TRUE ROBOTICS

TAKING OFF WITH PILOT

GRADES 3–5

This document lists the Georgia 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 Georgia Department of Education.

30	3	10	43
MATH	SCIENCE	CS	TOTAL STANDARDS

MATHEMATICS

30 STANDARDS

Based on the Georgia state standards

GRADE	CODE	STANDARD
3	3.PAR.2.1	Fluently add and subtract within 1000 to solve problems.
3	3.PAR.3.2	Represent single digit multiplication and division facts using a variety of strategies. Explain the relationship between multiplication and division.
3	3.PAR.3.5	Use place value reasoning and properties of operations to multiply one-digit whole numbers by multiples of 10, in the range 10-90.
3	3.PAR.3.6	Solve practical, relevant problems involving multiplication and division within 100 using part-whole strategies, visual representations, and/or concrete models.
3	3.NR.4.1	Describe a unit fraction and explain how multiple copies of a unit fraction form a non-unit fraction. Use parts of a whole, parts of a set, points on a number line, distances on a number line and area models.
3	3.MDR.5.2	Tell and write time to the nearest minute and estimate time to the nearest fifteen minutes (quarter hour) from the analysis of an analog clock.
3	3.MDR.5.3	Solve meaningful problems involving elapsed time, including intervals of time to the hour, half hour, and quarter hour where the times presented are only on the hour, half hour, or quarter hour within a.m. or p.m. only.
3	3.MDR.5.4	Use rulers to measure lengths in halves and fourths (quarters) of an inch and a whole inch.
3	3.GSR.6.2	Classify, compare, and contrast polygons, with a focus on quadrilaterals, based on properties. Analyze specific 3-dimensional figures to identify and describe quadrilaterals as faces of these figures.
3	3.GSR.7.3	Discover and explain how area can be found by multiplying the dimensions of a rectangle.

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GRADE	CODE	STANDARD
3	3.GSR.8.1	Determine the perimeter of a polygon and explain that the perimeter represents the distance around a polygon. Solve problems involving perimeters of polygons.
3	3.GSR.8.2	Investigate and describe how rectangles with the same perimeter can have different areas or how rectangles with the same area can have different perimeters.
4	4.NR.2.1	Fluently add and subtract multi-digit numbers to solve practical, mathematical problems using place value understanding, properties of operations, and relationships between operations.
4	4.NR.2.2	Interpret, model, and solve problems involving multiplicative comparison.
4	4.NR.2.3	Solve relevant problems involving multiplication of a number with up to four digits by a 1-digit whole number or involving multiplication of two two-digit numbers using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
4	4.NR.2.4	Solve authentic division problems involving up to 4-digit dividends and 1-digit divisors (including whole number quotients with remainders) using strategies based on place-value understanding, properties of operations, and the relationships between operations.
4	4.PAR.3.3	Find factor pairs in the range 1–100 and find multiples of single-digit numbers up to 100.
4	4.PAR.3.4	Identify composite numbers and prime numbers and explain the relationship with the factor pairs.
4	4.NR.4.2	Compare two fractions with the same numerator or the same denominator by reasoning about their size and recognize that comparisons are valid only when the two fractions refer to the same whole.
4	4.NR.4.3	Compare two fractions with different numerators and/or different denominators by flexibly using a variety of tools and strategies and recognize that comparisons are valid only when the two fractions refer to the same whole.
4	4.MDR.6.1	Use the four operations to solve problems involving elapsed time to the nearest minute, intervals of time, metric measurements of liquid volumes, lengths, distances, and masses of objects, including problems involving fractions with like denominators, and also problems that require expressing measurements given in a larger unit in terms of a smaller unit, and expressing a smaller unit in terms of a larger unit based on the idea of equivalence.
4	4.MDR.6.3	Create dot plots to display a distribution of numerical (quantitative) measurement data.
4	4.GSR.8.2	Classify, compare, and contrast polygons based on lines of symmetry, the presence or absence of parallel or perpendicular line segments, or the presence or absence of angles of a specified size and based on side lengths.
4	4.GSR.8.3	Solve problems involving area and perimeter of composite rectangles involving whole numbers with known side lengths.
5	5.NR.3.1	Explain the meaning of a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.
5	5.NR.3.3	Model and solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators.
5	5.MDR.7.3	Convert among units within the metric system and then apply these conversions to solve multistep, practical problems.

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GRADE	CODE	STANDARD
5	5.MDR.7.4	Convert among units within relative sizes of measurement units within the customary measurement system.
5	5.GSR.8.3	Investigate volume of right rectangular prisms by packing them with unit cubes without gaps or overlaps. Then, determine the total volume to solve problems.
5	5.GSR.8.4	Discover and explain how the volume of a right rectangular prism can be found by multiplying the area of the base times the height to solve authentic, mathematical problems.

SCIENCE

3 STANDARDS

Based on the Georgia state standards

GRADE	CODE	STANDARD
3	S3E1.a	Ask questions and analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests.
4	S4P3.a	Plan and carry out an investigation on the effects of balanced and unbalanced forces on an object and communicate the results.
5	S5P2.c	Plan and carry out investigations on common materials to determine if they are insulators or conductors of electricity.

COMPUTER SCIENCE

10 STANDARDS

Based on the Georgia state standards

GRADE	CODE	STANDARD
3–5	CSS.EL.3-5.1	Identify the features of current technologies and use that knowledge to understand emerging technologies.
3–5	CSS.EL.3-5.1.1	Describe how internal and external parts of computing devices function to form a system.
3–5	CSS.EL.3-5.1.4	Develop and apply keyboarding skills, utilizing current technology.
3–5	CSS.IDC.3.5.4	Use a variety of technologies within a design process to identify and solve problems by creating new, useful, or imaginative solutions.
3–5	CSS.CT.3-5.5	Develop and employ strategies for understanding and solving problems in ways that use the power of technological methods to develop and test solutions.
3–5	CSS.CT.3-5.5.1	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
3–5	CSS.CT.3-5.5.3	Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.
3–5	CSS.CT.3-5.5.4	Create programs that include sequences, events, loops, conditionals, and variables.
3	CSS.IDC.3.5.4.1	Explore and practice a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems.
3	CSS.RR.3-5.8.3	Use information from multiple sources to identify real-world issues and create solutions.

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SOURCES & NOTES

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- 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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