

PAVING THE WAY WITH TREADS

GRADES K-3

This document lists the Tennessee 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 Tennessee State Board of Education.

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MATH

42

ELA

12

CS

6

SCIENCE

102

TOTAL STANDARDS

MATHEMATICS

42 STANDARDS

Based on the Tennessee state standards

GRADE	CODE	STANDARD
K-3	MP1	Make sense of problems and persevere in solving them.
K	K.CC.A.1	Count to 100 by ones, fives, and tens. Count backward from 10.
K	K.CC.B.5	Understand the relationship between numbers and quantities; connect counting to cardinality.
K	K.OA.A.1	Represent addition and subtraction with objects, fingers, drawings, acting out situations, verbal explanations, expressions, or equations.
K	K.OA.A.2	Add and subtract within 10 to solve contextual problems with result/total unknown involving situations of add to, take from, and put together/take apart. Use objects, drawings, or equations to represent the problem.
K	K.MD.A.1	Describe the measurable attributes of an object, such as length (long/short), height (tall/short), or weight (heavy/light).
K	K.MD.A.2	Directly compare two objects with a measurable attribute in common, to describe which object has more of/less of the attribute.
K	K.MD.C.4	Sort a collection of objects into a given category, with 10 or fewer in each category. Compare the categories by group size.
K	K.G.A.1	Describe objects in the environment using names of shapes and solids (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). Describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, between, and next to.
K	K.G.A.2	Correctly name shapes and solids (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres) regardless of their orientations or overall size.
1	MP2	Reason abstractly and quantitatively.

GRADE	CODE	STANDARD
1	1.OA.A.1	Add and subtract within 20 to solve contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1	1.OA.A.2	Add three whole numbers whose sum is within 20 to solve contextual problems using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1	1.NBT.B.3	Know that the digits of a two-digit number represent groups of tens and ones (e.g., 39 can be represented as 39 ones, 2 tens and 19 ones, or 3 tens and 9 ones).
1	1.NBT.B.4	Compare two two-digit numbers based on the meanings of the digits in each place and use the symbols $>$, $=$, and $<$ to show the relationship.
1	1.MD.A.1	Order three objects by length. Compare the lengths of two objects indirectly by using a third object.
1	1.MD.A.2	Measure the length of an object using non-standard units (paper clips, cubes, etc.) and express this length as a whole number of units.
1	1.MD.C.5	Organize, represent, and interpret data with up to three categories using pictographs, bar graphs, and tally charts. 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	1.G.A.1	Distinguish between attributes that define a shape (e.g., number of sides and vertices) versus attributes that do not define the shape (e.g., color, orientation, overall size); build and draw two-dimensional shapes to possess defining attributes.
1	1.G.A.2	Create a composite figure and use the composite figure to make new figures by using two-dimensional shapes (rectangles, squares, hexagons, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional solids (cubes, spheres, rectangular prisms, cones, and cylinders).
2	2.OA.A.1	Add and subtract within 100 to solve one- and two-step contextual problems, with unknowns in all positions, involving situations of add to, take from, put together/take apart, and compare. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem.
2	2.NBT.A.1	Know that the three digits of a three-digit number represent amounts of hundreds, tens, and ones (e.g., 706 can be represented in multiple ways as 7 hundreds, 0 tens, and 6 ones; 706 ones; or 70 tens and 6 ones).
2	2.NBT.A.3	Read and write numbers to 1000 using standard form, word form, and expanded form.
2	2.NBT.B.5	Fluently add and subtract within 100 using properties of operations, strategies based on place value, and/or the relationship between addition and subtraction.
2	2.MD.A.1	Measure the length of an object in whole number units by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2	2.MD.A.3	Estimate lengths using whole number units of inches, feet, yards, centimeters, and meters.
2	2.MD.C.8	Solve contextual problems involving amounts less than one dollar including quarters, dimes, nickels, and pennies using the ¢ symbol appropriately. Solve contextual problems involving whole number dollar amounts up to \$100 using the \$ symbol appropriately.

