

## Third – Fifth Grade Computer Science Standards

### Introduction to Indiana’s Academic Standards for Computer Science

Indiana’s Academic Standards for Computer Science allows for students to be prepared in the ever-changing computer science areas providing inquiry-based, hands-on experiences based on two components: Concepts and Practices. These standards are to be implemented in the 2016-2017 school year. The expectation is for students to work through the standards in multi-subject areas. As students move through grade levels, they will work with and experience the standards at those grade bands (K-2, 3-5, and 6-8). The standards are based on the five core concepts: Computing Devices and Systems, Networking and Communication, Data and Information, Programs and Algorithms, Impact and Culture.

<b>Data and Information (DI)</b>
<b>3-5.DI.1</b> Understand and use the basic steps in algorithmic problem solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).
<b>3-5.DI.2</b> Develop a simple understanding of an algorithm (e.g., search, sequence of events, or sorting) using computer-free exercises.
<b>3-5.DI.3</b> Demonstrate how a string of bits can be used to represent alphanumeric information and how 1's and 0's represent information.
<b>3-5.DI.4</b> Describe how a simulation can be used to solve a problem.
<b>3-5.DI.5</b> Understand the connections between computer science and other fields.

<b>Computing Devices and Systems (CD)</b>
<b>3-5.CD.1</b> Demonstrate proficiency with keyboards and other input and output devices.
<b>3-5.CD.2</b> Understand the pervasiveness of computers and computing in daily life (e.g., voicemail, downloading videos and audio files, microwave ovens, thermostats, wireless Internet, mobile computing devices, GPS systems).
<b>3-5.CD.3</b> Apply troubleshooting strategies for identifying simple hardware and software problems that may occur during use.
<b>3-5.CD.4</b> Recognize that computers model intelligent behavior (as found in robotics, speech and language recognition, and computer animation).

<b>Programs and Algorithms (PA)</b>
<b>3-5.PA.1</b> Use technology resources (e.g., calculators, data collection probes, mobile devices, videos, educational software, and web tools) for problem-solving and self-directed learning, and general-purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, facilitate learning, and individual/collaborative writing, communication, and publishing activities.
<b>3-5.PA.2</b> Use digital tools to gather, manipulate, and modify data for use by a program.
<b>3-5.PA.3</b> Implement problem solutions using a block-based visual programming language.

<b>Networking and Communication (NC)</b>
<b>3-5.NC.1</b> Use online resources (e.g., email, online discussions, collaborative web environments) to participate in collaborative problem-solving activities for the purpose of developing solutions or products.

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<b>3-5.NC.2</b> Use productivity technology tools (e.g., word processing, spreadsheet, presentation software) for individual and collaborative writing, communication, and publishing activities.
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<b>Impact and Culture (IC)</b>
<b>3-5.IC.1</b> Discuss basic issues related to responsible use of technology and information, and the consequences of inappropriate use.
<b>3-5.IC.2</b> Identify the impact of technology (e.g., social networking, cyber bullying, mobile computing and communication, web technologies, cyber security, and virtualization) on personal life and society.
<b>3-5.IC.3</b> Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources.
<b>3-5.IC.4</b> Understand ethical issues that relate to computers and networks (e.g., equity of access, security, privacy, copyright, and intellectual property).