PAVING THE WAY WITH TREADS

GRADES K–3

This document lists the Indiana 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 Indiana Department of Education.

35	35	11	5	86
MATH	ELA	CS	SCIENCE	TOTAL STANDARDS

MATHEMATICS

35 STANDARDS

Based on the Indiana state standards

GRADE	CODE	STANDARD
K–3	PS.1	Make sense of problems and persevere in solving them.
K	K.NS.1	Count to at least 100 by ones and tens. Count by one from any given number.
K	K.NS.3	Say the number names in standard order when counting objects, pairing each object with one and only one number name and each number name with one and only one object. Understand that the last number name said describes the number of objects counted and that the number of objects is the same regardless of their arrangement or the order in which they were counted. Count out the number of objects, given a number from 1 to 20.
K	K.CA.1	Solve real-world problems that involve addition and subtraction within 10 using modeling with objects or drawings.
K	K.G.1	Compare two- and three-dimensional shapes in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners"), and other attributes (e.g., having sides of equal length).
K	K.M.1	Make direct comparisons of the length, capacity, weight, and temperature of objects, and identify which object is shorter, longer, taller, lighter, heavier, warmer, cooler, or holds more.
K	K.DA.1	With guidance, collect and organize data into simple bar graphs, pictographs, and/or tables to identify patterns and make comparisons.
1	PS.2	Reason abstractly and quantitatively.
1	1.NS.2	Model place value concepts of two-digit numbers, multiples of 10, and equivalent forms of whole numbers using objects and drawings.
1	1.NS.4	Use place value understanding to compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

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GRADE	CODE	STANDARD
1	1.CA.2	Solve real-world problems involving addition and subtraction within 20 in situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all parts of the addition or subtraction problem (e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem).
1	1.G.1	Distinguish between defining attributes of two- and three-dimensional shapes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size). Create and draw two-dimensional shapes with defining attributes.
1	1.G.2	Use two-dimensional shapes (e.g., rectangles, squares, trapezoids, triangles, half-circles, quarter-circles) or three-dimensional shapes (e.g., cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.
1	1.M.1	Use direct comparison or a nonstandard unit to compare and order objects according to length, area, capacity, weight, and temperature.
1	1.DA.1	With guidance, collect data from a simple survey or collaborative investigation; organize data into appropriate single-unit bar graphs, pictographs, and/or tables and draw conclusions based on mathematical observations, comparisons, and grade-level computation strategies.
2	2.NS.2	Read and write whole numbers up to 1,000. Use words, models, standard form, and expanded form to represent and show equivalent forms of whole numbers up to 1,000.
2	2.NS.4	Define and model a "hundred" as a group of ten tens. Model place value concepts of three-digit numbers, multiples of 100, and equivalent forms of whole numbers using objects and drawings.
2	2.CA.1	Solve real-world problems involving addition and subtraction within 100 in situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all parts of the addition or subtraction problem (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem). Use estimation to decide whether answers are reasonable in addition problems.
2	2.CA.2	Using number sense and place value strategies, add and subtract within 1,000, including composing and decomposing tens and hundreds. Use models, drawings, and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; describe the strategy and explain the reasoning used.
2	2.G.1	Identify, describe, and classify two- and three-dimensional shapes (i.e., triangle, square, rectangle, cube, right rectangular prism) according to the number and shape of faces and the number of sides and/or vertices. Draw two-dimensional shapes.
2	2.G.4	Partition circles and rectangles into two, three, or four equal parts; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two halves, three thirds, or four fourths. Recognize that equal parts of identical wholes need not have the same shape.
2	2.M.2	Estimate and measure the length of an object by selecting and using appropriate tools, such as rulers, yardsticks, meter sticks, and measuring tapes to the nearest inch, foot, yard, centimeter, and meter.
2	2.M.6	Find the value of a collection of pennies, nickels, dimes, quarters, and dollars.

