PAVING THE WAY WITH TREADS

GRADES K–3

This document lists the Arizona 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 Arizona Department of Education.

45	40	19	3	107
MATH	ELA	CS	SCIENCE	TOTAL STANDARDS

MATHEMATICS

45 STANDARDS

Based on the Arizona state standards

GRADE	CODE	STANDARD
K	K.CC.A.1	Count to 100 by ones and by tens.
K	K.CC.B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K	K.OA.A.1	Represent addition and subtraction concretely.
K	K.OA.A.2	Solve addition and subtraction word problems and add and subtract within 10.
K	K.MD.A.1	Describe measurable attributes of a single object (e.g., length and weight).
K	K.MD.A.2	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 (e.g., directly compare the length of 10 cubes to a pencil and describe one as longer or shorter).
K	K.MD.B.3	Classify objects into given categories; count the number in each category and sort the categories by count. (Note: limit category counts to be less than or equal to 10.)
K	K.G.A.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.A.2	Correctly name shapes regardless of their orientation or overall size (e.g., circle, triangle, square, rectangle, rhombus, trapezoid, hexagon, cube, cone, cylinder, sphere).
K	K.MP.1	Make sense of problems and persevere in solving them.
1	1.OA.A.1	Use addition and subtraction within 20 to solve word problems with unknowns in all positions (e.g., by using objects, drawings, and/or equations with a symbol for the unknown number to represent the problem).

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GRADE	CODE	STANDARD
1	1.OA.A.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/or equations with a symbol for the unknown number to represent the problem).
1	1.NBT.B.2	Understand that the two digits of a two-digit number represent groups of tens and ones.
1	1.NBT.B.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
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	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.C.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.A.1	Distinguish between defining attributes (triangles are closed and 3 sided) versus non-defining attributes (color, orientation, overall size) for two-dimensional shapes; build and draw shapes that possess defining attributes.
1	1.G.A.2	Compose two-dimensional shapes or three-dimensional shapes to create a composite shape.
1	1.MP.1	Make sense of problems and persevere in solving them.
1	1.MP.2	Reason abstractly and quantitatively.
2	2.OA.A.1	Use addition and subtraction within 100 to solve one- and two-step word problems. Represent a word problem as an equation with a symbol for the unknown.
2	2.NBT.A.1	Understand that the three digits of a three-digit number represent groups of hundreds, tens, and ones (e.g., 706 equals 7 hundreds, 0 tens, and 6 ones and also equals 70 tens and 6 ones).
2	2.NBT.A.3	Read and write numbers up to 1000 using base-ten numerals, number names, and expanded form.
2	2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2	2.MD.A.1	Measure the length of an object by selecting and using appropriate tools (e.g., ruler, meter stick, yardstick, measuring tape).
2	2.MD.A.3	Estimate lengths using units of inches, feet, centimeters, and meters.
2	2.MD.C.8	Solve word problems involving collections of money, including dollar bills, quarters, dimes, nickels, and pennies. Record the total using $ and ¢ appropriately.
2	2.MD.D.9	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.

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GRADE	CODE	STANDARD
2	2.MD.D.10	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 the graph.
2	2.G.A.1	Identify and describe specified attributes of two-dimensional and three-dimensional shapes, according to the number and shape of faces, number of angles, and the number of sides and/or vertices. Draw two-dimensional shapes based on the specified attributes (e.g., triangles, quadrilaterals, pentagons, and hexagons).
2	2.G.A.3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, fourths, half of, third of, fourth of, and describe the whole as two halves, three thirds, or four fourths. Recognize that equal shares of identical wholes need not have the same shape.
2	2.MP.1	Make sense of problems and persevere in solving them.
3	3.OA.A.1	Interpret products of whole numbers as the total number of objects in equal groups (e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each).
3	3.OA.A.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.
3	3.OA.A.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers
3	3.OA.B.5	Apply properties of operations as strategies to multiply and divide. Properties include commutative and associative properties of multiplication and the distributive property. (Students do not need to use the formal terms for these properties.)
3	3.NF.A.1	Understand a fraction (1/b) as the quantity formed by one 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	3.NF.A.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram.
3	3.MD.B.3	Create 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.B.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch to the nearest quarter-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	Understand area as an attribute of plane figures and understand concepts of area measurement.
3	3.MD.C.6	Measure areas by counting unit squares (e.g., square cm, square m, square in, square ft, and improvised units).
3	3.G.A.1	Understand that shapes in different 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.
3	3.MP.1	Make sense of problems and persevere in solving them

