TRUE ROBOTICS

TAKING OFF WITH PILOT

GRADES 3–5

This document lists the Texas learning standards addressed by Taking Off with Pilot, True Robotics' grades 3–5 robotics curriculum. Standards are grouped by subject and grade level, with codes and wording as published by the Texas Education Agency.

30	10	6	46
MATH	SCIENCE	CS	TOTAL STANDARDS

MATHEMATICS

30 STANDARDS

Based on the Texas state standards

GRADE	CODE	STANDARD
3	111.5(b)(3)(A)	represent fractions greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 using concrete objects and pictorial models, including strip diagrams and number lines
3	111.5(b)(3)(B)	determine the corresponding fraction greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 given a specified point on a number line
3	111.5(b)(3)(E)	solve problems involving partitioning an object or a set of objects among two or more recipients using pictorial representations of fractions with denominators of 2, 3, 4, 6, and 8
3	111.5(b)(3)(H)	compare two fractions having the same numerator or denominator in problems by reasoning about their sizes and justifying the conclusion using symbols, words, objects, and pictorial models.
3	111.5(b)(4)(A)	solve with fluency one-step and two-step problems involving addition and subtraction within 1,000 using strategies based on place value, properties of operations, and the relationship between addition and subtraction
3	111.5(b)(4)(D)	determine the total number of objects when equally-sized groups of objects are combined or arranged in arrays up to 10 by 10
3	111.5(b)(4)(G)	use strategies and algorithms, including the standard algorithm, to multiply a two-digit number by a one-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties
3	111.5(b)(4)(K)	solve one-step and two-step problems involving multiplication and division within 100 using strategies based on objects; pictorial models, including arrays, area models, and equal groups; properties of operations; or recall of facts.
3	111.5(b)(5)(C)	describe a multiplication expression as a comparison such as 3 x 24 represents 3 times as much as 24

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GRADE	CODE	STANDARD
3	111.5(b)(6)(A)	classify and sort two- and three-dimensional figures, including cones, cylinders, spheres, triangular and rectangular prisms, and cubes, based on attributes using formal geometric language
3	111.5(b)(6)(B)	use attributes to recognize rhombuses, parallelograms, trapezoids, rectangles, and squares as examples of quadrilaterals and draw examples of quadrilaterals that do not belong to any of these subcategories
3	111.5(b)(6)(C)	determine the area of rectangles with whole number side lengths in problems using multiplication related to the number of rows times the number of unit squares in each row
3	111.5(b)(7)(B)	determine the perimeter of a polygon or a missing length when given perimeter and remaining side lengths in problems
3	111.5(b)(7)(C)	determine the solutions to problems involving addition and subtraction of time intervals in minutes using pictorial models or tools such as a 15-minute event plus a 30-minute event equals 45 minutes
4	111.6(b)(3)(D)	compare two fractions with different numerators and different denominators and represent the comparison using the symbols >, =, or <
4	111.6(b)(4)(A)	add and subtract whole numbers and decimals to the hundredths place using the standard algorithm
4	111.6(b)(4)(D)	use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties
4	111.6(b)(4)(F)	use strategies and algorithms, including the standard algorithm, to divide up to a four-digit dividend by a one-digit divisor
4	111.6(b)(5)(D)	solve problems related to perimeter and area of rectangles where dimensions are whole numbers.
4	111.6(b)(6)(C)	apply knowledge of right angles to identify acute, right, and obtuse triangles
4	111.6(b)(6)(D)	classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.
4	111.6(b)(8)(C)	solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate.
4	111.6(b)(9)(A)	represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions
5	111.7(b)(3)(H)	represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations
5	111.7(b)(3)(I)	represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models
5	111.7(b)(4)(A)	identify prime and composite numbers
5	111.7(b)(4)(G)	use concrete objects and pictorial models to develop the formulas for the volume of a rectangular prism, including the special form for a cube (V = l x w x h, V = s x s x s, and V = Bh)

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GRADE	CODE	STANDARD
5	111.7(b)(4)(H)	represent and solve problems related to perimeter and/or area and related to volume.
5	111.7(b)(6)(B)	determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base.
5	111.7(b)(7)	solve problems by calculating conversions within a measurement system, customary or metric.

SCIENCE

10 STANDARDS

Based on the Texas state standards

GRADE	CODE	STANDARD
3	112.5(b)(1)(A)	ask questions and define problems based on observations or information from text, phenomena, models, or investigations
3	112.5(b)(1)(B)	use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
3	112.5(b)(2)(D)	evaluate a design or object using criteria.
3	112.5(b)(3)(B)	communicate explanations and solutions individually and collaboratively in a variety of settings and formats
3	112.5(b)(8)(B)	plan and conduct investigations that demonstrate how the speed of an object is related to its mechanical energy.
3	112.5(b)(13)(A)	explore and explain how external structures and functions of animals such as the neck of a giraffe or webbed feet on a duck enable them to survive in their environment
4	112.6(b)(8)(A)	investigate and identify the transfer of energy by objects in motion, waves in water, and sound
4	112.6(b)(13)(A)	explore and explain how structures and functions of plants such as waxy leaves and deep roots enable them to survive in their environment
5	112.7(b)(6)(A)	compare and contrast matter based on measurable, testable, or observable physical properties, including mass, magnetism, relative density (sinking and floating using water as a reference point), physical state (solid, liquid, gas), volume, solubility in water, and the ability to conduct or insulate thermal energy and electric energy
5	112.7(b)(7)(A)	investigate and explain how equal and unequal forces acting on an object cause patterns of motion and transfer of energy

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TECHNOLOGY APPLICATIONS (COMPUTER SCIENCE)

6 STANDARDS

Based on the Texas state standards

GRADE	CODE	STANDARD
3	126.8(c)(1)(C)	develop a plan collaboratively and document a plan that outlines specific steps taken to complete a project
4	126.9(c)(1)(D)	debug algorithms (set of procedures) by identifying and removing errors.
4	126.9(c)(2)(B)	use a design process to create programs that include sequences, loops, and conditionals to express ideas or address a problem.
5	126.10(c)(1)(D)	compare multiple algorithms for the same task and determine which algorithm is the most appropriate for that task.
5	126.10(c)(2)(B)	use a design process to create block-based programs that include sequences, loops, conditionals, and events to solve an everyday problem
5	126.10(c)(5)(A)	identify and collect quantitative and qualitative data with digital tools

SOURCES & NOTES

- The official mathematics, science and computer science standards for Texas, as published by the Texas Education Agency.
- 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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