TRUE ROBOTICS

PAVING THE WAY WITH TREADS

GRADES K–3

This document lists the Minnesota 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 Minnesota Department of Education.

42	40	8	3	93
MATH	ELA	CS	SCIENCE	TOTAL STANDARDS

MATHEMATICS

42 STANDARDS

Based on the Minnesota state standards

GRADE	CODE	STANDARD
K–3	MP1	Make sense of problems and persevere in solving them.
K	0.1.1.2	Organize objects, draw pictures, or use tally marks to represent data and communicate observations.
K	0.2.3.1	Compare objects with a measurable attribute in common, to see which object has "more of," "less of" or the "same as" the attribute and explain the reasoning.
K	0.2.3.2	Describe several measurable attributes of objects such as length and weight.
K	0.2.4.1	Sort objects using characteristics such as shape, size, color and thickness.
K	0.2.4.3	Compose, decompose and name simple shapes. Recognize shapes regardless of their overall size and orientation.
K	0.2.4.4	Describe objects in the environment using names of shapes. Describe the relative positions of these objects using terms such as above, below, beside, in front of, behind and next to.
K	0.3.5.1	Recognize that a number can be used to represent how many objects are in a set or to represent the position of an object in a sequence. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number with one and only one object. Understand that the last number said tells the number of objects counted. Understand that each successive number refers to a quantity that is one more. Name the position of an object in a sequence (ordinal count).
K	0.3.5.6	Solve and represent a variety of addition and subtraction contextual situation types using objects, drawings, mental images or equations within 10.
K	0.3.7.2	Recognize patterns in counting. Skip count by 10s starting at zero up to 100.
1	MP2	Reason abstractly and quantitatively.

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GRADE	CODE	STANDARD
1	1.1.1.2	Collect and use data to consider and decide what data will answer a question. Represent the data as a drawing, tally marks, frequency bar graph and digitally communicate observations.
1	1.2.3.1	Order three objects by length. Compare the lengths of two objects indirectly by using a third object.
1	1.2.3.2	Measure the length of an object in terms of non-standard units.
1	1.2.4.1	Describe attributes of two- and three-dimensional objects, such as triangles, squares, rectangles, circles, rectangular prisms, cylinders, cones and spheres.
1	1.2.4.2	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles and quarter-circles) to create a composite shape. Decompose composite shapes into triangles, rectangles, squares and sectors.
1	1.3.5.3	Count, with or without objects, forward and backward from any given number up to 120.
1	1.3.5.4	Using models, pictures or numbers to recognize and describe the place value of numbers between 10 and 120 as a relationship of n groups of 10 plus an amount represented by a single digit (n x 10+a).
1	1.3.5.6	Solve contextual situations, up to and including 20, using addition and subtraction strategies of adding to, taking from, part-part-whole, difference between and comparing. Solve for unknowns in contextual situations using objects, drawings and equations with unknowns represented by a symbol in all positions (result, change, start).
1	1.3.6.1	Compare two two-digit numbers based on the meaning of the tens and ones digits.
2	2.1.1.3	Collect and use data to consider and decide what data will answer a question. Represent the data as drawings, picture graphs, dot plots (a.k.a. line graphs or line plots) and with technology. Communicate observations.
2	2.2.3.1	Estimate lengths using units of inches, feet, centimeters and meters.
2	2.2.3.3	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.
2	2.2.3.5	Partition a rectangle into rows and columns of same-size squares and count the total number.
2	2.2.3.7	Identify pennies, nickels, dimes and quarters. Find the value of a group of coins and determine combinations of coins that equal a given amount, using $ and ¢ symbols appropriately.
2	2.2.4.1	Classify two- and three-dimensional figures according to the number and shape of faces and the number of sides, edges and vertices.
2	2.2.4.2	Create a representation for basic two-dimensional shapes such as squares, circles, triangles, rectangles, trapezoids and hexagons.
2	2.3.5.2	Read, write, compare, order and represent whole numbers up to 1,000. Representations may include numerals, expanded notation, addition, subtraction, multiplication, words, pictures, tally marks, number lines and manipulatives such as bundles of sticks, ten frames and base 10 blocks.
2	2.3.5.4	Recognize and describe the place value of numbers between 10 and 1,000 as a relationship of groups of ten, hundreds and thousands plus an amount of a single digit. Know that 100 is 10 tens and a thousand is 10 hundreds or 100 tens.

