

PAVING THE WAY WITH TREADS

GRADES K-3

This document lists the Kansas 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 Kansas State Department of Education and the NGSS Lead States, as adopted by Kansas.

42

MATH

40

ELA

17

CS

5

SCIENCE

104

TOTAL STANDARDS

MATHEMATICS

42 STANDARDS

Based on the Kansas state standards

GRADE	CODE	STANDARD
K-3	MP.1	Make sense of problems and persevere in solving them.
K	K.CC.1	Count to 100 by ones and by tens and identify as a growth pattern.
K	K.CC.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K	K.OA.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
K	K.OA.2	Solve addition and subtraction word problems, and add and subtract within 10, (e.g., by using objects or drawings to represent the problem.)
K	K.MD.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
K	K.MD.2	Directly compare two objects, with a measurable attribute in common, to see which object has "more of"/"less of" the attribute and describe the difference.
K	K.MD.3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count (Limit category counts to be less than or equal to 10).
K	K.G.1	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	K.G.2	Correctly gives most precise name of shapes regardless of their orientations (position and direction in space) or overall size.
1	MP.2	Reason abstractly and quantitatively.

GRADE	CODE	STANDARD
1	1.OA.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 situation equations and/or solution equations with a symbol for the unknown number to represent the problem.)
1	1.OA.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	1.NBT.2	Understand that the two digits of a two-digit number represent amounts of tens and ones.
1	1.NBT.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the relational symbols $>$, $<$, $=$, and $\neq$.
1	1.MD.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
1	1.MD.2	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. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
1	1.MD.4	Organize, represent, and 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	1.G.1	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus nondefining attributes (e.g., color, orientation, overall size); build and draw shapes that possess defining attributes.
1	1.G.2	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	2.OA.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 situation equations and/or solution equations with a symbol for the unknown number to represent the problem.)
2	2.NBT.1	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	2.NBT.3	Read and write numbers within 1000 using base-ten numerals, number names, expanded form, and unit form.
2	2.NBT.5	Fluently (efficiently, accurately, and flexibly) add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction (e.g., composing/decomposing by like base-10 units, using friendly or benchmark numbers, using related equations, compensation, number line, etc.).
2	2.MD.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2	2.MD.3	Estimate lengths using whole units of inches, feet, centimeters, and meters.

GRADE	CODE	STANDARD
2	2.MD.8	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately (Do not use decimal point, if showing 25 cents, use the word cents or ¢).
2	2.MD.10	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object using different units. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
2	2.MD.11	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	2.G.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2	2.G.3	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., 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.1	Interpret products of whole numbers, (e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.)
3	3.OA.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	3.OA.4	Determine the unknown whole number in a multiplication or division equation by using related equations.
3	3.OA.5	Apply properties of operations as strategies to multiply and divide.
3	3.NF.1	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 part of size $1/b$.
3	3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram.
3	3.MD.4	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	3.MD.5	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.6	Recognize area as an attribute of plane figures and understand concepts of area measurement.
3	3.MD.7	Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard square units).

GRADE	CODE	STANDARD
3	3.G.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, trapezoids, kites, 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

40 STANDARDS

Based on the Kansas state standards

GRADE	CODE	STANDARD
K	RF.K.1.c	Understand that words are separated by spaces in print and can point with one-to-one correspondence.
K	RF.K.2.d	Blend and segment onsets and rimes (word families) of single-syllable spoken words.
K	RF.K.3.b	Associate the long and short sounds with common spellings (graphemes) for the five major vowels.
K	RF.K.3.c	Read common high-frequency words (e.g., the, of, to, you, she, my, is, are, do, does).
K	RL.K.12.c	Identify real-life connections between words and their use (e.g., note places at school that are colorful).
K	W.K.11	Demonstrate command of the conventions of standard English capitalization, punctuation and spelling when writing.
K	SL.K.2	Confirm sequence of events of a read aloud or media presentation by asking and answering questions about key details or requesting clarification of what is not understood.
K	SL.K.5	Add drawings or other visual displays to supply additional detail to descriptions.
1	RF.1.2.a	Distinguish long from short vowel sounds in spoken single-syllable words.
1	RF.1.2.c	Isolate and produce initial, medial vowel and final phonemes in spoken single-syllable words.
1	RF.1.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.
1	RF.1.3.b	Decode regularly spelled one-syllable words.
1	RF.1.3.c	Know final -e and common vowel team patterns for representing long vowel sounds.
1	RF.1.3.g	Recognize and read grade-appropriate words, including compound words.
1	RF.1.4	Read with sufficient accuracy and fluency to support comprehension.
1	W.1.11	Demonstrate command of the conventions of standard English capitalization, punctuation and spelling when writing.
1	SL.1.2	Ask and answer questions about key details in a text read aloud, information presented orally or through media.
1	SL.1.4	Use relevant details to describe people, places, things and events, expressing ideas and feelings clearly.

