Functions in Minecraft

Swimming Fish with Sprite Lab

Alien Dance Party with Sprite Lab

Drawing with Loops

Nested Loops in Maze

The Power of Words

Common sense education[®]

GRADE 3: POWER OF WORDS

Words Can Hurt 🗧

NAME

DATE

Directions

Read the story below and then work with a partner to answer the questions that follow.

Rani loves a website where she can play in a virtual world and chat with other players. Lately, Rani has been playing in a new area. She started receiving some mean messages from the other players.



1. How would you feel if you were Rani reading those messages? I would feel ...

2. Why do you think people send these kinds of messages to people they don't know? People send these kinds of messages because ...

3. What advice would you give Rani to respond to this situation? Remember S-T-O-P.





Envelope Variables

Variables in Envelopes

Robot Variables Worksheet

Think about a robot. What is it supposed to do? What does it look like?

Draw your robot on paper. When you're done, answer the three questions below on separate pieces of paper, then put them in the correct envelopes.

robotName numUnitsTall purpose 1. My robot's name is ______robotName_____ 2. My robot's height is ______numUnitsTall_____ (don't forget units!)

3. My robot's primary purpose is _____purpose_____

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Variables in Envelopes

Robot Variables Worksheet

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numUnitsTall	purpose
	numUnitsTall



1. My robot's name is ______Elijah_____ robotName = Elijah

2. My robot's height is _____27 feet_____ numUnitsTall = 27 feet

3. My robot's primary purpose is <u>being awesome</u> purpose = being awesome

Name(s)	Period Date	
	Variables in Envelopes	CO
	Variables Assessment Worksheet	DE

Variables Assessment Worksheet

Given the value of each variable envelope, fill in the blanks to finish the sentence.



Variable envelopes can also contain number values. Use these envelopes and the provided equations to figure out the magic numbers below.



0

Variables in Envelopes

Variables Assessment Worksheet

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Variables with Artist

Changing Variables with Bee

Changing Variables with Artist

Simulating Experiments

Running Simulations

Collect Data

Let's figure out who's the best apple collector, the elephant or the hippo. Run the simulation on the first bubble of this lesson *at least* 5 times and record how many apples each animal collected and how long it took to collect all of the apples

	Run #1	Run #2	Run #3	Run #4	Run #5
Elephant					
Нірро					
Time					

Line Graph

Using a different color for each animal, draw a line graph that tracks how many apples each animal collected during each of your five simulations.



Modifying Simulations

Modify	and	Predict	
--------	-----	---------	--

Now that you have some data about his simulation, it's time to start experimenting. On the second bubble of this lesson you will be able to modify the variables that control this simulation. Pick a variable to change and predict how that will change your data.

Variable to modify:

Predicted outcome:

Collecting More Data

Run your modified simulation at least five times and collect the data below

	Run #1	Run #2	Run #3	Run #4	Run #5
Elephant					
Нірро					
Time					

Visualize Your Data

Choose a way to visualize the data you collected to see if your prediction was accurate.



AI For Oceans

The Internet

Directions:

- 1) Create your own DNS table, similar to what is shown here.
- 2) Have the class help you fill in the blank spots in the table. Pick your favorite URLs and find their IP addresses using a site like www.getip.com.
- 3) Divide into groups of 3 to 5.
- 4) Assign each group an IP address from the table, and each person in the group a position:
 - * The Message Writer

* The Return Internet (Optional)* The Message Receiver (Optional)

- * The Internet
- * The Server (carries the IP Address)
- 5) Each group will draw an IP address Card and a Delivery Card to find out where their message is going and what their method of message delivery (Wi-Fi, Cable/DSL, or Fiber Optic Cable) will be.
- 6) The Message Writer will craft a note to send to the server.
- 7) The Internet will rip the message up into small pieces called packets, then deliver each packet one at a time to the Server with the IP address that was drawn from the IP address Card stack.
- 8) The Server will make sure that the message arrives in order, then will send each packet off one at a time with the Return Internet (can be the same person or different person than the original Internet).
- 9) The Return Internet will deliver each piece back to the Message Receiver (can be the same person or different person than the Message Writer) and put it back together.
- 10) The Message Receiver will wait for all of the pieces to arrive, then read the message to be sure it arrived correctly!

