



New York State
EDUCATION DEPARTMENT
Knowledge > Skill > Opportunity

Reference Sheets for Next Generation Mathematics Assessments

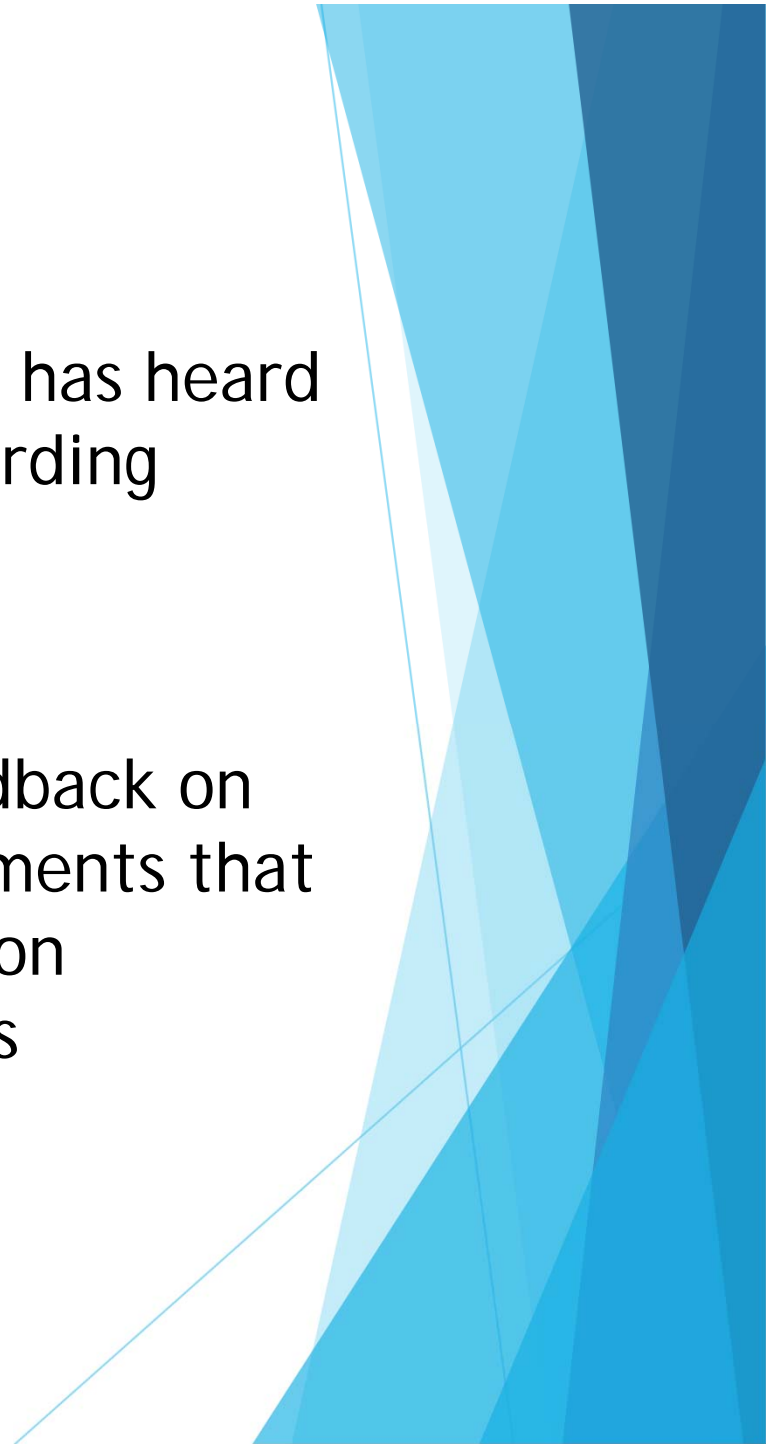
Please go to www.nysed.gov

1st - click “New York Next Generation Learning Standards”
(under “Updates from Commissioner Elia on the right”)

