TRUE ROBOTICS

INTRODUCTION TO ROBOTICS WITH AXLE

GRADES 6–8

This document lists the Texas learning standards addressed by Introduction to Robotics with Axle, True Robotics' grades 6–8 robotics curriculum. Standards are grouped by subject and grade level, with codes and wording as published by the Texas Education Agency.

39	22	8	69
MATH	SCIENCE	CS	TOTAL STANDARDS

MATHEMATICS

39 STANDARDS

Based on the Texas state standards

GRADE	CODE	STANDARD
6	111.26(b)(3)(A)	recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values
6	111.26(b)(3)(E)	multiply and divide positive rational numbers fluently
6	111.26(b)(6)(A)	identify independent and dependent quantities from tables and graphs
6	111.26(b)(6)(B)	write an equation that represents the relationship between independent and dependent quantities from a table
6	111.26(b)(8)(B)	model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes
6	111.26(b)(8)(D)	determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers
6	111.26(b)(9)(A)	write one-variable, one-step equations and inequalities to represent constraints or conditions within problems
6	111.26(b)(10)(A)	model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts
6	111.26(b)(10)(B)	determine if the given value(s) make(s) one-variable, one-step equations or inequalities true
6	111.26(b)(11)	graph points in all four quadrants using ordered pairs of rational numbers
6	111.26(b)(12)(B)	use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution

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GRADE	CODE	STANDARD
6	111.26(b)(12)(C)	summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution
6	111.26(b)(13)(B)	distinguish between situations that yield data with and without variability
7	111.27(b)(3)(A)	add, subtract, multiply, and divide rational numbers fluently
7	111.27(b)(3)(B)	apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers
7	111.27(b)(4)(A)	represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including d = rt
7	111.27(b)(4)(B)	calculate unit rates from rates in mathematical and real-world problems
7	111.27(b)(4)(C)	determine the constant of proportionality (k = y/x) within mathematical and real-world problems
7	111.27(b)(4)(D)	solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems
7	111.27(b)(5)(B)	describe π as the ratio of the circumference of a circle to its diameter
7	111.27(b)(5)(C)	solve mathematical and real-world problems involving similar shape and scale drawings
7	111.27(b)(8)(C)	use models to determine the approximate formulas for the circumference and area of a circle and connect the models to the actual formulas
7	111.27(b)(9)(A)	solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids
7	111.27(b)(9)(B)	determine the circumference and area of circles
7	111.27(b)(9)(C)	determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles
7	111.27(b)(9)(D)	solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net
7	111.27(b)(10)(A)	write one-variable, two-step equations and inequalities to represent constraints or conditions within problems
7	111.27(b)(11)(A)	model and solve one-variable, two-step equations and inequalities
8	111.28(b)(2)(A)	extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers
8	111.28(b)(2)(B)	approximate the value of an irrational number, including π and square roots of numbers less than 225, and locate that rational number approximation on a number line
8	111.28(b)(4)(B)	graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship
8	111.28(b)(4)(C)	use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems

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GRADE	CODE	STANDARD
8	111.28(b)(5)(B)	represent linear non-proportional situations with tables, graphs, and equations in the form of y = mx + b, where b ≠ 0
8	111.28(b)(5)(I)	write an equation in the form y = mx + b to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
8	111.28(b)(7)(A)	solve problems involving the volume of cylinders, cones, and spheres
8	111.28(b)(7)(C)	use the Pythagorean Theorem and its converse to solve problems
8	111.28(b)(7)(D)	determine the distance between two points on a coordinate plane using the Pythagorean Theorem
8	111.28(b)(9)	identify and verify the values of x and y that simultaneously satisfy two linear equations in the form y = mx + b from the intersections of the graphed equations
8	111.31(d)(12)(E)	write a formula for the nth term of arithmetic and geometric sequences, given the value of several of their terms

SCIENCE

22 STANDARDS

Based on the Texas state standards

GRADE	CODE	STANDARD
6	112.26(b)(1)(A)	ask questions and define problems based on observations or information from text, phenomena, models, or investigations
6	112.26(b)(1)(B)	use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems
6	112.26(b)(1)(C)	use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
6	112.26(b)(1)(D)	use appropriate tools such as graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides, life science models, petri dishes, dissecting kits, magnets, spring scales or force sensors, tools that model wave behavior, satellite images, hand lenses, and lab notebooks or journals
6	112.26(b)(6)(A)	compare solids, liquids, and gases in terms of their structure, shape, volume, and kinetic energy of atoms and molecules
6	112.26(b)(6)(C)	identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life
6	112.26(b)(6)(D)	compare the density of substances relative to various fluids
6	112.26(b)(7)(C)	identify simultaneous force pairs that are equal in magnitude and opposite in direction that result from the interactions between objects using Newton's Third Law of Motion
6	112.26(b)(8)(A)	compare and contrast gravitational, elastic, and chemical potential energies with kinetic energy
6	112.26(b)(8)(C)	explain how energy is transferred through transverse and longitudinal waves

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GRADE	CODE	STANDARD
7	112.27(b)(5)(D)	examine and model the parts of a system and their interdependence in the function of the system
7	112.27(b)(7)(C)	measure, record, and interpret an object's motion using distance-time graphs
7	112.27(b)(8)(C)	explain the relationship between temperature and the kinetic energy of the particles within a substance
7	112.27(b)(12)(B)	describe how ecosystems are sustained by the continuous flow of energy and the recycling of matter and nutrients within the biosphere
7	112.27(b)(13)(A)	identify and model the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, urinary, reproductive, integumentary, nervous, immune, and endocrine systems
7	112.27(b)(13)(D)	describe and give examples of how natural and artificial selection change the occurrence of traits in a population over generations
8	112.28(b)(7)(A)	calculate and analyze how the acceleration of an object is dependent upon the net force acting on the object and the mass of the object using Newton's Second Law of Motion
8	112.28(b)(7)(B)	investigate and describe how Newton's three laws of motion act simultaneously within systems such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches
8	112.28(b)(8)(A)	compare the characteristics of amplitude, frequency, and wavelength in transverse waves, including the electromagnetic spectrum
8	112.28(b)(8)(B)	explain the use of electromagnetic waves in applications such as radiation therapy, wireless technologies, fiber optics, microwaves, ultraviolet sterilization, astronomical observations, and X-rays
8	112.28(b)(12)(A)	explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems
8	112.28(b)(12)(B)	describe how primary and secondary ecological succession affect populations and species diversity after ecosystems are disrupted by natural events or human activity

TECHNOLOGY APPLICATIONS (COMPUTER SCIENCE)

8 STANDARDS

Based on the Texas state standards

GRADE	CODE	STANDARD
6	126.17(c)(1)(A)	decompose real-world problems into structured parts by using visual representation
6	126.17(c)(1)(E)	analyze different techniques used in debugging and apply them to an algorithm
6	126.17(c)(2)(B)	use a design process to create block-based and text-based programs that include sequences, loops, conditionals, and events to solve an everyday problem
6	126.17(c)(4)(A)	discuss how changes in technology throughout history have impacted various areas of study
7	126.18(c)(2)(B)	use a software design process to create text-based programs with nested loops that address different subproblems within a real-world context

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GRADE	CODE	STANDARD
7	126.18(c)(5)(A)	demonstrate how data can be represented in a binary number systems
8	126.19(c)(1)(E)	develop, compare, and improve algorithms for a specific task to solve a problem
8	126.19(c)(2)(A)	construct named variables with multiple data types and perform operations on their values

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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