

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

MATH

42

ELA

13

CS

5

SCIENCE

110

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.

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.

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.

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:
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:
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:
1	1.F.12	Read accurately and automatically
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

GRADE	CODE	STANDARD
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:
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.
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.
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.
- 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.