

PAVING THE WAY WITH TREADS

GRADES K-3

This document lists the West Virginia learning standards addressed by Paving the Way with Treads, True Robotics' grades K-3 robotics curriculum. Standards are grouped by subject and grade level, with codes and wording as published by the West Virginia Board of Education.

42

MATH

33

ELA

17

CS

5

SCIENCE

97

TOTAL STANDARDS

MATHEMATICS

42 STANDARDS

Based on the West Virginia state standards

GRADE	CODE	STANDARD
K-3	MHM1	Make sense of problems and persevere in solving them.
K	M.K.1	Count to 100 by ones and by tens.
K	M.K.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K	M.K.8	Represent addition and subtraction with strategies using objects, fingers, mental images, drawings, sounds (e.g., claps), and acting out situations, verbal explanations, expressions, and equations.
K	M.K.9	Solve addition and subtraction word problems and add and subtract within 10 by using objects or drawings to represent the problem.
K	M.K.15	Describe measurable attributes of objects, such as length or weight and describe several measurable attributes of a single object.
K	M.K.16	Directly compare two objects with a measurable attribute in common, to see which object has "more of" or "less of" the attribute and describe the difference.
K	M.K.17	Classify objects into given categories, count the numbers of objects in each category, and sort the categories by count. Category counts should be limited to less than or equal to 10.
K	M.K.20	Describe objects in the environment using names of shapes and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind and next to.
K	M.K.21	Correctly name shapes regardless of their orientations or overall size.
1	MHM2	Reason abstractly and quantitatively.

GRADE	CODE	STANDARD
1	M.1.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions (e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem).
1	M.1.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20 (e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem).
1	M.1.10	Understand the two digits of a two-digit number represent amounts of tens and ones.
1	M.1.11	Compare and order two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
1	M.1.15	Order three objects by length and compare the lengths of two objects indirectly by using a third object.
1	M.1.16	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.
1	M.1.19	Organize, represent, interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category and how many more or less are in one category than in another.
1	M.1.20	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, and/or overall size); build and draw shapes to possess defining attributes.
1	M.1.21	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape and compose new shapes from the composite shape.
2	M.2.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).
2	M.2.6	Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones (e.g., 706 equals 7 hundreds, 0 tens and 6 ones).
2	M.2.8	Read and write numbers to 1000 using base-ten numerals, number names and expanded form.
2	M.2.10	Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.
2	M.2.15	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2	M.2.17	Estimate lengths using units of inches, feet, centimeters, and meters.
2	M.2.22	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

GRADE	CODE	STANDARD
2	M.2.23	Generate measurement data by measuring lengths of several objects to the nearest whole unit or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
2	M.2.24	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.
2	M.2.25	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces (sizes are compared directly or visually, not compared by measuring). Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2	M.2.27	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.
3	M.3.1	Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each (e.g., describe context in which a total number of objects can be expressed as 5×7).
3	M.3.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).
3	M.3.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
3	M.3.5	Apply properties of operations as strategies to multiply and divide.
3	M.3.15	Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.
3	M.3.16	Understand a fraction as a number on the number line and represent fractions on a number line diagram.
3	M.3.20	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.
3	M.3.21	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves or quarters.
3	M.3.22	Recognize area as an attribute of plane figures and understand concepts of area measurement.
3	M.3.23	Measure areas by counting unit squares (square cm, square m, square in, square ft. and improvised units).
3	M.3.26	Understand that shapes in distinct categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides) and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

ENGLISH LANGUAGE ARTS

33 STANDARDS

Based on the West Virginia state standards

GRADE	CODE	STANDARD
K	ELA.K.II	Know and apply grade-level phonics and word analysis skills in decoding words.
K	ELA.K.IV	Recognize and produce rhyming words.
K	ELA.K.V	Understand that words are separated by spaces in print.
K	ELA.K.31	Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
K	ELA.K.34	Add drawings or other visuals to descriptions as desired to provide additional details.
K	ELA.K.37	Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.
K	ELA.K.40	Identify real-life connections between words and their use.
1	ELA.1.I	Read with sufficient accuracy and fluency to support comprehension.
1	ELA.1.II	Know and apply grade-level phonics and word analysis skills in decoding words.
1	ELA.1.IV	Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
1	ELA.1.31	Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
1	ELA.1.33	Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.
1	ELA.1.37	Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.
2	ELA.2.II	Know and apply grade-level phonics and word analysis skills in decoding words.
2	ELA.2.20	Write opinion pieces by introducing the topic or text being discussed, stating an opinion, supplying reasons that support the opinion, using linking words to connect opinion and reasons, and providing a concluding statement or section.
2	ELA.2.22	Write narratives to recount a well-elaborated event or short sequence of events, including details to describe actions, thoughts, and feelings, and using transitional words to signal event order and provide a sense of closure.
2	ELA.2.24	With guidance and support from adults and collaborative discussions, focus on a topic and strengthen writing as needed by revising and editing.
2	ELA.2.30	Ask for clarification and further explanation as needed about the topics and texts under discussion.
2	ELA.2.31	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
2	ELA.2.33	Tell a story or recount an experience with appropriate facts and relevant, descriptive details; speaking audibly and coherently.

