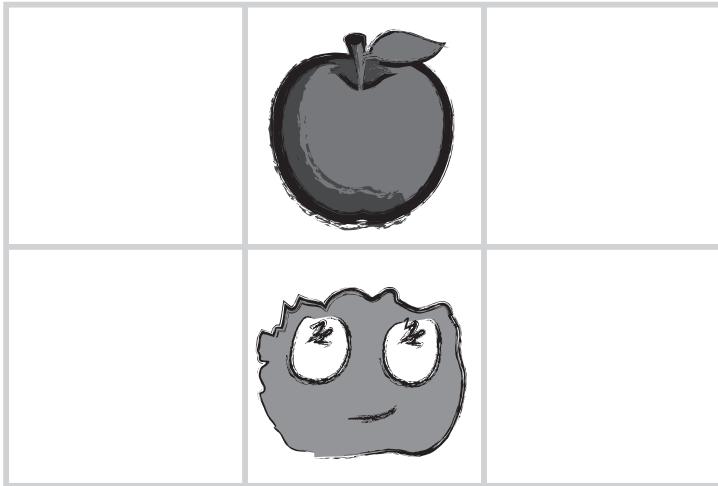


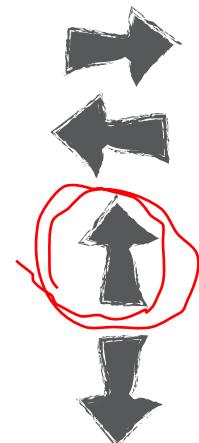
1

# Happy Map 1

C  
O  
D  
E



Which way should the Flurb step to get to the fruit?



Revision 140428.1a

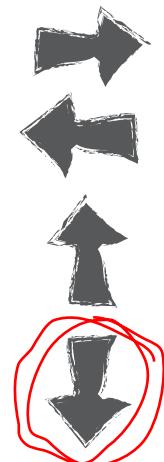
2

# Happy Map 2

C  
O  
D  
E



Which way should the Flurb step to get to the fruit?

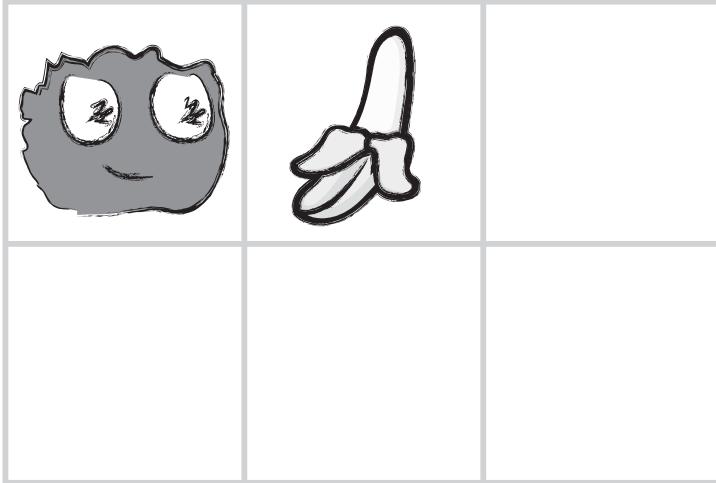


Revision 140428.1a

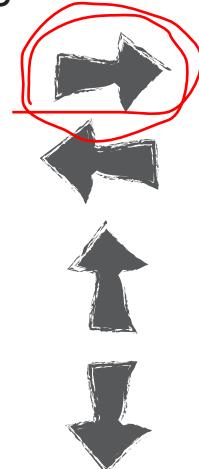
3

# Happy Map 3

C  
O  
D  
E



Which way should the Flurb step to get to the fruit?