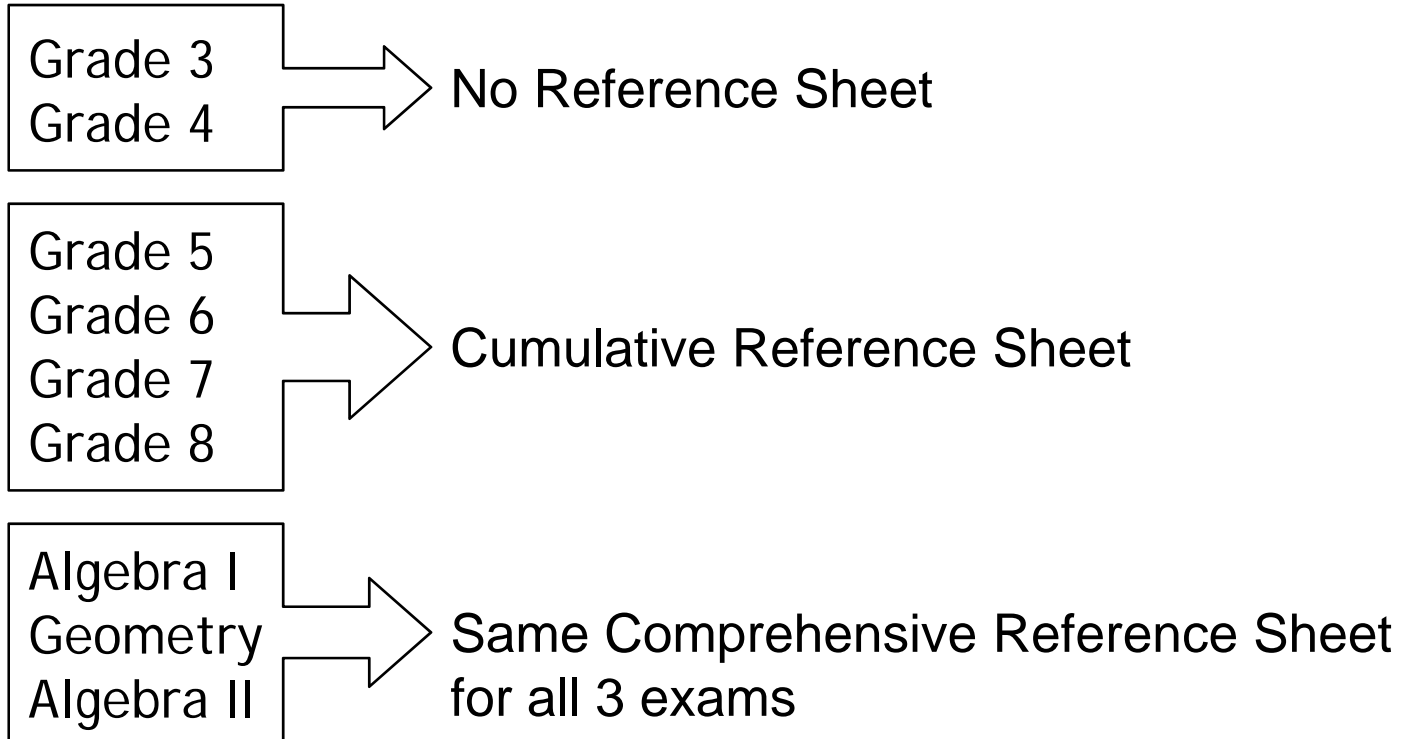
2nd - click “Mathematics Standards”

Reference Sheets

- ▶ Over the past few years, NYSED has heard a lot of educator feedback regarding reference sheets.
- ▶ Today, we are seeking your feedback on reference sheets for the assessments that will measure the Next Generation Mathematics Learning Standards

