

# PAVING THE WAY WITH TREADS

**GRADES K-3**

This document lists the Nebraska 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 Nebraska Department of Education.

**50**

MATH

**39**

ELA

**4**

SCIENCE

**93**

TOTAL STANDARDS

## MATHEMATICS

50 STANDARDS

Based on the Nebraska state standards

| GRADE      | CODE                   | STANDARD                                                                                                                                                                                                                            |
|------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>K-3</b> | <b>PROBLEM SOLVING</b> | Make sense of problems and persevere in solving them.                                                                                                                                                                               |
| <b>K</b>   | <b>MA.K.N.2.a</b>      | Use one-to-one correspondence when counting objects to show the relationship between numbers and quantities and understand the last number counted is a direct representation of the total objects in a given set.                  |
| <b>K</b>   | <b>MA.K.N.2.f</b>      | Count verbally in sequential order by ones and by tens to 100, making accurate decade transitions (e.g., 89 to 90).                                                                                                                 |
| <b>K</b>   | <b>MA.K.N.4.a</b>      | Represent and explain addition and subtraction as part-whole relationships, with addition as putting together and/or adding to and subtraction as taking apart and/or taking from, using objects, drawings, numbers, and equations. |
| <b>K</b>   | <b>MA.K.N.4.e</b>      | Solve authentic problems that involve addition and subtraction within 10 (e.g., by using objects, drawings, and equations to represent the problem).                                                                                |
| <b>K</b>   | <b>MA.K.G.1.a</b>      | Identify and name two-dimensional shapes including circles, triangles, squares, and rectangles regardless of orientation or size.                                                                                                   |
| <b>K</b>   | <b>MA.K.G.1.b</b>      | Identify and name three-dimensional shapes including spheres, cubes, cylinders, and cones regardless of orientation or size.                                                                                                        |
| <b>K</b>   | <b>MA.K.G.1.c</b>      | Describe the relative positions of shapes in relation to other objects or shapes using terms such as above, below, in front of, behind, and next to.                                                                                |
| <b>K</b>   | <b>MA.K.G.1.e</b>      | Combine simple shapes to compose larger shapes.                                                                                                                                                                                     |
| <b>K</b>   | <b>MA.K.G.2.a</b>      | Describe measurable attributes of authentic objects including length, capacity, and weight.                                                                                                                                         |
| <b>K</b>   | <b>MA.K.G.2.b</b>      | Directly compare two objects with a measurable attribute in common to describe which object is longer/shorter, heavier/lighter, and has more/less-capacity.                                                                         |

