Week 8: Computer Hardware and Software
Learning Objectives:

- Demonstrate an understanding of concepts underlying hardware, software and connectivity.
- Describe how computer and multimedia technology systems work.

Goals:

- Identify basic hardware components
- Evaluate computer products based on hardware components, price, and intended use.
- Compare and contrast the functions within MS Office software programs.

Essential Questions:

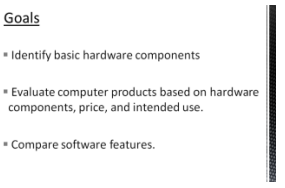
1. What is in a computer and how do the components work together to perform actions?
2. What should be taken into consideration when choosing between different technology systems and software programs?

Enduring Understandings:

- Basic understanding of computer hardware components will help a consumer to make better choices.
- Knowing what software is capable of will enhance the user's ability to create with it.

Vocabulary:
Resolution: the number of pixels wide by the number of pixels tall to create an image (common resolutions are 640x480, 800x600, 1024x768, 1280x1024)
pixel: a square of color that is placed with others to create a picture
Input device: sends a message to the computer (keyboard, mouse, Microphone, Scanner)
Processor: controls how fast the computer performs actions (measured in mega-hertz)
Bus: send data to other parts of the computer
Hard Drive: Long term memory
RAM (Random Access Memory): Short term memory
Output Device: Sends information from the computer to us (Speakers, Printer)
Storage Devices: holds files (Flash Drive, External Hard Drive, CD)
Activities:
Entrance Questions:

1. How does a computer work?
2. What is in a computer?
3. Describe something you could create using MS Word and something you could create using Excel.

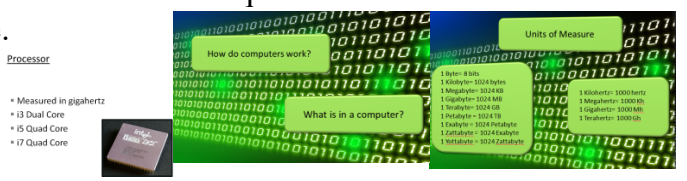



Introduction:

1. Introduce this week's topic and goals.

Computer Components (10 Min.):

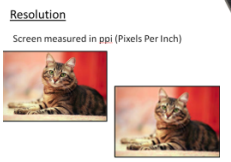
1. Review some student responses from the entrance ticket questions.
2. Discuss binary and Units of Measure.
    - A bit is one binary number. Computers group binary numbers into groups of 8 to communicate
    - Hertz is a unit of speed.




3. Discuss processors.
    - Dual and Quad Core allow for more tasks to be processed at once.
    - Each processor is tested to its max capacity to determine its speed. Not all

processors from the same generation have the same speed.
- The higher the speed the better (Example 3.5 GHz).

4. Discuss memory devices.
   - Solid state hard drives are less likely to be damaged.
   - RAM (Random Access Memory)
5. Discuss resolution.
   - Pixels are a group of lights that create a colored space.
   - Common resolutions are 640x480, 800x600, 1024x768, 1280x1024

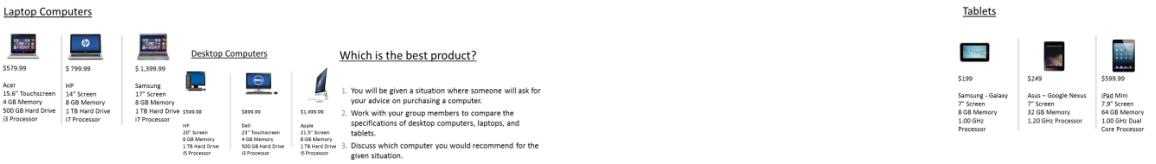



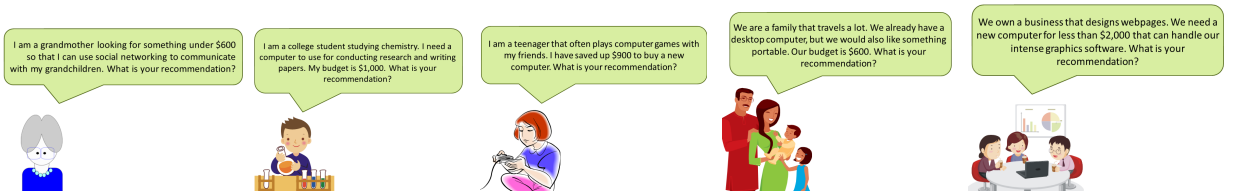

Which is the best product? (25 min.)

*Overview of activity:*

*Students will work with group members to decide which product would be best for a certain situation. Each group will be given the specifications of three desktop computers, three laptop computers, and three tablets. They will also be given a situation describing how a person intends to use the computer and what their budget is.*

1. Ask the students to read the activity directions silently first. Then, explain that they will work in a group to determine which product would be the best for the situation they are given.
2. Take a look at the different products together and ask students to point out some differences to get them started.
3. Place students in their groups and give them 10 min. to discuss their recommendation.
4. Bring students back to the main room and have them explain why they choose their recommendation for that situation.



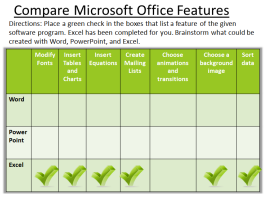




Compare Microsoft Office Features (15 min.):

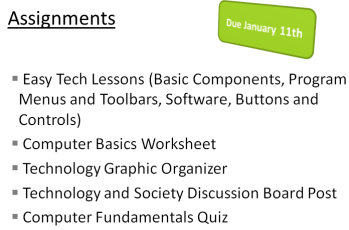
*Activity Overview:*

*Students will place green checks to show what features are available with MS Word, PowerPoint, and Excel. Then they will brainstorm what could be created with each program.*

1. Ask the students to read the directions silently. Then, discuss the directions together.
2. Send students into breakout rooms with the chart to complete the activity for five minutes.
3. Bring students back. Complete the chart together and discuss the ideas they brainstormed with their group.




Homework:




Show how images look in different resolutions.

Assessment:
Formative Exit Ticket:

1. Select the resolution that will yield the clearest image.
    b. 640 x 480
    c. 1024x768
    d. 1280x1024
2. Select the amount that would provide the least amount of memory storage.
    a. 16 GB
    b. 256 MB
    c. 1 TB
3. Select the Microsoft Office program that would be best to use when manipulating data.
    a. Word
    b. PowerPoint
    c. Excel

Summative:

- Computer Basics Worksheet: Students will demonstrate their knowledge of hardware components.
- Computer Fundamentals Quiz: Students will demonstrate their knowledge of software that is commonly used in the class.