

***ELA= Standards found in English Language Arts (SL= Speaking and Listening, RI=Reading Informational text, L = Language)**

**** LM= Standards found in Library Media (LM=Media Literacy)**

*****CS, NI= Computer Science Standards**

Materials Needed: An account for your child at [Scratch - Imagine, Program, Share \(mit.edu\)](#), Scratch Coding Cards ([here](#)), and Coding for Kids: Scratch ([here](#)), an account at canva.com, and a software that allows you to make charts and graphs (i.e. Microsoft Word)

Computer Science Lesson 1

Standards Taught: Review, 4.AP.2

Materials:	Preparation:	Implementing the Lesson:
Scratch App and an Account for your child		<p>Allow your child to play on Scratch. Give them time to experiment with and remind themselves of how different and aspects work. Encourage your child to add the things they remember from last year to projects.</p> <p>Remind your child of the importance of checking battery levels, charging the device as needed, ensuring power cords are connected correctly, turning the device on and off to reboot if needed, and closing and re-opening the app when appropriate.</p>

Computer Science Lesson 2

Standards Taught: 4.AP.1, 4.AP.2, 4.AP.3, 4.AP.4

Materials:	Preparation:	Implementing the Lesson:
Scratch App Scratch Cards: Jumping Game Cards		Review the following terms with your child: algorithm, program, code, event, sequence. Then, ask them to program the game as shown on the cards.

Computer Science Lesson 3

Standards Taught: 4.AP.1, 4.AP.2, 4.AP.3, 4.AP.4

Materials:	Preparation:	Implementing the Lesson:
Scratch App Scratch Cards: Animate a Character Cards		Review the following terms with your child: troubleshooting, debug. Then, ask them to program the game as shown on the cards. Encourage your child to debug their program as needed.

Computer Science Lesson 4

Standards Taught: 4.AP.1, 4.AP.2, 4.AP.3, 4.AP.4

Materials:	Preparation:	Implementing the Lesson:
Scratch App Scratch Cards: Make Music Cards		Review the following terms with your child: conditionals and loops. Then, ask them to program the game as shown on the cards. Encourage your child to add conditionals to the program as they see fit. Ask them to ensure the music is on a loop.

Computer Science Lesson 5

Standards Taught: 4.AP.1, 4.AP.2, 4.AP.3, 4.AP.4

Materials:	Preparation:	Implementing the Lesson:
Scratch App Scratch Cards: Catch Game Cards		Ask your child to program the game as shown on the cards.

Computer Science Lesson 6

Standards Taught: 4.AP.1, 4.AP.2, 4.AP.3, 4.AP.4

Materials:

Scratch App

Scratch Cards:
Chase Game
Cards

Preparation:

Implementing the Lesson:

Ask your child to program the game as shown on the cards. Then, ask them to explain the process they used to create the game and the elements within the algorithm.

Computer Science Lesson 7

Standards Taught: 4.CS.1, 4.NI.1

Materials:	Preparation:	Implementing the Lesson:
		<p>Explain to your child that computers and electronic devices have both hardware (physical equipment such as keyboards, the mouse, speakers, or the monitor) and software (programs and apps that tell the computer how to use certain programs and codes). Working together, these allow us to complete different tasks, connect with others around the world, and enjoy recreational games.</p> <p>Log your child into an email account. Then, ask them to send an email to another account you have access to. On a different device, log into the second email account. Ask your child how the information moved from one device to another.</p> <p>Point out that the information presented on both devices is exactly the same, though the computer and tablet/phone are not connected by wires or other hardware. Explain that these programs are on the internet, a network of computers that are connected and can communicate with each other. Briefly explain that there is a series of cables under the oceans that connect computers around the world with each other, allowing them to access the same information at the same time from servers. The computer that you created the email on broke the information from it down into small pieces, called packets. These packets were then transmitted through the internet, either through physical connections or wireless, and reassembled, where the second device was able to read them.</p> <p>Next, explain that computers work through a process of input, processing, and output capabilities. Input means the information and data we into the network. For example, someone used their own computer to program, or build, the game, app, or website your child enjoys so much. The program is a set of rules that tells the computer how to react to different input from those who play it. We often use a keyboard and a mouse to input things into a computer or network. Computers then take that input and process it, or change it into something that all computers understand. This works a little like a translator, changing the input into a new language that computers share. Finally, output is simply the computer sending the processed output to where a human can see it. For example, words you type on the keyboard show up on the screen, a picture added to a website is shown when someone accesses that webpage, or the arrow on the screen moves when you wiggle the mouse. Without output, we would not be able to see what we are doing on the computer and neither would others.</p>

Computer Science Lesson 8

Standards Taught: 4.CT.1

Materials:	Preparation:	Implementing the Lesson:
Scratch Account		Ask your child to program a new game of their own making. Then, ask them to explain the algorithm to you. Encourage your child to debug the program and ensure it works well. Then, discuss each element. Ask your child if the game could work the same way without individual elements and work together to eliminate excessive aspects.