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GRADE	CODE	STANDARD
2	2.3.5.6	Use addition and subtraction, within 1,000, to solve contextual situations using concrete models or drawings based on place value, properties of operations and/or the relationship between addition and subtraction. Relate the strategy to a written method.
2	2.3.5.7	Use a range of strategies and algorithms based on knowledge of place value and equality to flexibly add and subtract two-digit numbers. Strategies may include decomposition, expanded notation and partial sums and differences. Use place value and properties of operations to explain why strategies works.
2	2.3.5.10	Represent and solve contextual equal sharing situations where a whole number of items is shared equally among 2 or 4 groups. Name the fractional amount using the words "halves" and "fourths." Recognize that equal shares of identical wholes need not have the same shape.
3	3.1.1.3	Collect and organize data to answer a statistical question using various tools and addressing missing or incomplete data. Represent data in a variety of ways including technology.
3	3.1.1.5	Critically analyze data visualizations, including frequency tables, bar graphs, picture graphs or number line plots having a variety of scales to support a claim and solve situations.
3	3.2.3.1	Measure lengths to the nearest fourth when measuring with standard units.
3	3.2.3.4	Use addition and subtraction with whole numbers, within 100, to calculate change up to one dollar in several different ways, using $ and ¢ symbols appropriately.
3	3.2.4.1	Create representations of regular and irregular polygons with a given number of sides, including triangles, quadrilaterals, pentagons, hexagons and octagons.
3	3.3.5.6	Represent and solve contextual situations involving multiplication, measurement division and partitive division with single digit factors using visual models.
3	3.3.5.7	Multiply and divide within 144, using strategies such as equal groups, repeated addition, the relationship between multiplication and division or properties of operations. Develop fluency with facts of 2s, 5s, 10s and square products.
3	3.3.5.9	Partition a whole into halves, thirds, fourths and eighths. Wholes can be circles, rectangles and the distance between 0 and 1 on a number line.
3	3.3.5.10	Use pictures and symbols to represent non-unit fractions up to 2 as sums of unit fractions using halves, fourths, thirds and eighths.
3	3.3.6.3	Make conjectures and justifications using the commutative and associative properties of addition and multiplication with true/false and open number equations.

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ENGLISH LANGUAGE ARTS

40 STANDARDS

Based on the Minnesota state standards

GRADE	CODE	STANDARD
K	0.1.1.0c	Understand that words are separated by spaces in print.
K	0.1.1.1a	Identify and orally produce rhyming words, onset-rime and alliteration.
K	0.1.1.2a	Decode words using one-to-one letter sound correspondences in three-phoneme CVC words and knowledge of word families, demonstrating both accuracy and automaticity.
K	0.1.1.2b	Read high-frequency words, in and out of context, demonstrating both accuracy and automaticity.
K	0.2.1.1	Recognize that words are represented in written language by specific sequences of letters, which are separated by spaces, and put in a specific order to create a sentence.
K	0.2.1.2	Demonstrate one-to-one letter-sound correspondence.
K	0.2.5.1	Make a statement about a topic and offer one or two details about the topic, verbally, visually or in written form, with support and guidance.
K	0.3.1.2	Confirm understanding of a text read aloud or information presented orally or through other media (e.g., poems, rhymes, songs) by asking and answering questions about key details and requesting clarification if something is not understood.
K	0.3.2.1	Speak audibly and express thoughts, feelings and ideas clearly.
1	1.1.1.1	Demonstrate understanding of spoken words, syllables and sounds (phonemes): Identify, orally produce, blend, segment and manipulate syllables in multi-syllabic words and sounds in three to four phoneme words.
1	1.1.1.2	Know and apply grade-level phonics and word analysis skills in decoding words: a. Know the spelling-sound correspondences for the common consonant digraphs and blends. b. Decode regularly spelled one-syllable words including final e and vowel teams, consonant digraphs and diphthongs, and inflectional suffixes and two-syllable words that follow six-syllable types, demonstrating both accuracy and automaticity. c. Read high-frequency words, in and out of context, demonstrating both accuracy and automaticity.
1	1.1.1.2b	Decode regularly spelled one-syllable words including final e and vowel teams, consonant digraphs and diphthongs, and inflectional suffixes and two-syllable words that follow six-syllable types, demonstrating both accuracy and automaticity.
1	1.1.1.2c	Read high-frequency words, in and out of context, demonstrating both accuracy and automaticity.
1	1.1.1.3	Read decodable texts accurately and with automaticity.
1	1.1.4.1	Ask and answer questions including who, what and where to demonstrate understanding of key details in a text; retell key details.
1	1.2.1.1	Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).
1	1.2.1.2	Accurately spell words in common word families and high-frequency words; use phonetic spelling for other words.
1	1.3.3.1	Create written, oral and digital content that communicates knowledge and ideas in a variety of presentation styles.