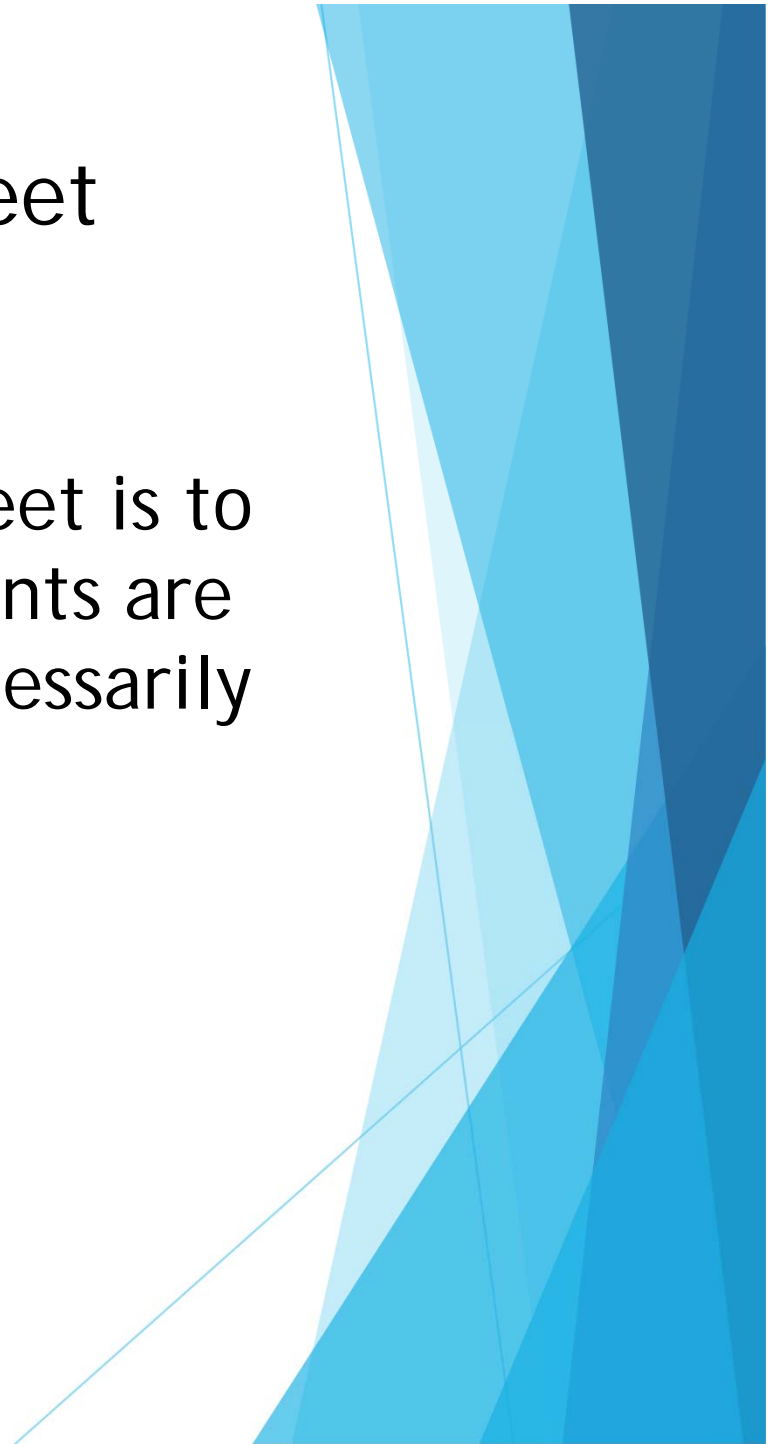


Current Reference Sheets



Purpose of a Reference Sheet

The purpose of a reference sheet is to contain information that students are expected to apply, but not necessarily memorize.



Let's take a look at the Standards

CONVERSIONS

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
1 mile = 5,280 feet	1 pound = 0.454 kilogram	1 quart = 2 pints
1 mile = 1,760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts
1 mile = 1.609 kilometers	1 ton = 2,000 pounds	1 gallon = 3.785 liters
		1 liter = 0.264 gallon
		1 liter = 1,000 cubic centimeters

FORMULAS

Triangle

$$A = \frac{1}{2}bh$$

Right Rectangular Prism

$$V = Bh \text{ or } V = lwh$$

NY-6.RP.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Note: Conversion of units occur within a given measurement system, not across different measurement systems.