Rules:

- 1) The Internet must rip the message into exactly four packets.
- 2) If the Internet drops a packet, they have to pick it up and go back to the start to deliver it again.
- 3) The server has to wait for all of the message pieces to arrive before it can begin to send the message along.



Sample of DNS Table

#	URL	IP ADDRESS
1	www.code.org	
2		
3		
4		
5		

Sample of Classroom Group Layout During Game Play





These cards correlate with numbered entries in the DNS Table. (You should make one distinct row for each group.)





These cards correlate with different methods of delivering messages over the Internet.

(Print enough to have once card for each group.)



Types:

- Wi-Fi: Convenient, but spotty. Wi-Fi doesn't require cables, but since the signal bounces all over the place, packets can get lost pretty easily. Simulation: Internet must carry each packet on their shoulder (no hands).
- 2) Cable/DSL: Fairly good at delivering messages, but you must be connected to a wire.

Simulation: Internet must carry each packet on the back of one hand and must keep the other hand touching a wall, desk, chair, or the floor at all times.

3) Fiber Optic Cable: The best at delivering messages, but you must be connected to a wire.

Simulation: Internet can carry packets in hand, but must keep the other hand touching a wall, desk, chair, or the floor at all times.

The Internet

0

How the Internet Does What It Does

The DNS has gone out, and now you're in charge of delivering information all over the Internet! Use the DNS Look-up Table to figure out where each packet is supposed to go.

DNS Look-Up Table

#	URL	IP ADDRESS
1	www.code.org	54.243.71.82
2	csisfun.com	100.42.50.110
3	thinkersmith.org	64.14.68.10
4	light-bot.com	54.209.61.132
5	khanAcademy.org	23.23.224.106



The Internet



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Draw a line from each packet to the server where it is supposed to be delivered. The first one has been done for you.



This message is being delivered from someone at code.org to someone at thinkersmith.org. Draw the path that the message is likely to take.



For Loop Fun

TEACHER KEY



Name(s) Date	
For Loop Fun	C O
Number Lines and Score Sheet	D E

Directions:

- Use the number lines to trace the "for loop" for each turn
 - Start at the starting value of X
 - Count down the number line, circling the numbers at the correct step
 - Stop when you get to the stopping value
- Add all of the circled values to get the score for your round
- Best 2 out of 3 Wins





For Loop Fun

Number Lines and Score Sheet

C O D E

SAMPLE



Name(s)	Period	Date

For Loop Fun

Assessment Worksheet



Below, you will find three rounds of the For Loop Game, along with what each player rolled during their turn. Fill out the number lines and tally the scores for each round. Who won the game?



For Loops with Bee

For Loops with Artist

Behaviors in Sprite Lab

Virtual Pet with Sprite Lab

End of Course Project



The Design Process



The Design Process

Designing software means solving lots of little problems, all the time. The main problem in software design is what to create in the first place.

This process is useful for all kinds of things, but we are going to focus on using it for app design.

- Define
 - What kind of app would you like to create?
 - What are your constraints?
 - What does success look like?
- Prepare
 - Brainstorm / research possible elements
 - Compare pros and cons
 - Make a plan
- **Try**
 - Put your plan into action
- Reflect
 - How do your results compare to the goals you set while defining the app?
 - What can you learn from this or do better next time?
 - What new problems have you discovered?

What it Looks Like

Over the course of the next several weeks, you will have the opportunity to experiment with some existing games and design your own game based off of what you have learned. After creating your game, you will get the chance to present it to others and receive feedback. These steps are all critically important in the software industry, and getting practice with the elements of the design process will help you create better products more efficiently. Here is what the coming weeks will hold as we learn more about the design process.