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GRADE	CODE	STANDARD
2	2.1.1.2a	Know the spelling-sound correspondences for the common vowel graphemes.
2	2.1.4.1	Ask and answer questions including who, what, where, when, why and how to demonstrate understanding of key details in a text; recount the text.
2	2.1.8.2	Determine the meaning of unfamiliar vocabulary or phrases in informational text, using metacognitive strategies and reference tools.
2	2.2.3.1	Plan, draft, revise, edit and publish writing, using self-reflection and teacher guidance.
2	2.2.4.1	Write to state a personal opinion, provide several reasons for the opinion, and include introductory and concluding statements.
2	2.2.6.1	Write to tell a story, introducing conflict to a character and setting.
2	2.2.6.2	Use words that signal changes in situation in written narratives, poetry or other creative text (e.g., next, surprisingly).
2	2.3.1.2	Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issues.
2	2.3.2.1	Demonstrate basic understanding and use of descriptive language and features of spoken language (including volume, intonation, phrasing, speed, pausing, stress, rhythm and gestures).
2	2.3.3.1	Create written, oral and digital content that communicates knowledge and ideas, including relevant facts and descriptive details, in a variety of presentation styles.
2	2.3.3.2	Create and share work, choosing a digital tool from teacher-provided lists, and critique effectiveness of chosen tool regarding the task, purpose and audience (e.g., to create or integrate knowledge, to share experiences or information, to persuade, to entertain, or as artistic expression), demonstrating understanding of digital footprint.
3	3.1.1.2	Know and apply grade-level phonics and word analysis skills in decoding words: a. Identify, know the meaning of and read words with common prefixes and suffixes. b. Decode multi-syllabic words. c. Read grade-level irregularly spelled words, including high-frequency words, in and out of context, demonstrating both accuracy and automaticity.
3	3.1.4.1	Ask and answer questions to demonstrate understanding of both literal and nonliteral language in a text, referring explicitly to the texts as the basis for the answers; summarize the text.
3	3.1.4.2	Identify the central idea or argument in fables, folktales, and myths, explain how it is supported by key details, and describe the connection between details.
3	3.1.5.3	Interpret the ideas/information conveyed through illustrations, graphics and other audiovisual elements in text.
3	3.1.8.1	Demonstrate understanding of figurative language as it is used in texts to express the style of specific genres.
3	3.1.8.2	Determine the meaning of general academic and domain-specific vocabulary and phrases in informational text.
3	3.2.1.1	Use correct punctuation (including commas in series and apostrophes), spelling, capitalization and grammar authentically in writing.

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GRADE	CODE	STANDARD
3	3.2.1.3	Use nouns (collective and irregular plural), verbs, frequently used adjectives and adverbs, conjunctions, prepositions, and pronouns (including reflexive pronouns and male, female and non-binary gender pronouns) in simple and compound sentences authentically in writing.
3	3.2.3.1	Plan, draft, revise, edit and publish writing, using self-reflection, guidance and support from peers and educators.
3	3.2.6.1	Write to tell a story, describing thoughts and feelings to develop characters as they interact with conflict.
3	3.2.6.2	Use dialogue and descriptive words, in written narratives, poetry or other creative text.

COMPUTER SCIENCE

8 STANDARDS

Based on the Minnesota state standards

GRADE	CODE	STANDARD
K	0.3.3.1	Create written, oral and digital content that communicates knowledge and ideas in a variety of presentation styles, with prompting and support.
K	0.3.3.2	With prompting and support, create an individual or shared multimedia work for a specific purpose (e.g., to share lived or imagined experiences, to present information, to entertain, or as artistic expression), considering digital footprint.
1	1.3.3.2	Create and share work using a teacher-selected digital tool, articulating the advantages and limitations of the tool, related to task, purpose and audience, considering digital footprint.
2	2.1.4.4	Describe the connection between a series of events, concepts or steps in a procedure in informational text.
3	3E.2.2.1.1	Organize and electronically present collected data to identify and describe patterns in the amount of daylight in different times of the year.
3	3.1.4.4	Describe the relationship between a series of events, concepts or steps in a procedure, using language that pertains to time, sequence and cause/effect, in informational text.
3	3.3.1.3	Receive and act on feedback from others, self-reflect, and provide constructive feedback on peers' work, with guidance and support from adults.
3	3.3.3.2	Create and share work, using self-selected digital tools, and critique effectiveness of chosen tool regarding the task, purpose and audience, demonstrating understanding of digital footprint.

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SCIENCE

3 STANDARDS

Based on the Minnesota state standards

GRADE	CODE	STANDARD
K	0E.1.1.1.2	Ask questions about how a person may reduce the amount of natural resources the individual uses.
1	1L.3.2.2.2	Plan and design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
2	2E.2.1.1.2	Analyze data from tests of objects designed to reduce the impacts of weather-related hazards and compare the strengths and weaknesses of how each performs.

SOURCES & NOTES

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