TRUE ROBOTICS

PAVING THE WAY WITH TREADS

GRADES K–3

This document lists the Kentucky 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 Kentucky Department of Education.

42	38	10	5	95
MATH	ELA	CS	SCIENCE	TOTAL STANDARDS

MATHEMATICS

42 STANDARDS

Based on the Kentucky state standards

GRADE	CODE	STANDARD
K–3	MP.1	Make sense of problems and persevere in solving them.
K	KY.K.CC.1a	Count to 100 by ones and by tens.
K	KY.K.CC.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
K	KY.K.OA.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.
K	KY.K.OA.2	Solve addition and subtraction word problems and add and subtract within 10 by using objects or drawings to represent the problem.
K	KY.K.MD.1	Describe measurable attributes (length, height, weight, width, depth) of an object or a set of objects using appropriate vocabulary.
K	KY.K.MD.2	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/ "less of" the attribute and describe the difference.
K	KY.K.MD.3	Classify and sort objects or people by attributes. Limit objects or people in each category to be less than or equal to 10.
K	KY.K.G.1	Name and describe shapes in the environment.
K	KY.K.G.2	Correctly name shapes regardless of orientations or overall size.
1	MP.2	Reason abstractly and quantitatively.
1	KY.1.OA.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions.

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GRADE	CODE	STANDARD
1	KY.1.OA.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, by using objects, drawings and equations with a symbol for one unknown number to represent the problem.
1	KY.1.NBT.2	Understand the two-digits of a two-digit number represent amounts of tens and ones.
1	KY.1.NBT.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
1	KY.1.MD.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
1	KY.1.MD.2	Express the length of an object as a whole number of same-size length units, by laying multiple copies of a shorter object (the length unit) end to end with no gaps or overlaps.
1	KY.1.MD.4	Investigate questions involving categorical data.
1	KY.1.G.1	Distinguish between defining attributes versus non-defining attributes; build and draw shapes to possess defining attributes.
1	KY.1.G.2	Compose shapes.
2	KY.2.OA.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, by using drawings and equations with a symbol for the unknown number to represent the problem.
2	KY.2.NBT.1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones.
2	KY.2.NBT.3	Read and write numbers to 1000 using base-ten numerals, number names and expanded form.
2	KY.2.NBT.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.
2	KY.2.MD.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.
2	KY.2.MD.3	Estimate lengths using units of inches, feet, yards, centimeters and meters.
2	KY.2.MD.8	Solve word problems with adding and subtracting within 100, (not using dollars and cents simultaneously) using the $ and ¢ symbols appropriately (not including decimal notation).
2	KY.2.MD.9	Investigate questions involving measurements.
2	KY.2.MD.10	Create a pictograph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart and compare problems using information presented in a bar graph.
2	KY.2.G.1	Recognize and draw shapes having specified attributes, such as a given number of angles or sides. Identify triangles, quadrilaterals, pentagons, hexagons and cubes (identify number of faces).
2	KY.2.G.3	Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

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GRADE	CODE	STANDARD
3	KY.3.OA.1	Interpret and demonstrate products of whole numbers.
3	KY.3.OA.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays and measurement quantities, by using drawings and equations with a symbol for the unknown number to represent the problem.
3	KY.3.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
3	KY.3.OA.5	Apply properties of operations as strategies to multiply and divide.
3	KY.3.NF.1	Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.
3	KY.3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line.
3	KY.3.MD.3	Investigate questions involving categorical data.
3	KY.3.MD.4	Investigate questions involving numerical data.
3	KY.3.MD.5	Recognize area as an attribute of plane figures and understand concepts of area measurement.
3	KY.3.MD.6	Measure areas by counting unit squares (square cm, square m, square in, square ft. and improvised units).
3	KY.3.G.1	Classify polygons by attributes.

ENGLISH LANGUAGE ARTS (READING AND WRITING)

38 STANDARDS

Based on the Kentucky state standards

GRADE	CODE	STANDARD
K	RF.K.1c	Recognize that words are separated by spaces in print.
K	RF.K.2a	Recognize and orally produce rhyming words.
K	RF.K.3b	Associate the long and short sounds (phonemes) with common spellings (graphemes) for the five major vowels.
K	RF.K.4c	Read common high-frequency words with automaticity.
K	RL.K.1	With prompting and support, ask and answer explicit questions about key ideas and details and make logical inferences to construct meaning from the text.
K	C.K.2a	With guidance and support from adults, strengthen writing through peer collaboration and adding details through writing and/or pictures as needed.
K	L.K.2	When writing: a. Capitalize the first word in a sentence and the pronoun I. b. Recognize and name end punctuation. c. Write a grapheme for most consonant and short-vowel phonemes. d. Spell consonant-vowel-consonant (CVC) words, and attempt to spell simple words drawing on knowledge of phoneme-grapheme correspondences.
K	L.K.5	With guidance and support from adults, explore word relationships and nuances in word meanings.