GRADE	CODE	STANDARD
2	2.MD.D.9	Given a set of data, create a line plot, where the horizontal scale is marked off in whole-number units.
2	2.MD.D.10	Draw a pictograph (with a key of values of 1, 2, 5, or 10) and a bar graph (with intervals of one) to represent a data set with up to four categories. Solve addition and subtraction problems related to the data in a graph.
2	2.G.A.1	Identify triangles, quadrilaterals, pentagons, and hexagons. Draw two-dimensional shapes having specified attributes (as determined directly or visually, not by measuring), such as a given number of angles/vertices or a given number of sides of equal length.
2	2.G.A.3	Partition circles and rectangles into two, three, and four equal shares. Describe the shares using the words halves, thirds, fourths, half of, a third of, and a fourth of, and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.
3	3.OA.A.1	Interpret the factors and products in whole number multiplication equations (e.g., 4×7 is 4 groups of 7 objects with a total of 28 objects or 4 strings measuring 7 inches each with a total length of 28 inches).
3	3.OA.A.3	Multiply and divide within 100 to solve contextual problems, with the unknown in any positions, in situations involving equal groups, arrays/area, and measurement quantities using strategies based on place value, the properties of operations, and the relationship between multiplication and division (e.g., contexts including computations such as $3 \times ? = 24$, $6 \times 16 = ?$, $? \div 8 = 3$, or $96 \div 6 = ?$).
3	3.OA.A.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers within 100.
3	3.OA.B.5	Apply properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties.)
3	3.NF.A.1	Understand a unit fraction, $1/b$, as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a non-unit fraction, n/b , as the quantity formed by n parts of size $1/b$.
3	3.NF.A.2	Understand a fraction as a number on the number line. Represent fractions on a number line.
3	3.MD.B.3	Draw a pictograph 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 graphs.
3	3.MD.B.4	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	3.MD.C.5	Recognize that plane figures have an area and understand concepts of area measurement.
3	3.MD.C.6	Measure areas by counting unit squares (square centimeters, square meters, square inches, square feet, and improvised units).
3	3.G.A.1	Understand that shapes in different categories may share attributes and that the shared attributes can define a larger category. Recognize rhombuses, rectangles, and squares as examples of quadrilaterals and recognize examples of quadrilaterals that do not belong to any of these subcategories.

ENGLISH LANGUAGE ARTS

42 STANDARDS

Based on the Tennessee state standards

GRADE	CODE	STANDARD
K	K.FL.PC.1c	Understand that words are separated by spaces in print; demonstrate one-to-one correspondence between voice and print.
K	K.FL.PA.2a	Recognize and begin to produce rhyming words.
K	K.FL.PWR.3b	Associate the long and short phonemes with common spellings for the five major vowels.
K	K.FL.PWR.3c	Read common high-frequency words by sight.
K	K.FL.WC.4	Know and apply grade-level phonics and word analysis skills when encoding words; write legibly.
K	K.FL.SC.6	Demonstrate command of the conventions of standard English grammar and usage when speaking and conventions of standard English grammar and usage, including capitalization and punctuation, when writing with adult support.
K	K.FL.VA.7b.iii	Make real-life connections between words and their use.
K	K.SL.CC.2	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	K.SL.PKI.5	Add drawings or other visual displays of descriptions as desired to provide additional detail.
1	1.FL.PA.2a	Distinguish long from short vowel sounds in spoken single-syllable words.
1	1.FL.PA.2c	Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words.
1	1.FL.PWR.3	Know and apply grade-level phonics and word analysis skills when decoding isolated words and in connected text.
1	1.FL.PWR.3b	Decode regularly spelled one-syllable words.
1	1.FL.PWR.3c	Know the final -e and common vowel team conventions for representing long vowel sounds, including r controlled vowels.
1	1.FL.PWR.3g	Recognize and read grade-appropriate irregularly spelled words.
1	1.FL.WC.4	Know and apply grade-level phonics and word analysis skills when encoding words; write legibly.
1	1.FL.F.5	Read with sufficient accuracy and fluency to support comprehension.
1	1.FL.SC.6	Demonstrate command of the conventions of standard English grammar and usage when speaking and conventions of standard English grammar and usage, including capitalization and punctuation, when writing.
1	1.SL.CC.2	Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
1	1.SL.PKI.4	Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