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ENGLISH LANGUAGE ARTS

40 STANDARDS

Based on the Arizona state standards

GRADE	CODE	STANDARD
K	K.RF.1e	Understand that words are separated by spaces in print.
K	K.RF.2b	Recognize and produce rhyming words.
K	K.RF.3a	Demonstrate basic knowledge of one-to-one letter-sound correspondence by producing the primary or most frequent sound(s) for each consonant and the five major vowels.
K	K.RF.3c	Read 50 common high-frequency words by sight from a research-based word list.
K	K.SL.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.5	Add drawings or other visual displays to descriptions as desired to provide additional detail.
K	K.L.2	Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.
K	K.L.5c	Identify real-life connections between words and their use (e.g., note places at school that are colorful).
1	1.RF.2a	Distinguish long from short vowel sounds in spoken single-syllable words.
1	1.RF.2c	Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words.
1	1.RF.3	Know and apply phonics and word analysis skills in decoding one-syllable or two-syllable words.
1	1.RF.3b	Decode regularly spelled one-syllable words.
1	1.RF.3d	Recognize and apply all six syllable types when decoding grade level texts.
1	1.RF.3f	Recognize and read grade-appropriate irregularly spelled words.
1	1.RF.4	Read with sufficient accuracy and fluency to support comprehension.
1	1.SL.2	Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
1	1.SL.4	Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.
1	1.L.2	Demonstrate command of the conventions of Standard English capitalization, punctuation, and spelling when writing.
2	2.RF.3a	Distinguish long and short vowels when reading regularly spelled one-syllable words.
2	2.RF.3b	Know spelling-sound correspondences for additional common vowel teams.
2	2.W.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.

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GRADE	CODE	STANDARD
2	2.W.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	2.W.5	With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
2	2.SL.1c	Ask for clarification and further explanation as needed about the topics and texts under discussion.
2	2.SL.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
2	2.SL.4	Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
2	2.SL.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.
2	2.L.1a	Use collective nouns (e.g., group).
2	2.L.1b	Form and use frequently occurring irregular plural nouns (e.g., feet, children, teeth, mice, fish).
2	2.L.2c	Use an apostrophe to form contractions and frequently occurring possessives.
2	2.L.4d	Use sentence-level context as a clue to the meaning of a word or phrase.
2	2.L.5a	Identify real-life connections between words and their use (e.g., describe foods that are spicy or juicy).
3	3.RL.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
3	3.RL.2	Recount and paraphrase 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 text.
3	3.RF.3	Know and apply phonics and word analysis skills in decoding one-syllable or multisyllabic words.
3	3.W.3	Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
3	3.W.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
3	3.SL.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.
3	3.L.4	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.L.5	Demonstrate understanding of word relationships and nuances in word meanings.

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COMPUTER SCIENCE

19 STANDARDS

Based on the Arizona state standards

GRADE	CODE	STANDARD
K–2	K-2.2.b	Students, with guidance, engage in positive and safe behavior when using devices and working online with others.
K–2	K-2.6.c	Students, with guidance, create digital artifacts to share ideas in multiple formats.
K–2	K-2.7.b	Students, with guidance, use technology to communicate with others and to look at problems from different perspectives.
K	K.AP.A.1	With teacher assistance, model daily processes by following algorithms (sets of step-by-step instructions) to complete tasks.
K	K.AP.C.1	With teacher assistance, identify programs with sequences and simple loops, to express ideas or address a problem.
1	1.CS.D.1	With teacher guidance, select and operate appropriate devices and software to perform a task.
1	1.IC.C.1	Discuss how people live and work before and after the implementation or adoption of new computing technology.
2	2.CS.D.1	Recognize that users have different needs and preferences for technology they used by selecting and operating appropriate devices.
2	2.AP.A.1	Model daily processes by creating and following algorithms (sets of step-by-step instructions to complete tasks.
2	2.AP.C.1	Develop programs with sequences and simple loops, to express ideas or address a problem.
2	2.AP.PD.1	Develop plans that describe a program's sequence of events, goals, and expected outcomes.
3	3.CS.HS.2	Recognize that hardware (devices) can only accomplish the specific tasks the software (programs/apps) is designed to accomplish.
3	3.DA.CVT.1	Select tools from a specified list to collect, organize, and present data visually to highlight relationships and support a claim.
3	3.DA.IM.1	Use a computational tool to draw conclusions, make predictions, and answer questions utilizing a specified data set.
3	3.AP.A.1	Recognize and compare multiple algorithms for the same task and determine which are effective.
3	3.AP.C.1	Create programs that include sequences, events, loops, and/or conditionals.
3	3.AP.PD.3	Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.
3	3-5.6.c	Students, in collaboration with an educator, create digital artifacts using digital tools to communicate ideas visually, graphically, and/or auditorily.
3	3-5.7.a	Students, in collaboration with an educator, use digital tools to work with other learners, including those from a variety of backgrounds and cultures.

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SCIENCE

3 STANDARDS

Based on the Arizona state standards

GRADE	CODE	STANDARD
K	K.P2U2.2	Design and evaluate a tool that helps people extend their senses.
1	1.P4U2.4	Design and evaluate ways to increase or reduce heat from friction between two objects.
2	2.E1U2.6	Analyze patterns in weather conditions of various regions of the world and design, test, and refine solutions to protect humans from severe weather conditions.

SOURCES & NOTES

- The official mathematics, English language arts, computer science and science standards for Arizona, as published by the Arizona Department 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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