# Mount Pleasant Central School District

## 6th Grade Technology, STEM

***We believe students should have a rich, well-balanced technology environment to maximize their learning. Our vision is to provide students with real-world opportunities in technology. We are committed to developing creative thinkers, effective communicators, collaborators, problem solvers and students who can critically evaluate information and media.***

| Unit Title | Month | Content | Vocabulary | Standards | Skills | Big Ideas | Assessments |
|---|---|---|---|---|---|---|---|
| **Getting Started with Computer Science** | September | - students will learn what computer science is and how to work collaboratively through pair programming. These initial activities will also teach students about persistence by developing a growth mindset, examine diversity in computer science and introduce Scratch as a tool. | - technology, program, sequence | Describe computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices. | - Recognize technologies, how and whom they influence | growth mindset, examine diversity in computer science and introduce Scratch as a tool | Self-assessment |
| **Motion in Scratch (Events)** | September | - Students will be introduced to the fundamental CS concepts of events, | - event, trigger, broadcast | Systematically test and refine programs using a range of test cases. | - use events to trigger motion; use XY coordinate grid for location | Events, responses, sequences, parallelism, and initialization | Students will design creative motion-based projects in Scratch |

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| | | responses, sequences, parallelism, and initialization. They will learn how to move sprites around the Stage using the XY coordinate grid, and by broadcasting and receiving messages through code blocks. Students will explore sequenced and parallel responses as well as the importance of initialization through their programming activities. | | | | | that focus on using event blocks to trigger responses from their sprites. |

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| **Animation (loops)** | October | - In this unit, students will be introduced to loops. Students will work through a series of animation projects in Scratch that focus on making the distinction between both bitmap and vector graphics, and sprites and backgrounds, while also learning how to work with sprite costumes. | - loop, sprite, animation | Systematically test and refine programs using a range of test cases. Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. | - use loops to iterate code | Loops repeat code. | Students will demonstrate their understanding of these concepts with the completion of an animation project. |
| **Games (Conditions)** | November | - Students will be introduced to booleans and conditionals in this | - boolean, conditional, IF, IF-ELSE | Systematically test and refine programs using a range of test cases. Decompose | - use of IF and IF–ELSE statements. | Programs perform differently based on conditions | Development of a game which includes conditions |

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| | | unit. Using these concepts, students will create programs that perform different tasks based on various conditions, or parameters, through the use of IF and IF–ELSE statements. These Scratch projects are game-based and will ask students to focus on considering how users will interact with their games through the use of the sensing category of code blocks. | | problems and subproblems into parts to facilitate the design, implementation, and review of programs. | | | |
| **Robotics** | December / | - Students will be | - Systems, | Decompose a | - reading technical | Robots respond to | Construction and |

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| | January | introduced to VEX IQ robots. They will be taught how to read technical drawings and follow step by step instructions. Students will also write code to direct their robots through real world design challenges. | subsystems, motors, sensors, input, control, feedback, output | problem into smaller named tasks, some of which can themselves be decomposed into smaller steps. | drawings and writing code to solve real world problems | code exactly as it is written. | programming of a VEX IQ Robot |
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