| GRADE    | CODE              | STANDARD                                                                                                                                                                                                                                                                                                                                    |
|----------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>K</b> | <b>MA.K.D.1.a</b> | Identify, sort, and classify objects by size, shape, color, and other attributes.                                                                                                                                                                                                                                                           |
| <b>1</b> | <b>REASONING</b>  | Reason quantitatively and abstractly and consider the reasoning of others.                                                                                                                                                                                                                                                                  |
| <b>1</b> | <b>MA.1.N.3.a</b> | Understand 10 as a bundle, collection, or (more abstractly) composition of ten ones and that the two digits of a two-digit number represent a composition of some tens and some ones.                                                                                                                                                       |
| <b>1</b> | <b>MA.1.N.3.b</b> | Compare two, two-digit numbers using words greater than, less than, equal to, and symbols $<$ , $>$ , $=$ . Justify comparisons based on the number of tens and ones.                                                                                                                                                                       |
| <b>1</b> | <b>MA.1.N.5.e</b> | Solve problems that call for addition of three whole numbers whose sum is less than or equal to 20 using flexible strategies with objects, drawings, and/or equations.                                                                                                                                                                      |
| <b>1</b> | <b>MA.1.N.5.f</b> | Solve authentic 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 by using objects, drawings, and/or equations with a symbol for the unknown number to represent the problem. |
| <b>1</b> | <b>MA.1.G.1.a</b> | Determine geometric attributes of two-dimensional shapes regardless of orientation or size for rhombi, trapezoids, and hexagons (e.g., a hexagon is closed with six sides).                                                                                                                                                                 |
| <b>1</b> | <b>MA.1.G.2.a</b> | Measure the length of an object as a whole number of same-size, non-standard units by placing them end to end.                                                                                                                                                                                                                              |
| <b>1</b> | <b>MA.1.G.2.b</b> | Order three objects by directly comparing their lengths or indirectly by using a third object.                                                                                                                                                                                                                                              |
| <b>1</b> | <b>MA.1.D.1.a</b> | Collect, organize, and represent a data set with up to three categories using a picture graph.                                                                                                                                                                                                                                              |
| <b>1</b> | <b>MA.1.D.2.a</b> | Ask and answer questions about the total number of data points, how many in each category, and compare categories by identifying how many more or less are in a particular category using a picture graph.                                                                                                                                  |
| <b>2</b> | <b>MA.2.N.3.a</b> | Read and write numbers within the range of 0 to 1,000 using standard, word, and expanded forms.                                                                                                                                                                                                                                             |
| <b>2</b> | <b>MA.2.N.3.b</b> | Understand 100 as a bundle, collection, or (more abstractly) composition of ten tens and that the three digits of a three-digit number represent a composition of some hundreds, some tens, and some ones.                                                                                                                                  |
| <b>2</b> | <b>MA.2.N.4.b</b> | Add and subtract using 100 strategies based on place value including properties of operations, relationships between addition and subtraction, and algorithms.                                                                                                                                                                              |
| <b>2</b> | <b>MA.2.N.5.a</b> | Solve authentic problems involving addition and subtraction within 100 in situations of addition and subtraction, including adding to, subtracting from, joining and separating, and comparing situations with unknowns in all positions using objects, models, drawings, verbal explanations, expressions, and equations.                  |
| <b>2</b> | <b>MA.2.G.1.a</b> | Recognize and describe all faces of three-dimensional shapes as two-dimensional shapes. Identify and count attributes of solid shapes including the edges, faces, and vertices.                                                                                                                                                             |
| <b>2</b> | <b>MA.2.G.1.b</b> | Recognize and draw two-dimensional shapes having a specific number of sides, angles, and vertices including triangles, quadrilaterals, pentagons, and hexagons.                                                                                                                                                                             |
| <b>2</b> | <b>MA.2.G.1.d</b> | Divide circles and rectangles into two, three, or four equal parts and describe the parts using the language of halves, thirds, fourths, half of, a third of, and a fourth of.                                                                                                                                                              |

| GRADE    | CODE       | STANDARD                                                                                                                                                                                |
|----------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2</b> | MA.2.G.1.e | Recognize that equal shares of identical wholes need not have the same shape.                                                                                                           |
| <b>2</b> | MA.2.G.3.a | Identify and use appropriate tools for measuring length.                                                                                                                                |
| <b>2</b> | MA.2.G.3.b | Measure and estimate lengths using whole numbers with inches, feet, centimeters, and meters.                                                                                            |
| <b>2</b> | MA.2.G.5.a | Solve problems involving dollar bills, quarters, dimes, nickels, and pennies using \$ and ¢ symbols appropriately.                                                                      |
| <b>2</b> | MA.2.D.1.a | Ask authentic questions to generate data and represent the data using scaled picture graphs with up to four categories.                                                                 |
| <b>2</b> | MA.2.D.1.b | Ask authentic questions to generate data and represent the data using bar graphs with up to four categories.                                                                            |
| <b>2</b> | MA.2.D.1.c | Create and represent a data set by making a line plot using whole numbers.                                                                                                              |
| <b>2</b> | MA.2.D.2.a | Analyze data using scaled picture graphs or bar graphs with up to four categories. Solve problems including one-step comparison problems, using information from the graphs.            |
| <b>3</b> | MA.3.N.2.a | Partition two-dimensional figures into equal areas and express the area of each part as a unit fraction of the whole.                                                                   |
| <b>3</b> | MA.3.N.2.b | Find parts of a whole using visual fraction models.                                                                                                                                     |
| <b>3</b> | MA.3.N.2.c | Represent and understand a fraction as a number on a number line.                                                                                                                       |
| <b>3</b> | MA.3.A.1.c | Solve and write one-step whole number equations to represent authentic problems using the four operations including equations with an unknown start, unknown change, or unknown result. |
| <b>3</b> | MA.3.A.1.e | Apply commutative, associative, distributive, identity, and zero properties as strategies to multiply and divide.                                                                       |
| <b>3</b> | MA.3.A.1.f | Use drawings, words, arrays, symbols, repeated addition, equal groups, and number lines to interpret and explain the meaning of multiplication and division and their relationship.     |
| <b>3</b> | MA.3.G.1.1 | Sort quadrilaterals into categories according to their attributes.                                                                                                                      |
| <b>3</b> | MA.3.G.2   | Students will recognize perimeter and area as attributes of plane figures and understand concepts of area measurement.                                                                  |
| <b>3</b> | MA.3.G.2.b | Use concrete and pictorial models to measure areas in square units by counting square units.                                                                                            |
| <b>3</b> | MA.3.G.3.b | Estimate and measure length to the nearest half inch, fourth inch, and centimeter.                                                                                                      |
| <b>3</b> | MA.3.D.1.a | Create scaled picture graphs and scaled bar graphs to represent a data set with more than four categories, including data collected through observations, surveys, and experiments.     |
| <b>3</b> | MA.3.D.1.b | Generate and represent data using line plots where the horizontal scale is marked off in halves and whole number units.                                                                 |
| <b>3</b> | MA.3.D.2.a | Analyze data and make simple statements using information represented in picture graphs, line plots, and bar graphs.                                                                    |