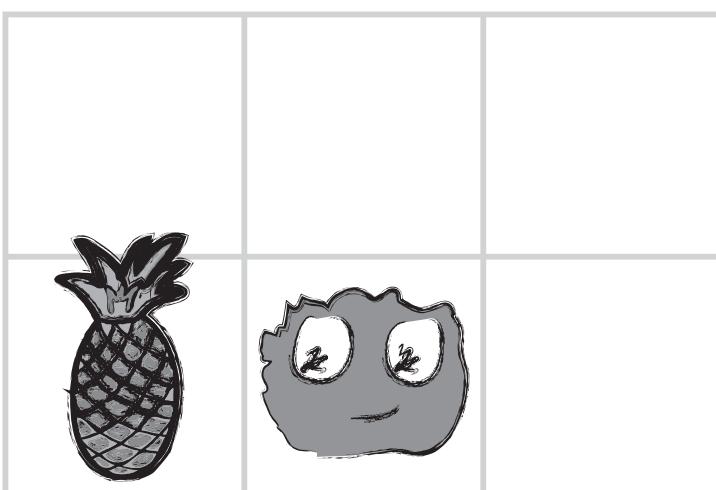


Revision 140428.1a

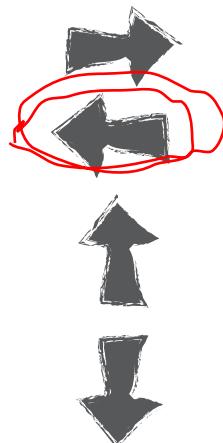
4

# Happy Map 4

C  
O  
D  
E



Which way should the Flurb step to get to the fruit?



Revision 140428.1a

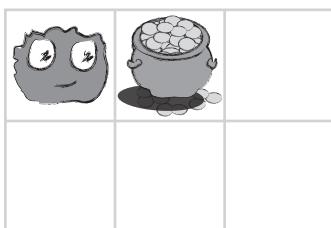
# Move the Flurbs

## Assessment Worksheet

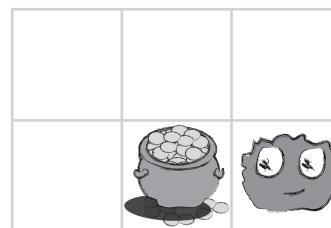
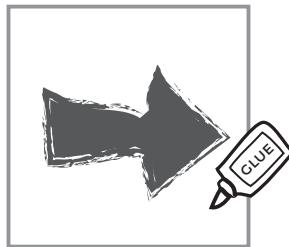
C	O
D	E

The Flurb's pot of gold is in danger! Help her get to it as quickly as possible before it disappears.

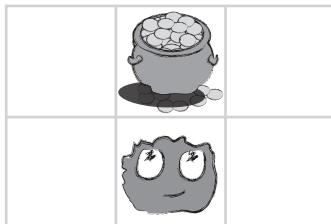
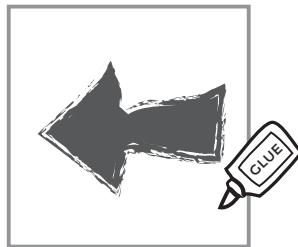
To show the Flurb how to get to her pot of gold, cut out the correct arrows from the bottom of the page and paste them in the program slots by each of the picture maps.



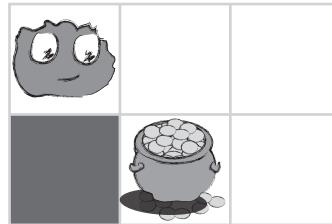
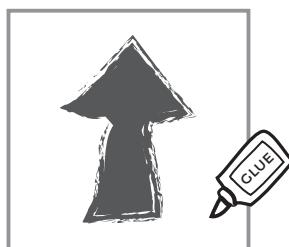
PROGRAM 1



