaportal Skills sheets* (TBD) Unit Project (TBD) |

Data and Probability: Student Learning Goals

Students will understand that . . .

- Variability occurs whenever data are collected
- The shape of a distribution can be used to locate the mean and the median
- Counts or percents can be used to report frequencies of occurrence of data

| Content MLR & NECAP Alignment | Skills: students will . . . | Materials & Resources |
|--|--|---|
| M(DSP) 8-1,8-2,8-3,8-4 M(N&O) 8-1 | <ul style="list-style-type: none"> •Apply the process of statistical investigation to pose questions to identify ways data are collected and to determine strategies for analyzing data in order to answer the questions posed •Describe the variability in the distribution of a given data set •Identify sources of variability including natural variability | CMP2 <i>Data Distributions</i> Glencoe <i>Pre Algebra</i> Saxon Special Ed Adaptations Warsaw_math portaportal Skills sheets* (TBD) Unit Project (TBD) |

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| | <p>and variability that results from errors in measurement</p> <ul style="list-style-type: none">•Determine whether to use the mean or median to describe a distribution•Use a variety of representations including tables, bar graphs and line plots to display distributions•Compare the distributions of data sets using their centers (mean, median, and mode), variability (outliers and range),and shape (clusters and gaps)•Decide if a difference among data values or summary measures matters•Develop and use strategies to compare data sets to solve problems | |
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Essential Vocabulary:

Listed by unit in the CMP2 teachers manuals

Assessment:

Unit tests

Unit projects

NWEA

MCAP benchmark probes

VMath assessment

| Benchmark Measures | Grade 6-8 |
|---------------------------|---|
| Length | Units (accuracy): Inch (to 1/16 inch); Foot; Centimeter (to 1/10 centimeter); Meter (to 1/100 meter); Yard; Mile (use in scale and rate questions); Kilometer (use in scale and rate questions) Equivalencies: 12 inches in 1 foot; 100 centimeters in 1 meter; 3 feet in 1 yard; 36 inches in 1 yard; 10 millimeters in 1 centimeter; 1000 millimeters in 1 meter |
| Time | Hour (to 1 minute); Day; Year Equivalencies: 24 hours in 1 day; 7 days in 1 week; 365 days in 1 year; 60 seconds in 1 minute; 60 minutes in 1 hour |
| Temperature | Unit (accuracy): C° and F° (to 1 degree) |
| Capacity | Unit (accuracy): Quarts (to 1 ounce); Gallon; Pint; Liter Equivalencies: 32 ounces in 1 quart; 4 quarts in 1 gallon; 2 pints in 1 quart; 1000 milliliters in 1 liter |
| Mass | Unit (accuracy): Kilogram; Gram (to 1/10 gram) |
| Weight | Unit (accuracy): Pound (to 1 ounce) Equivalencies: 16 ounces in 1 pound |
| Angles and Rotation | Unit (accuracy): Degree (to 2 degrees) Equivalencies: 360° in 1 circle; 90° in 1 right angle |