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GRADE	CODE	STANDARD
2	2.DA.1	Collect, organize, and graph data from observations, surveys, and investigations using scaled bar graphs and pictographs (limit scale to 2s, 5s, 10s, and 100s); interpret mathematical relationships within the data using grade-level addition, subtraction, and comparison strategies.
3	3.NS.2	Model unit fractions as the quantity formed by 1 part when a whole is partitioned into equal parts; model non-unit fractions as the quantity formed by iterations of unit fractions.
3	3.NS.3	Model a non-unit fraction on a number line by marking equal lengths from 0, identifying each part as a unit fraction and locating the non-unit fraction as the endpoint on the number line.
3	3.CA.1	Fluently add and subtract multi-digit whole numbers using strategies and algorithms based on place value, properties of operations, and relationships between addition and subtraction.
3	3.CA.3	Model the concept of multiplication of whole numbers using equal-sized groups, arrays, area models, and equal intervals on a number line. Model the properties of 0 and 1 in multiplication using objects or drawings.
3	3.CA.5	Multiply and divide within 100 using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations.
3	3.CA.7	Solve real-world problems involving whole number multiplication and division within 100 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.G.1	Define, identify, and classify four-sided shapes such as rhombuses, rectangles, and squares as quadrilaterals. Identify and draw examples and non-examples of quadrilaterals.
3	3.M.2	Choose and use appropriate units and tools to estimate and measure length, weight, and temperature. Estimate and measure length to a quarter-inch, weight in pounds, and temperature in degrees Celsius and Fahrenheit.
3	3.M.4	Find the value of any collection of coins and bills. Write amounts less than a dollar using the ¢ symbol and write larger amounts using the $ symbol in the form of dollars and cents (e.g., $4.59). Solve real-world problems to determine whether there is enough money to make a purchase.
3	3.M.5	Find the area of a rectangle with whole-number side lengths by modeling with unit squares, and show that the area is the same as would be found by multiplying the side lengths. Identify and draw rectangles with the same perimeter and different areas or with the same area and different perimeters.
3	3.DA.1	Collect, organize, and graph data from observations, surveys, and experiments using scaled bar graphs and pictographs. Solve real-world problems by analyzing and interpreting the data using grade-level computation and comparison strategies.

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ENGLISH/LANGUAGE ARTS

35 STANDARDS

Based on the Indiana state standards

GRADE	CODE	STANDARD
K	K.RF.4	Identify and produce rhyming words.
K	K.W.8	Demonstrate command of capitalization, punctuation, and spelling, focusing on: a. Capitalization – Capitalizing the first word in a sentence and the pronoun I. b. Punctuation – Recognizing and naming end punctuation. c. Encoding – Spelling simple words phonetically, drawing on phonemic awareness.
K	K.CC.2	Ask questions to seek help, obtain information, or clarify something that is not understood.
K	K.CC.3	Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
1	1.RF.3	Identify and produce beginning, middle (medial), and final sounds in single-syllable words.
1	1.RF.5	Use letter-sound knowledge of single consonants (hard and soft sounds), short and long vowels, consonant blends and digraphs, vowel teams (e.g., ai) and digraphs, and r-controlled vowels to decode phonetically regular words (e.g., cat, go, black, boat, her), independent of context.
1	1.RF.6	Decode one-syllable words in the major syllable types (CVC, CVr, V, VV, VCe), independent of context.
1	1.RF.7	Decode grade-appropriate base words and affixes including common prefixes, plurals, verb tense, inflectional suffixes (e.g., plurals, verb tenses), simple compound words (e.g., cupcake), and contractions (e.g., isn't).
1	1.RF.8	Orally read decodable texts with appropriate fluency (rate, accuracy, and prosody) while reading.
1	1.W.1	Write all uppercase (capital) and lowercase letters legibly, and space letters, words, and sentences appropriately.
1	1.W.8	Demonstrate command of capitalization, punctuation, and spelling, focusing on: a. Capitalization – Capitalizing the first word of a sentence, dates, names of people, and the pronoun I. b. Punctuation – (I) Correctly using a period, question mark, and exclamation mark at the end of a sentence. (II) Using commas in dates and to separate items in a series. c. Encoding – (I) Spelling unknown words phonetically, drawing on phonemic awareness and spelling conventions. (II) Correctly spelling words with common spelling patterns. (III) Correctly spelling common irregularly-spelled, grade-appropriate words (e.g., said, does, gone).
1	1.W.8c.III	Encoding – Correctly spelling common irregularly-spelled, grade-appropriate words (e.g., said, does, gone).
1	1.CC.4	Ask and answer questions about key details in what is read, heard, or viewed to demonstrate comprehension.
1	1.CC.5	Speaking audibly and using appropriate language, recite poems, rhymes, songs, and stories, with careful attention to sensory detail when describing people, places, things, and events.
1	1.CC.6	Add drawings or other visual displays, such as pictures and objects, when sharing information to clarify ideas, thoughts, and feelings.