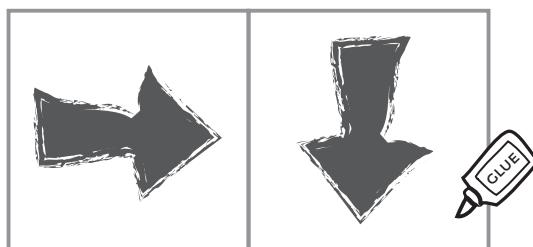
PROGRAM 2



PROGRAM 3



EXTRA CREDIT PROGRAM



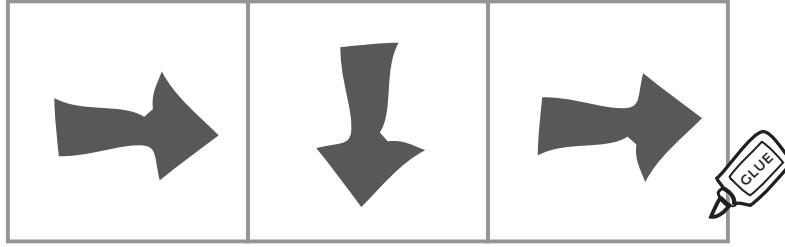
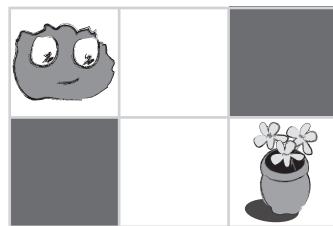
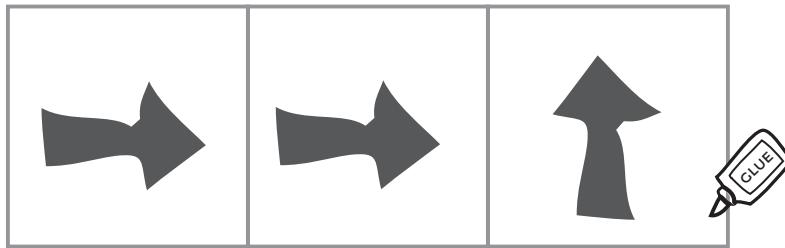
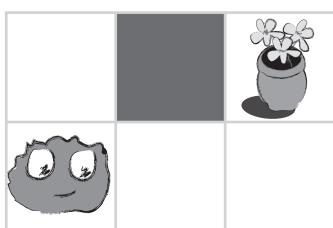
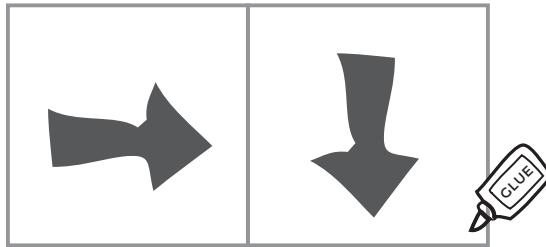
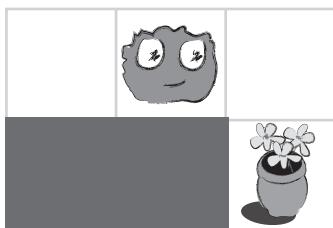
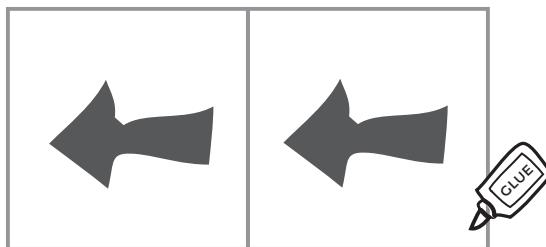
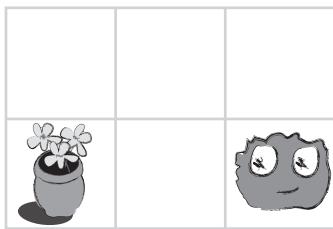
# Move the Flurbs 2

## Assessment Worksheet

C	O
D	E

The weather is getting hot. Help the Flurb get to her flowers so she can water them.

To show the Flurb how to get to her flowers, cut out the correct arrows from the bottom of the page and paste them in the program slots by each of the picture maps.



