Ohio Mathematics Correlation (Grade 9)

Reference: Academic Content Standards (PDF)

Introduction

This document correlates Yenka Mathematics software to the content performance indicators of the Ohio 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.

Measurement Standard

Area	Indicator	Product	Content (Model)	Example
Use Measurement Techniques and Tools	3. Use the ratio of lengths in similar two-dimensional figures or three-dimensional objects to calculate the ratio of their areas or volumes respectively.	Yenka 3D Shapes	Related models: - Similar triangles - Similar cuboids	

Geometry and Spatial Sense Standard

Area	Indicator	Product	Content (Model)	Example
Characteristics and Properties	2. Apply proportions and right triangle trigonometric ratios to solve problems involving missing lengths and angle measures in similar figures.	Yenka 3D Shapes	-Similar triangles See also: - Similar cuboids - Find the similar triangle	

Data Analysis and Probability Standard

Area	Indicator	Product	Content (Model)	Example
Data Collection	1. Classify data as univariate (single variable) or bivariate (two variables) and as quantitative (measurement) or qualitative (categorical) data.	Yenka Statistics		Yenka Statistics allows students to work with both univariate and bivariate data. The *Example datasets* provided, alongside *Graphs*, could be used to highlight the differences between these data types.

	2. Create a scatterplot for a set of bivariate data, sketch the line of best fit, and interpret the slope of the line of best fit.	Yenka Statistics	Related models: - Line of best fit and tutorial: - Finding correlations	
Statistical Methods	3. Analyze and interpret frequency distributions based on spread, symmetry, skewness, clusters and outliers.	Yenka Statistics	Related models: - Calculating standard deviation - Comparing normal distributions	
	6. Make inferences about relationships in bivariant data, and recognize the difference between evidence of relationship (correlation) and causation.	Yenka Statistics	- Correlation Tutorial: - Finding correlations	
Probability	8. Describe, create and analyze a sample space and use it to calculate probability.	Yenka Statistics	Tutorial: - Using the probability tree	The *probability trees* are extremely useful in helping pupils visualise the sample space in an experiment. As a simple example, set up a *Probability Game* 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.
	9. Identify situations involving independent and dependent events and explain differences between, and common misconceptions about, probabilities associated with those events.	Yenka Statistics	- Independent and dependent events	

	10. Use theoretical and experimental probability, including simulations or random numbers, to estimate probabilities and to solve problems dealing with uncertainty; e.g., compound events, independent events, simple dependent events.	Yenka Statistics	- Independent and dependent events - Combining independent events Tutorial: - Playing probability games	Set up a *Probability Game* e.g. the rolling of a dice, or spinning a spinner. The dice can be weighted, and students calculate the probability of each number being rolled, of three 6's being rolled consecutively etc. Students then roll the dice 500 times and use a probability tree or *data viewer* to determine the experimental probability.