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GRADE	CODE	STANDARD
2	2.RF.2	Apply knowledge of short and long vowels (including vowel teams) when reading regularly-spelled, one-syllable words.
2	2.RC.1	Ask and answer questions about the main idea and key details in a text to demonstrate comprehension.
2	2.RC.11	Use context clues (e.g., words and sentence clues) and text features (e.g., table of contents, headings) to determine the meanings of unknown words.
2	2.W.2	Write pieces that introduce an opinion, give reasons that support the opinion, use linking words (e.g., because, and, also), include a concluding statement or section, and include multiple reasons to explain why a certain course of action should be followed.
2	2.W.4	Write narratives that: a. Include a beginning; b. Use temporal words to signal event order (e.g., first of all); c. Provide details to describe actions, thoughts, and feelings; and d. Provide a middle and an ending.
2	2.W.5a	Plan by generating ideas for writing by drawing and brainstorming; with support, revise writing by adding details (e.g., organization, sentence structure, word choice); edit writing for format and conventions (e.g., spelling, capitalization, usage, punctuation); and provide feedback to other writers.
2	2.W.7a	Demonstrate command of English grammar and usage, when writing or speaking, focusing on: Nouns/Pronouns – Using sentences that include common, proper, possessive, and collective nouns, irregular plural nouns, and personal and possessive pronouns.
2	2.W.8b.II	Punctuation – Using an apostrophe to form contractions and singular possessive nouns.
2	2.CC.3	Ask for clarification and further explanation as needed about the topics and texts under discussion.
2	2.CC.5	Develop simple presentations that maintain a clear focus, using various media when appropriate to clarify ideas, thoughts, and feelings.
3	3.RF.1	Understand the six major syllable patterns (CVC, CVr, V, VV, VCe, Cle) to aid in decoding unknown words.
3	3.RF.4	Read multisyllabic words composed of roots and related prefixes and suffixes; read irregular contractions (e.g., will not = won't) and possessives (e.g., children's, Dennis's).
3	3.RC.1	Ask and answer questions to demonstrate comprehension of a text, referring explicitly to the text as the basis for the answers.
3	3.RC.2	Recount folktales, fables, and tall tales from diverse cultures; identify the themes in these works.
3	3.RC.11	Apply context clues (e.g., word, phrase, and sentence-level context) and text features (e.g., maps, illustrations, charts) to determine the meanings of unknown words.
3	3.RC.12	Identify relationships among words, including synonyms, antonyms, homographs, homonyms, and multiple-meaning words (e.g., puzzle, fire).
3	3.RC.13	Use a known word as a clue to the meaning of an unknown word with the same root, and identify when an affix is added to a known root word.
3	3.W.4	Write narrative compositions in a variety of forms that: a. Establish an introduction (e.g., situation, narrator, characters). b. Include specific descriptive details and clear event sequences. c. Include dialogue. d. Connect ideas and events using introduction and transition words. e. Provide an ending.

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GRADE	CODE	STANDARD
3	3.W.5a	Generate a draft by developing, selecting, and organizing ideas relevant to topic, purpose, and genre; revise to improve writing, using appropriate reference materials (e.g., quality of ideas, organization, sentence fluency, word choice); and edit writing for format and conventions (e.g., spelling, capitalization, usage, punctuation).
3	3.CC.4	Retell, paraphrase, and explain the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively (e.g., charts and graphs), and orally.

COMPUTER SCIENCE

11 STANDARDS

Based on the Indiana state standards

GRADE	CODE	STANDARD
K–2	K-2.CD.3	Select and operate appropriate software to perform a variety of tasks and recognize that users have different needs and preferences for the technology they use.
K–2	K-2.PA.3	Develop programs with sequences and simple loops to express ideas or address a problem.
K–2	K-2.PA.5	Model daily processes by creating and following algorithms (i.e., sets of step-by-step instructions) to complete tasks.
K–2	K-2.IC.1	Compare and contrast the effects of technology on communities and social interactions.
3	3-5.DI.2	Organize and present collected data visually to highlight relationships and support a claim.
3	3-5.DI.5	Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea.
3	3-5.CD.1	Model how computer hardware and software work together to accomplish tasks.
3	3-5.CD.4	Describe what distinguishes humans from machines, focusing on human intelligence versus machine intelligence.
3	3-5.PA.1	Collaborate with peers to implement problem-solving steps to create a variety of programming solutions.
3	3-5.PA.2	Design programs that incorporate sequences, events, loops, and conditionals.
3	3-5.PA.3	Test and debug (i.e., identify and fix errors) a program or algorithm to ensure it runs as intended.

SCIENCE

5 STANDARDS

Based on the Indiana 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.

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GRADE	CODE	STANDARD
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 Indiana, as published by the Indiana 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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