GRADE	CODE	STANDARD
2	ELA.2.34	Create audio recordings of stories or poems; add visuals to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
2	ELA.2.36	Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.
2	ELA.2.37	Use an apostrophe to form contractions and frequently occurring possessives.
2	ELA.2.39	Use sentence-level context as a clue to the meaning of a word or phrase.
2	ELA.2.40	Identify real-life connections between words and their use.
3	ELA.3.11	Know and apply grade-level phonics and word analysis skills in decoding words.
3	ELA.3.1	Ask and answer questions to demonstrate understanding of a literary text, referring explicitly to the text as the basis for the answers.
3	ELA.3.2	Recount stories, including fables, folktales, and myths from diverse cultures; determine the central idea, lesson, or moral and explain how it is conveyed through key details in the literary text.
3	ELA.3.22	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
3	ELA.3.24	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing to demonstrate command of Language standards up to and including grade 3.
3	ELA.3.31	Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
3	ELA.3.39	Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.
3	ELA.3.40	Demonstrate understanding of word relationships and nuances in word meanings.

TECHNOLOGY AND COMPUTER SCIENCE

17 STANDARDS

Based on the West Virginia state standards

GRADE	CODE	STANDARD
K-2	T.K-2.3	Use an input device (mouse, touch screen, etc.) to select an item and navigate the screen.
K-2	T.K-2.5	Demonstrate responsible use of technology (e.g., seek guidance and appropriate support when selecting digital content, understand how to be safe online, follow safety rules when using media, etc.).
K-2	T.K-2.6	Practice using safe, legal, and ethical behavior when using technology.
K-2	T.K-2.7	Collaborate with peers, teams, and individuals within their communities and home through the use of age-appropriate technology.
K-2	T.K-2.9	With support and guidance, create original work through the use of age-appropriate technology and digital resources.
K-2	T.K-2.17	With guidance, select appropriate digital learning tools and resources to produce and publish information.

GRADE	CODE	STANDARD
K-2	CS.K-2.9	Follow a procedure/algorithm using tangible materials.
K-2	CS.K-2.10	Write an algorithm using sequences.
K-2	CS.K-2.12	List ways to use computer technology to help their daily life.
3	T.3-5.1	Explore a variety of age-appropriate technologies that can assist with the learning process.
3	T.3-5.7	Collaborate with peers, teams, and individuals within their communities and home through the use of age-appropriate technology.
3	T.3-5.18	Graph data using a spreadsheet. Analyze and produce a report that explains the analysis of data.
3	T.3-5.19	Communicate with others through the use of electronic mail (email) or other digital resources.
3	CS.3-5.7	Collect and organize data using appropriate digital tool.
3	CS.3-5.9	With support and guidance, analyze and write the steps to solve problems.
3	CS.3-5.10	Understand how to decompose a larger problem into smaller sub-problems using sequences, events, loops, and conditionals.
3	CS.3-5.11	With support and guidance, design, create, test, and debug procedures/algorithms.

SCIENCE

5 STANDARDS

Based on the West Virginia state standards

GRADE	CODE	STANDARD
1	S.1.10	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
1	S.1.11	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
2	S.2.14	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
3	S.3.17	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3	S.3.18	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

SOURCES & NOTES

- The official mathematics, English language arts, computer science and science standards for West Virginia, as published by the West Virginia Board of Education.
- Codes and standard wording are reproduced from the official standards documents. Clarification statements, examples and assessment boundaries are omitted.
- Grade shows the grade level at which True Robotics lessons address each standard. A range (for example K-2) marks a standard written for a grade band.
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- A lesson-level crosswalk is available on request at info@truerobotics.org.