GRADE	CODE	STANDARD
2	RF.2.3.a	Distinguish long and short vowels when reading regularly spelled one-syllable words.
2	RF.2.3.b	Know correspondences for additional common vowel teams (e.g., steak).
2	RL.2.11.a	Use sentence-level context (definition and synonym) as a clue to the meaning of a word or phrase.
2	RL.2.12.a	Identify real-life connections between words and their use.
2	W.2.1	Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons and provide a concluding statement or section.
2	W.2.3	Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts and feelings, use temporal words to signal event order and provide a sense of closure.
2	W.2.5	With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
2	W.2.10.a	Use collective nouns when writing.
2	W.2.10.b	Form and use frequently-occurring irregular plural nouns (e.g., feet)
2	W.2.11.c	Use an apostrophe to form contractions and frequently-occurring possessives.
2	SL.2.1.c	Ask for clarification and further explanation as needed about the topics and texts under discussion.
2	SL.2.2	Recount or describe key ideas or details from a text read aloud, information presented orally or through media.
2	SL.2.4	Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking with appropriate volume, enunciation and rate in coherent sentences.
2	SL.2.5	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts and feelings.
3	RF.3.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.
3	RL.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
3	RL.3.2	Recount stories, including fables, folktales, and myths from diverse cultures; determine the lesson, moral, or central message (main idea) and explain how it is conveyed through key details in the text.
3	RL.3.11	Determine or clarify the meaning of unknown and multiple-meaning words and phrases to expand language comprehension.
3	RL.3.12	Demonstrate understanding of word relationships and nuances in word meanings.
3	W.3.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details and clear event sequences.
3	W.3.5	With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising and editing.

GRADE	CODE	STANDARD
3	SL.3.2	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.

COMPUTER SCIENCE

17 STANDARDS

Based on the Kansas state standards

GRADE	CODE	STANDARD
K	K.CS.D.01	Demonstrate how to operate a variety of computing devices.
K	K.CS.HS.02	Identify and use software that controls computing devices (e.g. programs, browsers, websites, and applications).
K	K.NI.NCO.01	Recognize and use computing devices to connect with people or other devices using a network to communicate, access, and share information as a class (e.g. the internet, video conferencing, email, file transfer).
K	K.AP.A.01	Construct and execute algorithms (set of step-by-step instructions) that includes sequencing and simple loops to accomplish a task, both independently, collaboratively, with or without a computing device (e.g. verbally, kinesthetically, with robot devices or a programming language, block coding).
K	K.AP.C.01	With guidance, independently or collaboratively create programs to accomplish tasks using a programming language, robot device, or unplugged activity that includes sequencing events and simple loops (e.g. emphasizing beginning, middle, and end; collaborative programming).
K	K.AP.PD.01	Create a design document to illustrate thoughts, ideas and stories in a sequential manner (e.g. storyboard, mindmap, sequential graphic organizer).
1	1.AP.A.01	With guidance, model daily processes and follow algorithms (sets of step-by-step instructions) for complete tasks verbally, kinesthetically, with robot devices, or a programming language.
1	1.IC.C.01	Identify how people use different types of technologies in their daily work and personal lives.
2	2.AP.C.01	Independently and collaboratively create programs to accomplish tasks using a programming language such as block based programming using a robot device, or unplugged activity that includes simple loops, sequencing, and repetition.
3	3.CS.IO.01	Demonstrate proper use of grade level appropriate input devices and produce digital artifacts with a controlled audience.
3	3.DA.C.01	Gather relevant and reliable data to solve a problem or answer a question.
3	3.DA.CVT.01	Create a simple data visualization based on data collected by or provided to student.
3	3.AP.A.01	Compare multiple algorithms for the same task.
3	3.AP.C.01	Create simple programs using a programming language that utilize sequencing, repetition, conditionals, and variables to solve a problem or express ideas independently.
3	3.AP.M.01	Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.

GRADE	CODE	STANDARD
3	3.AP.PD.03	Analyze and debug (identify/fix errors) a program that includes sequencing, repetition and variables in a programming language.
3	3.IC.SI.01	Develop a code of conduct, explain, and practice grade-level appropriate behavior and responsibilities while participating in an online community. Identify and report inappropriate behavior. (Digital Citizenship - review of all nine components, but focused on Digital Communication and Digital Etiquette.)

SCIENCE (ENGINEERING DESIGN)

5 STANDARDS

Based on the Kansas state standards

GRADE	CODE	STANDARD
K-2	K-2-ETS1-1	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.
K-2	K-2-ETS1-2	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.
K-2	K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
3	3-5-ETS1-2	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	3-5-ETS1-3	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 Kansas, as published by the Kansas State Department of Education and the NGSS Lead States, as adopted by Kansas.
- 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.
- Standards text remains the property of its publisher and is reproduced here for alignment reference only.
- A lesson-level crosswalk is available on request at info@truerobotics.org.