Computer Science Lesson 9

Standards Taught: 4.AP.1, 4.AP.2, 4.AP.3, 4.AP.4

Materials:	Preparation:	Implementing the Lesson:
Scratch or Scratch Jr. App Friend or Sibling		Over the next four weeks, ask your child to complete a program while working with a friend or sibling. This week, they should plan the characters, setting, and plot of their program as well as what they want it to accomplish. Ask them to record this information on a blank paper, which they will save for next week.

Computer Science Lessons 10-11

Standards Taught: 4.AP.1, 4.AP.2, 4.AP.3, 4.AP.4

Materials:	Preparation:	Implementing the Lesson:
Scratch or Scratch Jr. App Friend or Sibling		Using the plans from the previous lesson, allow your child and their friend or sibling to begin coding their program. Encourage them to build together, debug, and troubleshoot until their program is exactly as they planned. This part of the lesson should take two weeks.

Computer Science Lesson 12

Standards Taught: 4.AP.1, 4.AP.2, 4.AP.3, 4.AP.4

Materials:	Preparation:	Implementing the Lesson:
Scratch or Scratch Jr. App Friend or Sibling		Allow your child and their friend/sibling to present their program to others. This may include friends or family members. Encourage them to discuss the process of building, debugging, and working together on a program. Finally, encourage your child to credit their friend/sibling with the parts they worked on as well as creators of any program pieces that were created by others.

Computer Science Lesson 13

Standards Taught: Review

Materials:	Preparation:	Implementing the Lesson:
Scratch App		Take time to review any concept your child is struggling with in computer science so far. Alternatively, allow your child time to explore and experiment with Scratch or keyboarding skills.

Computer Science Lesson 14

Standards Taught: 4.DA.1, 4.DA.2

Materials:	Preparation:	Implementing the Lesson:
Microsoft Word or other software capable of creating a bar or picture graph	Prepare a bar graph showing a sample of 30 children and their favorite pets with the following data: 10 children like dogs, 5 children like cats, 11 children like fish, and 4 children like hamsters	Show your child the graph. Explain that it shows data (or information you've collected) in a picture form. This graph shows a classroom of children and their favorite animals. Ask your child to identify the most and least popular animals in the class. Next, explain that this is a second grade class. Ask them if you were to interview all three second grade classes in the same school, what do you think would be the most and least popular animals? Why?

Computer Science Lesson 15

Standards Taught: 4.DA.1, 4.DA.2

Materials:

Microsoft Word or other software capable of creating a bar or picture graph

Preparation:

Implementing the Lesson:

Using the graph from the previous lesson, teach your child how to create, save, and make changes to the graph within the software. Allow them to practice these skills as well.

Computer Science Lesson 16

Standards Taught: 4.DA.1, 4.DA.2

Materials:	Preparation:	Implementing the Lesson:
<p>Blank paper</p> <p>A group of at least 20 people your child can survey</p> <p>Microsoft Word or other software capable of creating a bar or picture graph</p>		<p>Explain to your child that today they will be collecting their own data. Ask them to consider what they would like to know about a group of people. Examples include favorite color, shoe size, height, favorite food, favorite book, etc. Give your child the blank paper. Help them write a title for their survey at the top. Then, allow them to interview the group, tracking and recording data as they go. Encourage them to create categories that match answers and add a tally mark for each person that chooses that category. At the end, ask your child to count the total tally marks for each category.</p> <p>Using the data collected, help your child build, modify, save, and print a graph representing their findings.</p>

Computer Science Lesson 17

Standards Taught: LM.ML.11.1, LM.ML.11.2, LM.ML.12.1, LM.ML.12.2, LM.ML.13.1, LM.ML.13.2, LM.ML.13.2

Materials:	Preparation:	Implementing the Lesson:
Canva.com or a video camera		<p>Ask your child to review what they learned last year about advertisements. Discuss the fact that makers of advertisements want to convince you to do or purchase something. The message in the ad is designed to motivate you. Remind your child that different methods (e.g. emotional, celebrity, bandwagon, etc.) are used to do this. Discuss ways to decide whether or not an ad is being truthful and accurate.</p> <p>Then, ask your child to design their own ad for a product they use daily. This may be a social media post, a flyer, a video or radio commercial, or a jingle. Give them time to plan, produce, and polish their ad. Discuss content, audience, length, and intent, helping them modify as needed.</p>

Computer Science Lesson 18

Standards Taught: 4.IC.1, 4.IC.2

Materials:	Preparation:	Implementing the Lesson:
		<p>Show your child an older and newer model of the same type of technology. Examples include: a typewriter and computer, a floppy disk or CD and jump drive, a landline phone and cell phone, or an old cell phone and a new. Ask them to point out the differences in these two technologies. Explain that they both have the same purpose, though the newer one is more efficient at its job.</p> <p>Discuss the changes this technology has brought to society and cultural practices. Examples may include: faster communication, better notetaking, more records, more information saved and shared, easier access to information, stored rather than remembered phone numbers, communication in more areas, faster processing times, etc.</p> <p>Finally, discuss challenges some may experience when trying to access this technology. Examples may include: financial limits, physical differences such as blindness, deafness, or limited use of hands, lack of electricity, lack of resources needed to build technology, etc. Discuss ideas for overcoming these challenges. Then, help your child research work that has already been accomplished in that area.</p>