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GRADE	CODE	STANDARD
1	RF.1.2a	Distinguish long from short vowel sounds (phonemes) in spoken single-syllable words.
1	RF.1.2c	Construct and deconstruct spoken single syllable words into initial, medial vowel and final sounds (phonemes).
1	RF.1.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.
1	RF.1.3b	Decode regularly spelled one-syllable words.
1	RF.1.3c	Know final -e and common vowel team conventions for representing long vowel sounds (phonemes).
1	RF.1.4	Read fluently (accuracy, speed and prosody) on grade-level to support comprehension.
1	RF.1.4d	Read irregularly spelled high-frequency words with automaticity and accuracy.
1	RL.1.1	With prompting and support, ask and answer explicit questions about key ideas and details and make and support logical inferences to construct meaning from the text.
1	L.1.2	When writing: a. Capitalize proper nouns, including but not limited to dates and names of people. b. Demonstrate appropriate use of end punctuation. c. With prompting and support, produce and write commas in dates and to separate single words in a series. d. Use conventional spelling for words with common spelling patterns (graphemes) and for frequently occurring irregular words. e. With adult support, spell untaught words phonetically, using phonemic awareness and syllabication.
2	RF.2.3a	Distinguish long and short vowels when reading regularly spelled one-syllable words.
2	RF.2.3b	Know phoneme-grapheme correspondences for additional common vowel teams.
2	RI.2.2	Identify implicit and explicit information from an informational text to determine the central idea of a text.
2	C.2.1	Compose opinion pieces, using a combination of writing and digital resources, on topics or texts, with supporting reasons.
2	C.2.3	Compose narratives, using writing and digital resources, to develop real or imagined experiences or multiple events or ideas, using effective technique, descriptive details and clear sequences.
2	C.2.3b	Recount a single event or multiple events, memories or ideas.
2	C.2.3f	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising and editing.
2	C.2.4	With guidance and support from adults, use a variety of digital resources to create and publish products, including in collaboration with peers.
2	L.2.1a	In writing or speaking, demonstrate appropriate use of: collective nouns.
2	L.2.1b	In writing or speaking, demonstrate appropriate use of: frequently occurring irregular nouns.
2	L.2.2c	Use apostrophe to form contractions and possessives.
2	L.2.4a	Use sentence-level context as a clue to the meaning of a word or phrase.
2	L.2.5	Demonstrate understanding of word relationships and nuances in word meanings.

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GRADE	CODE	STANDARD
3	RF.3.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.
3	RL.3.1	Ask and answer questions, and make and support logical inferences to construct meaning from the text.
3	RL.3.2	Identify implicit and cite explicit information from a literary text to determine the theme, lesson learned and/or moral, including but not limited to fables, folktales and myths from diverse cultures.
3	RI.3.2	Identify implicit and cite explicit information from an informational text to determine the central idea of a text.
3	C.3.3	Compose narratives, using writing and digital resources, to develop real or imagined experiences or multiple events or ideas using effective technique, descriptive details and clear sequences.
3	C.3.3f	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising and editing.
3	L.3.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 3 reading and content, choosing flexibly from an array of strategies.
3	L.3.5	Demonstrate understanding of word relationships and nuances in word meanings.

COMPUTER SCIENCE

10 STANDARDS

Based on the Kentucky state standards

GRADE	CODE	STANDARD
K–3	E-AP-01	Create, follow, compare and refine algorithms for a task.
K–3	E-AP-03	Routinely create programs using a variety of tools to express ideas, address a problem or create an artifact, individually and collaboratively.
K–3	E-CS-01	Identify, select and operate appropriate software and hardware to perform a variety of tasks and recognize that users have different needs and preferences for the technology they use.
K–3	CC1	Communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals, audience and task.
K–2	E-IC-01	Discuss how computing has impacted society.
K–2	KC2	Produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.
3	E-DA-02	Collect and visually display data using appropriate applications.
3	E-DA-03	Analyze data for trends and relationships
3	E-AP-08	Identify and correct errors in an algorithm.
3	GC1	Use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

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SCIENCE (ENGINEERING DESIGN)

5 STANDARDS

Based on the Kentucky state standards

GRADE	CODE	STANDARD
K–2	K-2-ETS1-1	Ask questions, make observations, and gather information about a situation that people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
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 Kentucky, as published by the Kentucky 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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- A lesson-level crosswalk is available on request at info@truerobotics.org.

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