**ENGLISH LANGUAGE ARTS**

39 STANDARDS

Based on the Nebraska state standards

| GRADE    | CODE        | STANDARD                                                                                                                                                                                                       |
|----------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>K</b> | LA.K.F.1.c  | Demonstrate understanding that words are separated by spaces in print; demonstrate understanding of one-to-one correspondence between voice and print.                                                         |
| <b>K</b> | LA.K.F.2.b  | Recognize and begin to produce oral rhymes.                                                                                                                                                                    |
| <b>K</b> | LA.K.F.3.b  | Demonstrate the long and short sounds with common spellings (graphemes) for the five major vowels.                                                                                                             |
| <b>K</b> | LA.K.F.4.c  | Read grade level high-frequency words with automaticity and accuracy (e.g. Fry or Dolch words or those included in instructional materials).                                                                   |
| <b>K</b> | LA.K.W.1.a  | Capitalize the first word in a sentence and the pronoun I.                                                                                                                                                     |
| <b>K</b> | LA.K.W.1.b  | Recognize and name end punctuation.                                                                                                                                                                            |
| <b>K</b> | LA.K.SL.1.a | Ask pertinent questions to acquire or confirm information.                                                                                                                                                     |
| <b>K</b> | LA.K.SL.2.e | Use appropriate visual and/or digital tools to support verbal communication.                                                                                                                                   |
| <b>1</b> | LA.1.F.2.a  | Identify, segment and blend phonemes in single syllable spoken three and four phoneme words including words with blends.                                                                                       |
| <b>1</b> | LA.1.F.3    | Know and apply phonics and word analysis skills in decoding and encoding (spelling) words.                                                                                                                     |
| <b>1</b> | LA.1.F.3.c  | Decode and encode regularly spelled one-syllable words.                                                                                                                                                        |
| <b>1</b> | LA.1.F.3.d  | Decode and encode final -e and common vowel team conventions for representing long vowel sounds.                                                                                                               |
| <b>1</b> | LA.1.F.3.h  | Recognize and read grade-appropriate, irregularly spelled words.                                                                                                                                               |
| <b>1</b> | LA.1.F.4    | Develop accuracy, phrasing, and expression/prosody while reading a variety of grade-level texts to support comprehension.                                                                                      |
| <b>1</b> | LA.1.W.1.a  | Capitalize proper nouns (e.g., days of the week, names of people).                                                                                                                                             |
| <b>1</b> | LA.1.W.1.b  | Use end punctuation, commas in dates, and commas to separate single words in a series.                                                                                                                         |
| <b>1</b> | LA.1.SL.1.a | Ask pertinent questions to acquire or confirm information.                                                                                                                                                     |
| <b>1</b> | LA.1.SL.2   | Tell a story or recount experiences with appropriate facts and pertinent descriptive details.                                                                                                                  |
| <b>2</b> | LA.2.F.3.a  | Decode words with variable vowel teams and vowel diphthongs.                                                                                                                                                   |
| <b>2</b> | LA.2.F.3.b  | Decode regularly spelled two-syllable words with long vowels.                                                                                                                                                  |
| <b>2</b> | LA.2.V.1.a  | Use sentence-level context clues to determine the meaning of a word or phrase.                                                                                                                                 |
| <b>2</b> | LA.2.W.1.b  | Use commas in greetings and closings of letters; use apostrophes to form contractions and frequently occurring possessives.                                                                                    |
| <b>2</b> | LA.2.W.1.c  | Identify and explain the use of nouns (e.g., collective and irregular plural), pronouns (e.g., demonstrative), verbs (e.g., past tense irregular), simple prepositions, and frequently occurring conjunctions. |