NY-5.MD.1 Convert among different-sized standard measurement units within a given measurement system **when the conversion factor is given**. Use these conversions in solving multi-step, real world problems.

All conversion factors will be given. Grade 5 expectations for decimal operations are limited to work with decimals to hundredths.

NY-4.MD.1 Know relative sizes of measurement units: ft., in.; km, m, cm. **Know the conversion factor and use it to convert measurements** in a larger unit in terms of a smaller unit: ft., in.; km, m, cm; hr., min., sec. **Given the conversion factor**, convert all other measurements within a single system of measurement from a larger unit to a smaller unit.

CONVERSIONS

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
1 mile = 5,280 feet	1 pound = 0.454 kilogram	1 quart = 2 pints
1 mile = 1,760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts
1 mile = 1.609 kilometers	1 ton = 2,000 pounds	1 gallon = 3.785 liters
		1 liter = 0.264 gallon
		1 liter = 1,000 cubic centimeters

FORMULAS

Triangle

$$A = \frac{1}{2}bh$$

Right Rectangular Prism

$$V = Bh \text{ or } V = lwh$$

NY-6.G.2 Find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

NY-5.MD.5a Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base.

NY-5.MD.5b Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

NY-6.G.1 Find area of triangles, trapezoids, and other polygons by composing into rectangles or decomposing into triangles and quadrilaterals. Apply these techniques in the context of solving real-world and mathematical problems.

NY-4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

NY-3.MD.7a Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

NY-3.MD.7b Multiply side lengths to **find areas** of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

NY-3.MD.8a Solve real world and mathematical problems involving **perimeters** of polygons, including finding the perimeter given the side lengths or finding one unknown side length given the perimeter and other side lengths.

CONVERSIONS

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups
1 mile = 5,280 feet	1 pound = 0.454 kilogram	1 quart = 2 pints
1 mile = 1,760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts
1 mile = 1.609 kilometers	1 ton = 2,000 pounds	1 gallon = 3.785 liters
		1 liter = 0.264 gallon
		1 liter = 1,000 cubic centimeters

FORMULAS

Triangle

$$A = \frac{1}{2}bh$$

Right Rectangular Prism

$$V = Bh \text{ or } V = lwh$$

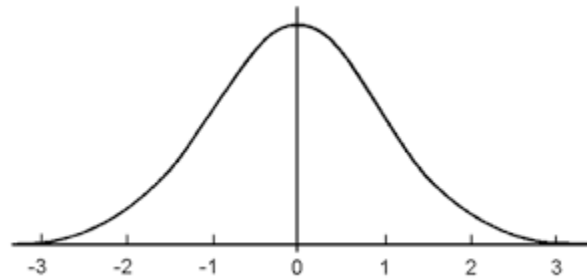
Figures

Other

NY-AII-S.ID.4a. Recognize whether or not a **normal curve** is appropriate for a given data set.

NY-AII-S.ID.4b If appropriate, determine population percentages using a graphing calculator for an appropriate **normal curve**.

NY-AII-S.IC.2 Determine if a value for a sample proportion or sample mean is likely to occur based on a given simulation.



TASK 1

- ▶ How do you provide formulas or other applied information to students in the classroom? What role does this play in supporting learning and assessment?
- ▶ What do students need to memorize vs. apply for their current grade level? What about information from prior grade levels?

Unit Conversions

Definitions

Formulas

Common figures

- ▶ Which formulas, conversions, and/or other information do you think should be on a reference sheet?

TASK 2

- ▶ Following your discussion, create one list of recommended formulas, conversions, etc. per table (each table has been assigned a grade level).
- ▶ NYSED staff will collect the list from each table.

Thank You for your Participation!

- ▶ Please go to the Rochester Regional Supporting All Students Conference page and complete the survey regarding Reference Sheets.

