PAVING THE WAY WITH TREADS

GRADES K–3

This document lists the North Dakota 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 North Dakota Department of Public Instruction.

50	42	13	5	110
MATH	ELA	CS	SCIENCE	TOTAL STANDARDS

MATHEMATICS

50 STANDARDS

Based on the North Dakota state standards

GRADE	CODE	STANDARD
K–2	K-2.MA.P	Learners can identify and use strategies to problem-solve situations and determine an appropriate solution.
K	K.NO.CC.1	Count verbally in sequential order by ones and tens to 100, making accurate decuple transitions (e.g., 89 to 90). Count verbally forward from any given number within 100.
K	K.NO.CC.5	Count and tell how many objects up to 20 are in an arranged pattern or up to 10 objects in a scattered configuration. Represent a quantity of up to 20 with a numeral.
K	K.AR.OA.4	Solve authentic word problems with addition by putting together or adding to within 10.
K	K.AR.OA.5	Solve authentic word problems with subtraction by taking apart or taking from within 10.
K	K.GM.G.1	Name shapes and identify them as two-dimensional (squares, circles, triangles, rectangles) regardless of their orientations or overall sizes.
K	K.GM.G.2	Name shapes and identify them as three-dimensional (cubes and spheres) regardless of their orientations or overall sizes.
K	K.GM.M.1	Compare and order two objects with a common measurable attribute.
K	K.DPS.D.1	Sort and classify objects (up to 10) based on attributes and explain the reasoning used.
1	K-2.MA.C	Learners can make connections and demonstrate relationships using words, pictures, or symbols.
1	1.NO.NBT.1	Demonstrate that the two digits of a two-digit number represent a composition of some tens and some ones.
1	1.NO.NBT.2	Compare two two-digit numbers using symbols >, <, and =. Justify comparisons based on the value of tens and ones.

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GRADE	CODE	STANDARD
1	1.AR.OA.4	Solve authentic word problems with addition, including three numbers and unknowns, within 20.
1	1.AR.OA.5	Solve authentic word problems with subtraction, including unknowns, within 20.
1	1.GM.G.3	Determine geometric attributes of two-dimensional and three-dimensional shapes (squares, circles, triangles, rectangles, trapezoids, rhombuses, pentagons, hexagons, octagons, cubes, spheres, cylinders, cones, triangular prisms, and rectangular prisms).
1	1.GM.G.4	Compose a geometric shape or solid by combining multiple two-dimensional shapes and/or three-dimensional solids (squares, circles, triangles, rectangles, trapezoids, rhombuses, pentagons, hexagons, octagons, cubes, spheres, cylinders, cones, triangular prisms, and rectangular prisms).
1	1.GM.M.1	Measure the length of an object as a whole number of same-size, non-standard units from end to end.
1	1.GM.M.2	Compare the lengths of three objects using a common measurable attribute.
1	1.DPS.D.1	Collect, organize and represent data with up to three categories using picture and bar graphs.
1	1.DPS.D.2	Analyze data by answering descriptive questions.
2	2.NO.CC.3	Read and write numbers up to 1000 using standard, word, and expanded forms.
2	2.NO.NBT.1	Understand that the three digits of a three-digit number represent a composition of some hundreds, some tens, and some ones.
2	2.NO.NBT.3	Add within 100 using place value strategies and/or the relationship between addition and subtraction.
2	2.NO.NBT.4	Subtract within 100 using place value strategies and/or the relationship between addition and subtraction.
2	2.NO.NF.1	Partition circles and rectangles into two, three, or four equal shares. Describe the shares using the language of halves, thirds, fourths, half of, a third of, and a fourth of.
2	2.NO.NF.2	Recognize that identical wholes can be equally divided in different ways.
2	2.AR.OA.3	Solve one- and two-step authentic word problems with addition within 100, including the use of unknowns.
2	2.AR.OA.4	Solve one- and two-step authentic word problems with subtraction within 100, including the use of unknowns.
2	2.GM.G.1	Identify two-dimensional shapes (parallelograms and quadrilaterals).
2	2.GM.G.3	Compose geometric shapes having specified geometric attributes, such as a given number of edges, angles, faces, vertices, and/or sides.
2	2.GM.M.1	Measure the length of an object using two different standard units of measurement. Describe how the two measurements relate to the size of the units chosen.
2	2.GM.M.2	Estimate and measure to determine how much longer one object is than another, expressing the difference with a standard unit of measurement.
2	2.DPS.D.1	Formulate questions and collect, organize, and represent data with up to four categories using single-unit scaled picture and bar graphs.