1. Define & Prepare

- Play existing games to get ideas and understand limitations
- Brainstorm and plan your new or modified app
- 2. Try
 - Follow your plan to build an app

3. Reflect & Edit

• Swap apps with another group to help make your projects better

4. Present

Show off your final product!





Use this worksheet to make sure you are following the right steps to get your final project completed correctly and on time. If more space is needed for answers, you can use the back of the paper.

Day 1: Define & Prepare

Time to plan the details of your final project!

Section A: Determine your project style				
1) What type of project will you be creating?	Sprite Lab (skip section B)	or	Artist (skip section C)	
2) Do you want this to be a showcase piece or an interactive game?	Showcase Piece (skip section D)	or	Interactive App (skip section E)	
3) Is your project a remix or brand new? (If remix, add URL of original)				
4) Describe in three to five sentences what your project will be.				

Section B: Artist Project

1) Will your drawing be a planned, detailed image which is the same each time, or change each time it's run?	
2) If your drawing stays the same each time it's run, what is the design you are trying to build, and why does it make an interesting project? (More room on back of sheet.)	





Final Project Design Worksheet

C O D E

Section C: Sprite Lab Project / Other

1) How many characters will your game have?	
2) Will your app be a story that plays the same way each time it is run, or is it meant to change each time?	
3) If your app is a story that runs the same way each time, describe the story it will be telling and the scene where it will take place.	
4) If your app is meant to change each time it is run, describe why it changes and how the program will make that happen.	





Section D: Interactive App

1) In what way does your app require audience interaction?	
2) For this type of app, you must use at least two of these suggested items.Circle the items you think you will use and describe what you might do with them.(5th grade concepts in red)	 Random Conditionals with both `if` and `else` Nested Loops Functions Variables For Loops

Section E: Showcase Piece

 For this type of app, you must use at least two of these suggested items. Circle the items you think you will use and describe what you might do with them. 	 Random Functions Nested Loops Variables For Loops



Day 2: Try

Coding day! Be sure to refer back to your table from day 1 to make sure your finished product represents the project that you said you were going to make.

Section F: What is going well?

1) What parts of your project are turning out just the way you thought they would?	
2) What are you learning about the concepts or blocks that you're using?	

Section G: What is not going well?

1) Is there anything that you planned to do that you needed to change? Why did you need to change it?	
2) Are there any blocks or concepts that you don't understand how to use? Which ones?	





Day 3: Reflect and Edit

Time to make your project the best it can be. Pass this sheet to a classmate, then have them try your app and fill out the boxes below. Your classmates will have 20 minutes to review your app, then you will have the rest of the class period to fix any issues that they found.

Share your project URL:

Section H: The app in general

1) What do you like about this app?	
2) Is there anything about this app you don't understand?	
3) Name two things you might change about this app if you were the one creating it.	





Section I: Assessing the app

1) Does the app match the description from day 1?	
2) Does the app use at least 2 of the concepts from the required category?	
3) Does the app feel like it was well-planned?	



Day 4: Present

Great computer scientists need to be able to show off their accomplishments. It's time to present your work.

Share your project URL:

Section J: Describe your work

1) Why did you decide to create this specific project?	
2) What does your project do?	
3) Which of the required ideas did you use, and how did you use them?	





Section K: Reflect on the process

1) What did you learn in creating this project?	
2) What was the most challenging part about this experience? How did you overcome that challenge?	
3) What part of this experience was the most fun?	
4) Describe a time that something did not go as planned and you had to be persistent to get everything to work out in the end.	



Final Project Design Worksheet



5) Is there anything that you would try to change if you had extra time?	
6) How well did you and your partner/team work together? Were you able to make compromises in order to end up with a project that you were both happy with?	
7) What else do you want people to know about your project?	