Intro to Computer Science - Unit 8 - Object Oriented Concepts and Culminating Activity

Unit Focus

In this final unit, students will gain an appreciation for object oriented programming concepts including inheritance, encapsulation, and polymorphism. Students will also have the opportunity to apply the knowledge they have learned throughout the course in a culminating programming activity.

Stage 1: Desired Results - Key Understandings

Standard(s)

Common Core
Mathematics: 9-12

- Make sense of problems and persevere in solving them. (CCSS.MATH.MP.1)
- Reason abstractly and quantitatively. (CCSS.MATH.MP.2)
- Model with mathematics. (CCSS.MATH.MP.4)
- Use appropriate tools strategically. (CCSS.MATH.MP.5)

Madison Public Schools Profile of a Graduate

- Analyzing: Examining information/data/ evidence from multiple sources to identify possible underlying assumptions, patterns, and relationships in order to make inferences. (POG.1.2)

Transfer

Students will be able to independently use their learning to...
T1 model relationships among quantities.
T2 use appropriate tools to make reaching solutions more efficient, accessible and accurate.
T3 apply familiar mathematical concepts to a new problem or apply a new concept to rework a familiar problem.

Meaning

Understanding(s)	Essential Question(s)
Students will understand that... **U1** Computer Scientists flexibly use different tools, strategies, and operations to build conceptual knowledge or solve problems. **U2** Computer Scientists use models to represent and make meaning of quantitative relationships. **U3** Computer Scientists identify relevant tools, strategies, relationships, and/or information in order to draw conclusions.	*Students will keep considering...* **Q1** What math tools/models/ strategies can I use to solve the problem? **Q2** What have I seen in the past that might help me now? **Q3** How do I model a real world situation with computer programming?

Acquisition of Knowledge and Skill

Knowledge	Skill(s)
Students will know... **K1** what is meant by object oriented programming **K2** how to model a real world situation using objects **K3** how to derive a class from a base class **K4** Vocabulary: class, object, instantiate, instance, constructor, base (super) class, derived class, inheritance, polymorphism, encapsulation, method, property, attribute	*Students will be skilled at...* **S1** creating class files **S2** instantiating instances of a class **S3** writing methods and properties