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GRADE	CODE	STANDARD
2	2.DPS.D.2	Generate data and create line plots marked in whole-number units.
2	2.DPS.D.3	Analyze data and interpret the results to solve one-step comparison problems using information from the graphs.
3	3-5.MA.P	Learners can develop and carry out a logical plan to problem-solve situations, reflect on the reasonableness of solutions, and explore alternate strategies with guidance.
3	3.NO.NF.1	Partition two-dimensional figures into equal areas and express the area of each part as a unit fraction of the whole. Describe using the language of sixths, eighths, a sixth of, and an eighth of.
3	3.NO.NF.2	Represent and understand a fraction as a number on a number line.
3	3.AR.OA.2	Apply the properties of operations to solve multiplication and division equations and justify thinking.
3	3.AR.OA.4	Use strategies and visual models to solve authentic word problems with multiplication within 100, including unknowns, using grouping models and equations.
3	3.AR.OA.5	Use strategies and visual models to solve authentic word problems with division within 100, including unknowns, using grouping models and equations.
3	3.GM.G.1	In two-dimensional shapes, identify lines, angles (right, acute, obtuse), and perpendicular and parallel lines.
3	3.GM.G.2	Sort quadrilaterals into categories based on attributes.
3	3.GM.M.1	Measure lengths using rulers marked with halves and fourths of an inch.
3	3.GM.M.5	Solve authentic word problems involving dollar bills, quarters, dimes, nickels, and pennies using the $ and ¢ symbols appropriately.
3	3.GM.M.7	Recognize area as an attribute of plane figures and understand concepts of area measurement.
3	3.GM.M.8	Find the area of a rectangle with whole-number side lengths by modeling with unit squares; show that area can be additive and is the same as would be found by multiplying the side lengths.
3	3.DPS.D.1	Formulate questions to collect, organize, and represent data with more than four categories using scaled picture and bar graphs.
3	3.DPS.D.2	Generate data and create line plots marked in whole numbers, halves, and fourths of a unit.
3	3.DPS.D.3	Analyze data and make simple statements to solve one- and two-step problems using information from the graphs.

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ENGLISH LANGUAGE ARTS

42 STANDARDS

Based on the North Dakota state standards

GRADE	CODE	STANDARD
K	K.F.3	Recognize that sentences have letters, words, spaces between words, capitalization, and ending punctuation.
K	K.F.4	Recognize and produce rhyming words.
K	K.F.7	Isolate and pronounce the initial, medial vowel, and final phonemes in three-phoneme words.
K	K.F.8b	Decode words with phoneme-grapheme correspondences: predictable short vowels spelled with a, i, o, u, e
K	K.F.8c	Decode words with phoneme-grapheme correspondences: long vowels associated with single letters in open one-syllable words
K	K.F.8d	Decode words with phoneme-grapheme correspondences: irregularly spelled high-frequency words
K	K.F.9	Encode words with phoneme-grapheme correspondences: a. predictable consonants; b. predictable short vowels; c. long vowels with single letters in open one-syllable words (e.g., he, me, go); d. irregularly spelled high-frequency words.
K	K.F.11	Orally use new academic, content-specific, grade-level vocabulary and relate new words to prior knowledge.
K	K.F.14	Write a simple sentence using subject and predicate, capital letters, punctuation, and appropriate word spacing.
K	K.R.2	Respond to a variety of texts, photographs, or illustrations before, during, and after shared reading or other text-listening experiences to compare, contrast, predict, or infer.
K	K.W.3	Draw and write informative pieces on a topic.
1	1.F.8	Decode words with phoneme-grapheme correspondences: a. consonant digraphs; b. two consonant blends at the beginning and end of words; c. single consonant after a short vowel; d. soft and hard c and g; s as /z/; e. closed and open syllables; f. silent e in single-syllable words; g. vowel teams; h. r-controlled; i. prefixes and suffixes (two-syllable words) (e.g., redo, undo, doing); j. functions of y; k. contractions; l. irregularly spelled high-frequency words.
1	1.F.8e	Decode words with phoneme-grapheme correspondences: closed and open syllables
1	1.F.8f	Decode words with phoneme-grapheme correspondences: silent e in single-syllable words
1	1.F.8g	Decode words with phoneme-grapheme correspondences: vowel teams
1	1.F.8l	Decode words with phoneme-grapheme correspondences: irregularly spelled high-frequency words
1	1.F.9	Encode words with phoneme-grapheme correspondences: a. digraphs; b. two consonant blends; c. silent e; d. double consonants at the end of words; e. irregularly spelled high-frequency words.
1	1.F.12	Read accurately and automatically