| GRADE    | CODE        | STANDARD                                                                                                                          |
|----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>2</b> | LA.2.W.2    | Use a recursive writing process to develop, strengthen, and produce writing appropriate to the audience, purpose, and discipline. |
| <b>2</b> | LA.2.W.3    | Write personal or fictional narratives that retell two or more appropriately sequenced events.                                    |
| <b>2</b> | LA.2.W.4    | Express an opinion and provide supporting reasons.                                                                                |
| <b>2</b> | LA.2.SL.1.a | Ask pertinent questions to acquire or confirm information.                                                                        |
| <b>2</b> | LA.2.SL.1.d | Develop active and attentive listening skills (e.g., eye contact, nonverbal cues, recalling).                                     |
| <b>2</b> | LA.2.SL.2   | Tell a story or recount an experience with appropriate facts and pertinent descriptive details.                                   |
| <b>2</b> | LA.2.SL.2.e | Use appropriate visual and/or digital tools to support verbal communication.                                                      |
| <b>3</b> | LA.3.F.3    | Know and apply phonics and word analysis skills in decoding and encoding (spelling) words.                                        |
| <b>3</b> | LA.3.RP.1   | Identify the central message or lesson in a literary text and explain how key details support that idea.                          |
| <b>3</b> | LA.3.RP.6   | Explain what the text says explicitly and draw inferences when asking and answering questions.                                    |
| <b>3</b> | LA.3.RI.1   | Identify the central idea and explain how key details support that idea.                                                          |
| <b>3</b> | LA.3.V.1    | Acquire and use grade-level academic vocabulary appropriately.                                                                    |
| <b>3</b> | LA.3.V.2    | Interpret an author's use of figurative, connotative, and technical language in grade-level literary and informational text.      |
| <b>3</b> | LA.3.V.2.b  | Identify real-life connections between words and their use (e.g., describe people who are friendly or helpful).                   |
| <b>3</b> | LA.3.W.2    | Use a recursive writing process to develop, strengthen, and produce writing appropriate to the audience, purpose, and discipline. |
| <b>3</b> | LA.3.W.3    | Write creative and/or expressive pieces that describe a well-developed event or experience.                                       |

## SCIENCE

4 STANDARDS

Based on the Nebraska state standards

| GRADE    | CODE        | STANDARD                                                                                                                                                                                                    |
|----------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>K</b> | SC.K.12.3.e | 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. |
| <b>1</b> | SC.1.6.2.b  | 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.                                                          |
| <b>2</b> | SC.2.3.1.c  | Analyze data from tests of two objects, designed to solve the same problem, to compare the strengths and weaknesses based on the properties.                                                                |

| GRADE | CODE       | STANDARD                                                                                                                                            |
|-------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 3     | SC.3.7.2.e | 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. |

## SOURCES & NOTES

- The official mathematics, English language arts and science standards for Nebraska, as published by the Nebraska 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.
- 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](mailto:info@truerobotics.org).
- Nebraska publishes no computer science standards for grades K-3, so that section is omitted.