

New York State Mathematics Correlation

Integrated Algebra (Grade 9-12)

Reference: [NY Mathematics Core Curriculum](#)

Introduction

This document correlates Yenka Mathematics software to the content performance indicators of the New York State mathematics core curriculum. It highlights specific areas of the curriculum that are covered by Yenka Mathematics and points to resources that will be useful when teaching the material.

The terminology we have used in this document is as follows:

- **Product:** this is the relevant Yenka Mathematics product, either [Yenka 3D Shapes](#) or [Yenka Statistics](#). More information about these products can be found on the Yenka web page by following the links.
- **Model:** a pre-made Yenka simulation with step-by-step instructions, which will either teach the pupils part of the curriculum, or give them opportunity to apply the knowledge they already have. These models are found under *Content* when you open Yenka itself, and they are linked to through our website.
- **Tutorial:** a model that explains how to use a particular aspect of the Yenka software. These can be found under *Getting Started* in the *Content* tab of Yenka.

Since the Yenka Mathematics titles are simulators, they will help you to cover other areas of the curriculum too. The final column of the table gives some possible *examples* of how you, or the students, can use Yenka Mathematics to create your own models and cover a wider scope of material. You may wish to look at the *tutorials*, and [training videos](#) provided on the website, to explore more of the potential uses of the software, and show you how to create your own models.



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Geometry Strand

Band		Product	Content (Models)	Example
Shapes	A.G.1 Find the area and/or perimeter of figures composed of polygons and circles or sectors of a circle. <i>Note: Figures may include triangles, rectangles, squares, parallelograms, rhombuses, trapezoids, circles, semi-circles, quarter-circles, and regular polygons (perimeter only).</i>	Yenka 3D Shapes	<ul style="list-style-type: none"> - Area of a square - Area of a rectangle - Area of a triangle - Wallpapering - Area of rectangles and triangles 	
	A.G.2 Use formulas to calculate volume and surface area of rectangular solids and cylinders.	Yenka 3D Shapes	<ul style="list-style-type: none"> - Cube - Volume of a cylinder - Which cylinder has the largest volume? 	

Statistics and Probability Strand

Band		Product	Content (Models)	Example
<i>Organization and Display of Data</i>	A.S.2 Determine whether the data to be analysed is univariate or bivariate	Yenka Statistics	Yenka Statistics models provide many examples of working with univariate and bivariate data. Pupils can be encouraged to identify the data type as they work through the models.	Use the <i>Example Datasets</i> in the Objects pane to illustrate the different data types. For example, working with the <i>Planets of the solar system</i> , ask pupils to plot a <i>Bar chart</i> looking at the number of moons of each planet and explain that this is univariate data. Then they can look at a <i>Scatter graph</i> of orbital period against orbital radius, and examine the relationship of this bivariate data.
	A.S.4 Compare and contrast the appropriateness of different measures of central tendency for a given data set	Yenka Statistics	<ul style="list-style-type: none"> - Comparing averages - Mode 	

			See also: - Mean - Median with odd number - Median with even number	
	A.S.5 Construct a histogram, cumulative frequency histogram, and a box-and-whisker plot, given a set of data	Yenka Statistics	- Histogram - Box plot See also tutorial: - Graphing data	
	A.S.6 Understand how the five statistical summary (minimum, maximum, and the three quartiles) is used to construct a box-and-whisker plot	Yenka Statistics	- Box plot	Open any of the <i>Example Datasets</i> , and in the Summary tab choose to view the Quartiles summary. This shows the minimum, maximum and three quartiles. Students can then add a <i>Box plot</i> and see quickly and clearly how the statistical summary is used to construct it. Alternatively your own data can be imported to an empty dataset and the same procedure followed.
	A.S.7 Create a scatter plot of bivariate data	Yenka Statistics	Related models: - Correlation and tutorials: - Finding correlations - Graphing data	This can be done quickly on Yenka Statistics for a variety of data, either using an <i>Example Dataset</i> or importing data to an <i>Empty data set</i> , and adding a <i>Scatter graph</i> to the model.
	A.S.8 Construct manually a reasonable line of best fit for a scatter plot and determine the equation of that line	Yenka Statistics	Related model: - Line of best fit	
<i>Analysis of Data</i>	A.S.9 Analyze and interpret a frequency distribution table or histogram, a cumulative frequency distribution table or histogram, or a box-and-whisker plot	Yenka Statistics	- Histogram - Cumulative frequency - Box plot	Each of the <i>Example Datasets</i> are useful in quickly providing a prepared set of data. The frequency and cumulative frequency distribution tables are displayed in the <i>Frequency tab</i> (double click to add the

			See also tutorial: - Frequency datasets	cumulative frequency column), and a <i>Histogram</i> and/or <i>Box plot</i> can be added to the model. Students can then be asked to analyze the data, identify its key features, and relate the data in the table to its graphical representation.
	A.S.11 Find the percentile rank of an item in a data set and identify the point values for first, second and third quartiles	Yenka Statistics		Construct a data set of 20 pupils scores in a test, with scores ranging between 0 and 100. (See tutorial Working with datasets). Ask students to use the <i>Data</i> and <i>Frequency tabs</i> to calculate the percentile rank of particular pupils, and to identify the quartiles for the data set. Answers can be checked in the <i>Summary</i> tab.
	A.S.12 Identify the relationship between the independent and dependent variables from a scatter plot (positive, negative, or none)	Yenka Statistics	- Correlation	
	A.S.13 Understand the difference between correlation and causation	Yenka Statistics	- Correlation	Ask students to open the <i>Example data set 'Men's 100m sprint records.'</i> Add a <i>scatter graph</i> to the model. Ask whether there is a correlation, and causation. Students can see that there is clearly a correlation between year and sprint time, however it is not true that a later year causes a shorter time. Students can discuss why there is correlation but not causation, and what other factors might be involved which cause the correlation.
	A.S.14 Identify variables that might have a correlation but not a causal relationship			
	A.S.17 Use a reasonable line of best fit to make a prediction involving interpolation or extrapolation	Yenka Statistics	- Extrapolation and Interpolation	
<i>Probability</i>	A.S.19 Determine the number of elements in a sample space and the number of favorable events	Yenka Statistics		The <i>probability trees</i> are extremely useful in helping pupils visualise the sample space in an experiment. As a simple example, set up a <i>Probability Game</i> of tossing a coin. Students

				can be asked to consider an experiment of tossing a coin twice, and observe from the probability tree that the sample space contains four elements – i.e. four branches. Ask them to consider the event that both flips show the same face – i.e. heads + heads, or tails + tails. Again students can see that there are two favorable events. This can be extended to much more complex examples.
	A.S.20 Calculate the probability of an event and its complement	Yenka Statistics	- Complementary events	As above, many probability experiments can be simulated on Yenka Statistics, and the probability tree can help students understand the events and calculation of probabilities.
	A.S.21 Determine empirical probabilities based on specific sample data	Yenka Statistics	- Probability and relative frequency	As above.
	A.S.22 Determine, based on calculated probability of a set of events, if: <ul style="list-style-type: none"> • some or all are equally likely to occur • one is more likely to occur than another • whether or not an event is certain to happen or not to happen 	Yenka Statistics	Related model: - Probability scale and tutorial: - Playing probability games	As above.
	A.S.23 Calculate the probability of: <ul style="list-style-type: none"> • a series of independent events • two mutually exclusive events • two events that are not mutually exclusive 	Yenka Statistics	- Combing independent events - Independent and dependent events	As above.

If you have any questions about Yenka or this document, please contact [Esther Droop](#) or visit www.yenka.com