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GRADE	CODE	STANDARD
1	1.F.14	Write simple sentences using subject and predicate, with capital letters, punctuation, and appropriate word spacing.
1	1.C.1	Describe people, places, things, and events with relevant details expressing ideas orally to a targeted audience (e.g., peers and adults).
1	1.R.2	Ask and answer questions about a variety of texts, genres, photographs, or illustrations before, during, and after shared reading or other text-listening experiences to compare, contrast, predict, or infer.
2	2.F.8a	Decode words with phoneme-grapheme correspondences: vowel teams
2	2.F.9g	Encode words with phoneme-grapheme correspondences: contractions
2	2.F.11	Use new academic, content-specific, grade-level vocabulary, connecting previously learned words and relating new words to background knowledge.
2	2.C.1	Report on a topic or text, tell a story or recount an experience to a targeted audience with relevant facts and descriptive details.
2	2.C.6	Participate in conversations by linking comments to the remarks of others and asking questions.
2	2.R.1	Comprehend information during and after listening to a grade-level text.
2	2.R.5	Determine the meaning of unknown words and phrases through a variety of text experiences.
2	2.W.4	Write opinion pieces on a topic using reasons to support the opinion.
2	2.W.5	Write narrative pieces that describe a well-elaborated event in sequence.
2	2.W.6	Develop and strengthen writing utilizing the five steps appropriate to the task.
2	2.L.2a	Recognize and use parts of speech in sentences: common, proper, and irregular plural nouns
3	3.F.8	Decode words with phoneme-grapheme correspondences: a. multisyllabic word construction and division: open syllables; closed syllables; complex closed syllables; long vowel VCe; vowel-r syllables; vowel team syllables; consonant -le syllables; syllable division principles (VC/CV, V/CV, etc.); b. inflectional endings; c. Latin and Greek roots.
3	3.F.10	Determine the meaning of multiple-meaning words and phrases, choosing from a range of strategies with varying texts (e.g., synonyms, antonyms, homophones, homographs).
3	3.F.11	Use new academic, content-specific, grade-level vocabulary to make connections to previously learned words and relate new words to background knowledge.
3	3.R.2	Ask and answer questions about key details before, during, and after reading a variety of genres, literary, and informational texts using text evidence to compare, contrast, predict, and infer.
3	3.R.3a	Summarize the main idea(s) with supporting details during or after reading an informational text or passage.
3	3.R.3b	Summarize the story by including major story elements after reading a literary text or passage.
3	3.R.5	Determine the meaning of unknown and multi-meaning words within a text.

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GRADE	CODE	STANDARD
3	3.W.5	Write narrative pieces that describe a well-elaborated real or imagined event in a sequence that unfolds naturally.
3	3.W.6	Develop and strengthen writing utilizing the five steps appropriate to the task and purpose.
3	3.L.2a	Recognize and use parts of speech in sentences: concrete, abstract, and possessive nouns

COMPUTER SCIENCE AND CYBERSECURITY

13 STANDARDS

Based on the North Dakota state standards

GRADE	CODE	STANDARD
K	K.HS.1	Use basic hardware to accomplish simple tasks (e.g., turn the device on/off, use a mouse or touchscreen).
K	K.DD.2	Create step-by-step directions to complete simple tasks.
K	K.PL.2	Understand the purpose of and comply with responsible and acceptable use policies.
K	K.DC.1	With guidance, identify appropriate times to use technology and times to be screen-free.
1	1.HS.1	Use basic software to accomplish simple tasks (e.g., open/close tabs, websites, apps, programs).
1	1.DD.2	Create step-by-step directions to solve problems or complete tasks.
2	2.S.1	Identify the positive and negative impacts of technology on how people live, work, and interact.
3	3.HS.1	Use software skills to complete tasks (e.g., typing, copy/paste, drawing) using hardware.
3	3.DD.1	Define an algorithm.
3	3.DD.2	Create a simple algorithm using coding patterns (e.g., sequences, loops, or conditionals).
3	3.DD.3	Test the outcome(s) of algorithms that use coding patterns (e.g., sequences, loops, or conditionals).
3	3.AP.1	Analyze data and make simple statements to solve one- and two-step problems using information from the graphs.
3	3.AP.2	Use a trial-and-error process to identify and fix errors in algorithms and processes.

SCIENCE (ENGINEERING & TECHNOLOGY)

5 STANDARDS

Based on the North Dakota state standards

GRADE	CODE	STANDARD
K–2	K-2-ET1-1	Ask questions, make observations, and gather information to define a simple problem (a situation people want to change) 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-ET1-2	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-ET1-3	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-ET1-2	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-ET1-3	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 North Dakota, as published by the North Dakota Department of Public Instruction.
- 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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