TRUE ROBOTICS

TAKING OFF WITH PILOT

GRADES 3–5

This document lists the South Carolina 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 South Carolina Department of Education.

30	7	8	45
MATH	SCIENCE	CS	TOTAL STANDARDS

MATHEMATICS

30 STANDARDS

Based on the South Carolina state standards

GRADE	CODE	STANDARD
3	3.MGSR.1.2	Determine the perimeter of regular and irregular triangles and quadrilaterals with known side lengths.
3	3.MGSR.2.2	Use analog and digital clocks to tell and record time to 1-minute intervals, identifying AM and PM.
3	3.MGSR.2.3	Solve problems involving addition and subtraction of time intervals to determine elapsed time to the nearest half hour.
3	3.NR.2.2	Represent fractions from 0 to 1 using concrete, set, area, and linear models, and write them in standard form and word form. Limit denominators to 2, 3, 4, 6, and 8.
3	3.NR.2.6	Compare two fractions with the same numerator or same denominator based on the same size whole by reasoning about their size. Use the symbols for is equal to (=), is less than (<), or is greater than (>). Limit denominators to 2, 3, 4, 6, and 8, and fractions should be limited to fractions between 0 and 1.
3	3.PAFR.1.1	Use a strategy to compute sums and differences up to 1,000.
3	3.PAFR.1.2	Multiply whole numbers (factors 0–10) and divide whole numbers (divisors 1–10) using a model and write a corresponding equation.
3	3.PAFR.2.1	Determine the unknown whole number in a multiplication or division real-world situation relating three whole numbers when the unknown is a missing factor, product, dividend, divisor, or quotient.
3	3.PAFR.2.4	Recognize that a whole number is a multiple of each of its factors 1–10.
4	4.DPSR.1.1	Collect and organize numerical and categorical data based on observations, investigations, surveys, and experiments using tables, scaled bar graphs, or dot plots. Use titles and labels. Scales to include whole numbers, halves, and fourths.

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GRADE	CODE	STANDARD
4	4.MGSR.1.1	Apply perimeter formulas for rectangles to solve real-world situations including finding the perimeter, given the side lengths, and finding an unknown side length.
4	4.MGSR.1.2	Apply area formulas for rectangles to solve real-world situations. Use square units to label area measurements.
4	4.MGSR.2.3	Measure length to the nearest quarter inch.
4	4.MGSR.2.5	Convert customary units of length, weight, and liquid volume from a larger unit to a smaller unit, given direct comparisons of the two measurements and/or the unit equivalencies within a single system of measurement. Limit to inches, feet, yards, ounces, pounds, fluid ounces, cups, pints, quarts, and gallons when given unit equivalences.
4	4.MGSR.3.1	Classify triangles according to side length (isosceles, equilateral, scalene) and angle measure (acute, obtuse, right, equiangular).
4	4.MGSR.3.2	Classify quadrilaterals in a hierarchy based on their shared attributes.
4	4.NR.2.6	Compare fractions and mixed numbers with like and unlike denominators applying benchmark fractions such as 0, 1/2, and 1 using the symbols for is equal to (=), is less than (<), or is greater than (>). Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.
4	4.PAFR.1.1	Use a strategy to accurately compute sums and differences of whole numbers up to 100,000 and justify the sum or difference.
4	4.PAFR.1.2	Compute the product of a one-digit whole number times a multiple of 10 (from 10 to 90) and 100 (from 100 to 900) based on place value and properties of operations.
4	4.PAFR.1.3	Decompose numbers by the value of each digit to multiply whole numbers up to four digits by a one-digit number and two 2-digit whole numbers.
4	4.PAFR.1.4	Use a strategy to divide up to a four-digit dividend by a one-digit divisor, with and without remainders. Justify the calculation.
4	4.PAFR.2.4	Interpret a fraction as an equal sharing division situation, where a quantity (the numerator) is divided into equal parts (the denominator) to include real-world situations.
4	4.PAFR.3.1	Find all factor pairs for a whole number in the range 1–50. Determine whether the whole number is prime or composite.
4	4.PAFR.3.3	Solve real-world situations involving multiplicative comparison situations and write equations to represent the problem using a variable for the unknown.
4	4.PAFR.3.4	Solve two-step, real-world situations using the four operations involving whole number answers. Represent the problem using an equation with a variable as the unknown in any position.
5	5.MGSR.1.1	Solve problems involving area and perimeter of composite figures by decomposing with rectangles.
5	5.MGSR.1.2	Estimate and measure the volume of a right rectangular prism with whole-number side lengths by filling it with unit cubes.
5	5.MGSR.2.1	Given the unit equivalencies, convert within a single system of measurement from larger units to smaller units and smaller units to larger units for length, weight, liquid volume, and time. Use these conversions in solving real-world situations. Limit units to inches, feet, yards, ounces, pounds, fluid ounces, cups, pints, quarts, gallons, seconds, minutes, hours, milli-, centi-, kilo-, and.base units (grams, liters, meters)

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GRADE	CODE	STANDARD
5	5.PAFR.2.1	Use a strategy to compute sums and differences of fractions and mixed numbers with unlike denominators and justify the sum or difference to include real-world situations. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.
5	5.PAFR.2.2	Use a strategy to multiply a fraction by a fraction or a fraction by a whole to include real-world situations. Limit denominators to 2, 3, 4, 5, 6, 8, 10, and 12.

SCIENCE

7 STANDARDS

Based on the South Carolina state standards

GRADE	CODE	STANDARD
3	3-PS2-1	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
3	3-PS2-4	Develop possible solutions to a simple design problem by applying scientific ideas about magnets.
4	4-PS3-1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.
4	4-PS3-3	Ask questions and predict outcomes about the changes in energy that occur when objects collide.
4	4-PS3-4	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
5	5-PS1-3	Make observations and measurements to identify materials based on their properties.
5	5-ESS3-1	Evaluate potential solutions to problems that individual communities face in protecting the Earth's resources and environment.

COMPUTER SCIENCE AND DIGITAL LITERACY

8 STANDARDS

Based on the South Carolina state standards

GRADE	CODE	STANDARD
4	4.CS.1.2	Identify a variety of computing devices and their functionality (e.g., mobility; available applications such as word processing; communication).
4	4.DA.2.1	Select and use appropriate non-digital and digital tools for collecting data.
4	4.AP.2.2	Recognize that the same steps can be ordered in different ways to perform the same task (i.e., simple control structures).
4	4.AP.4.1	Use picture directions to design a series of steps to complete a complex task.
5	5.CS.1.2	Explain the importance of the major hardware components of the computing device (e.g., input and output devices, processors).
5	5.AP.2.1	Recognize that a sequence of steps can be repeated.
5	5.AP.2.2	Identify the result of a conditional statement (e.g., in the statement, "If it is dark, then turn on the light," the result is the lights turning on).

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GRADE	CODE	STANDARD
5	5.AP.4.1	Use a visual language to design and test a program that solves a simple task (e.g., online coding activity).

SOURCES & NOTES

- The official mathematics, science and computer science standards for South Carolina, as published by the South Carolina 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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