TRUE ROBOTICS

TAKING OFF WITH PILOT

GRADES 3–5

This document lists the Idaho 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 Idaho State Department of Education.

28	6	5	39
MATH	SCIENCE	CS	TOTAL STANDARDS

MATHEMATICS

28 STANDARDS

Based on the Idaho state standards

GRADE	CODE	STANDARD
3	3.OA.A.1	Interpret a product of whole numbers as a grouping of sets, e.g., 5 × 7 as five groups of seven objects each.
3	3.OA.A.3	Use multiplication and division within 100 to solve word problems involving equal groups, arrays, and measurements by using visual and symbolic representations, with a symbol for an unknown number.
3	3.NBT.A.2	Fluently add and subtract whole numbers within 1,000 using understanding of place value and properties of operations.
3	3.NBT.A.3	Multiply one-digit whole numbers by multiples of ten in the range 10–90 using understanding of place value and properties of operations.
3	3.NF.A.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram.
3	3.NF.A.3.d	Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize the comparisons are valid only when the two fractions refer to the same whole. Record the results of the comparisons with the symbols >, =, and <, and justify the conclusion using visual representations and/or verbal reasoning.
3	3.MD.A.1	Tell and write time to the nearest minute within the same hour and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes.
3	3.MD.B.4	Generate measurement data by measuring lengths of objects using rulers marked with halves and fourths of an inch. Record and show the data by making a line plot (dot plot), where the horizontal scale is marked off in appropriate units—whole numbers, halves, or fourths.

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GRADE	CODE	STANDARD
3	3.MD.C.7.b	Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
3	3.MD.D.8	Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
3	3.G.A.1	Understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category. Compare and classify shapes by their sides and angles. Recognize rhombi, rectangles, squares, and trapezoids as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
4	4.OA.A.1	Interpret a multiplication equation as a comparison, e.g., 35 = 5 × 7, as 35 is 5 times as many as 7. Represent verbal multiplicative comparisons as equations.
4	4.OA.B.4	Find all factor pairs for a whole number in the range 1–100.
4	4.NBT.B.4	Fluently use the standard algorithm for multi-digit whole-number addition and subtraction.
4	4.NBT.B.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers.
4	4.NBT.B.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors.
4	4.NF.A.2	Compare two fractions with different numerators and different denominators, by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2.
4	4.MD.A.2	Use the four operations to solve word problems involving measurements.
4	4.MD.A.3	Apply the area and perimeter formulas for rectangles in real-world and mathematical problems.
4	4.G.A.2	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. Recognize right triangles as a category, and identify right triangles.
5	5.NF.A.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions to produce an equivalent sum or difference of fractions with like denominators.
5	5.NF.A.2	Solve word problems involving addition and subtraction of fractions referring to the same whole (the whole can be a set of objects), including cases of unlike denominators.
5	5.NF.B.3	Interpret a fraction as division of the numerator by the denominator a/b = a ÷ b. Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers by using visual fraction models and/or equations to represent the problem.
5	5.NF.B.4.b	Find the area of a rectangle with fractional side lengths.
5	5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system. Use conversions in solving multi-step, real-world problems.

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GRADE	CODE	STANDARD
5	5.MD.C.5.a	Find the volume of a right rectangular prism with whole-number edge lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base.
5	5.MD.C.5.b	Apply the formulas V = l × w × h and V = B × h (where B stands for the area of the base) for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths, and in the context of solving real-world and mathematical problems.
5	5.MD.C.5.c	Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts. Apply this technique to solve real-world problems.

SCIENCE

6 STANDARDS

Based on the Idaho state standards

GRADE	CODE	STANDARD
3	3-PS-1.1	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
3	3-PS-1.4	Define a problem that can be solved by applying scientific ideas about magnets.
4	4-PS-1.1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.
4	4-PS-1.3	Ask questions and predict outcomes about the changes in energy that occur when objects collide.
4	4-PS-2.3	Generate and compare multiple solutions that use patterns to transfer information.
5	5-PS-1.3	Make observations and measurements to identify materials based on their properties.

COMPUTER SCIENCE

5 STANDARDS

Based on the Idaho state standards

GRADE	CODE	STANDARD
3–5	3-5.CT.1.3	Recognize and utilize the features and functions of a variety of creation or communication tools.
3–5	3-5.CT.5.2	Construct and test problem solutions using block-based and or text-based programming.
3–5	3-5.CT.5.6	Construct an algorithm to accomplish a task.
3–5	3-5.CT.5.7	Break down problems into smaller parts, identify key information, and propose solutions.
3–5	3-5.DL.3.1	Identify how computational devices impact daily life.

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SOURCES & NOTES

- The official mathematics, science and computer science standards for Idaho, as published by the Idaho State 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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