GRADE	CODE	STANDARD
2	2.FL.PWR.3a	Distinguish long and short vowels when reading regularly spelled one-syllable words.
2	2.FL.PWR.3b	Know spelling-sound correspondences for additional common vowel teams.
2	2.FL.SC.6a	Use collective nouns.
2	2.FL.SC.6b	Form and use frequently occurring irregular plural nouns.
2	2.FL.SC.6j	Use an apostrophe to form contractions and frequently occurring possessives.
2	2.FL.VA.7a.i	Use sentence-level context as a clue to the meaning of a word or phrase.
2	2.FL.VA.7b.i	Identify real-life connections between words and their use.
2	2.SL.CC.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
2	2.SL.CC.3	Ask and answer questions about what a speaker says in order to gather information or clarify something that is not understood.
2	2.SL.PK1.4	Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
2	2.SL.PK1.5	Add audio or visual elements to stories or recounts of experiences, when appropriate, to clarify ideas, thoughts, and feelings.
2	2.W.TTP.1	Write opinion pieces on topics or texts.
2	2.W.TTP.3	Write narratives recounting an event or short sequence of events.
2	2.W.PDW.5	With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and strengthen writing as needed by revising and editing.
3	3.FL.PWR.3	Know and apply grade-level phonics and word analysis skills when decoding isolated words and in connected text.
3	3.FL.VA.7a	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.
3	3.FL.VA.7b	Demonstrate understanding of word relationships and nuances in word meanings.
3	3.RL.KID.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as a basis for the answers.
3	3.RL.KID.2	Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.
3	3.SL.CC.2	Determine the main ideas and supporting details of a text presented in diverse media such as visual, quantitative, and oral formats.
3	3.W.TTP.3	Write narratives to develop real or imagined experiences or events using an effective technique, such as descriptive details and clear event sequences.
3	3.W.PDW.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.

COMPUTER SCIENCE

12 STANDARDS

Based on the Tennessee state standards

GRADE	CODE	STANDARD
K	K.AT.1	Construct sequential events step-by-step in a logical order.
1	1.FC.1	Navigate to applications and documents by using desktop icons, windows, and menus (e.g., open and close the browser window, find/use bookmark to store the website, recognize and use app on tablet).
1	1.FC.2	Demonstrate use of input devices (e.g., mouse, keyboard).
1	1.NI.1	Advocate, demonstrate, and routinely practice safe, legal, and responsible use of information and technology.
2	2.FC.2	Use a variety of digital tools collaboratively to connect with other learners.
2	2.AT.1	Plan and create a design document to illustrate thoughts, ideas, and stories in a sequential (step-by-step) manner (e.g., story map, storyboard, sequential graphic organizer).
2	2.AT.2	Compare and evaluate multiple ways to get a solution.
2	2.DA.3	Collect, create, and organize data in a digital chart or graph.
2	2.NI.3	Create a research-based product using online digital tools.
3	3.FC.2	Communicate key ideas and details collaboratively in a way that informs, persuades, and/or entertains, using digital tools.
3	3.FC.3	Use basic features of digital tools to communicate key ideas and details in a way that informs and/or persuades.
3	3.AT.2	Create an algorithm to solve a problem as a collaborative team.

SCIENCE

6 STANDARDS

Based on the Tennessee state standards

GRADE	CODE	STANDARD
1	1.ETS1.2	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved.
1	1.ETS1.3	Develop a simple sketch, drawing, or physical model that communicates solutions to others.
2	2.ETS1.3	Compare and contrast solutions to a design problem by using evidence to point out strengths and weaknesses of the design.
2	2.ETS2.1	Use appropriate tools to make observations, record data, and refine design ideas.
3	3.ETS1.1	Design a solution to a real-world problem that includes specified criteria and constraints.
3	3.ETS1.2	Apply evidence or research to support a design solution.

SOURCES & NOTES

- The official mathematics, English language arts, computer science and science standards for Tennessee, as published by the Tennessee State 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.