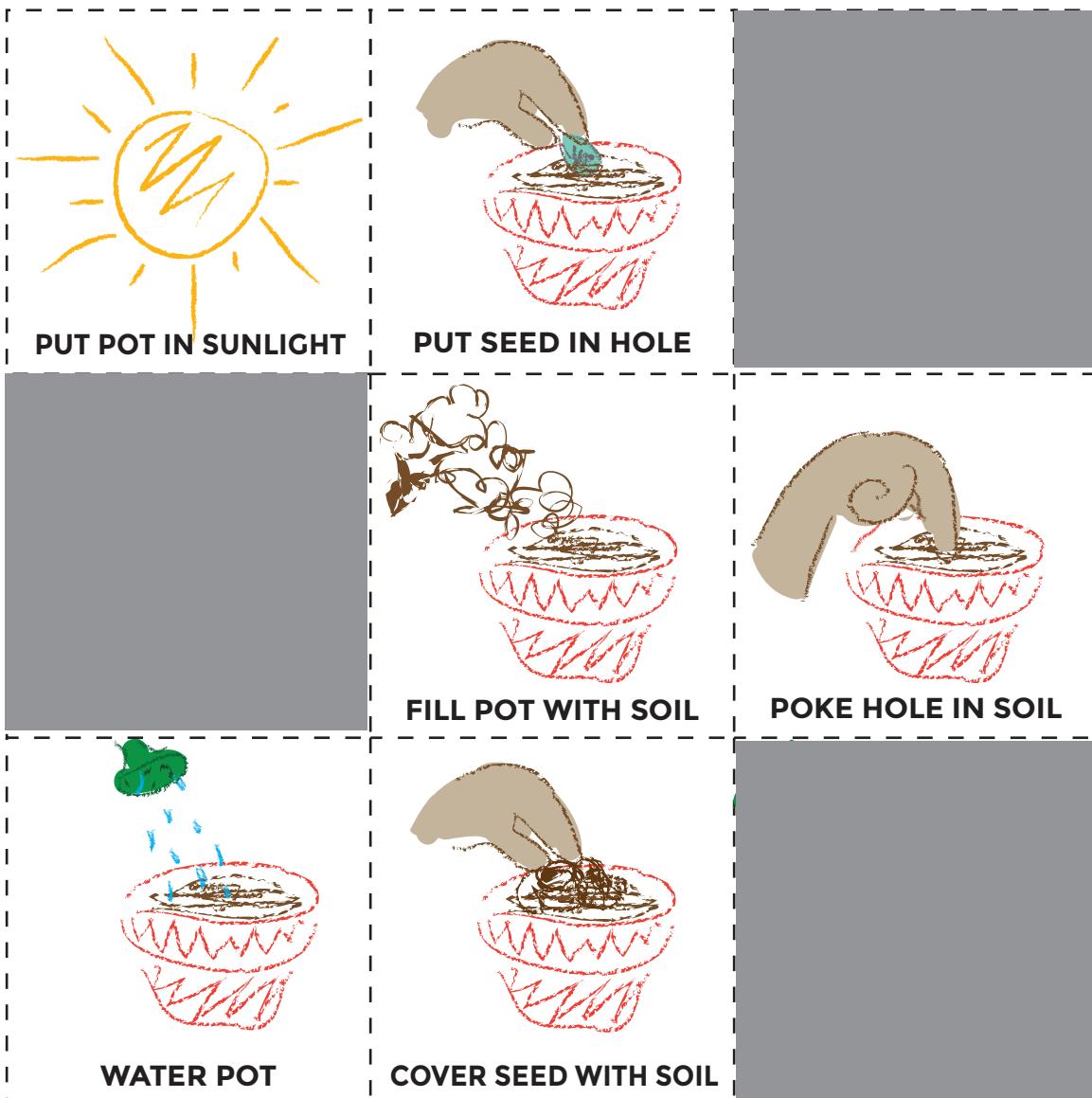
# Real-Life Algorithms

## Plant a Seed Worksheet

C	O
D	E

You can use algorithms to help describe things that people do every day. In this activity, we will create an algorithm to help each other plant a seed.

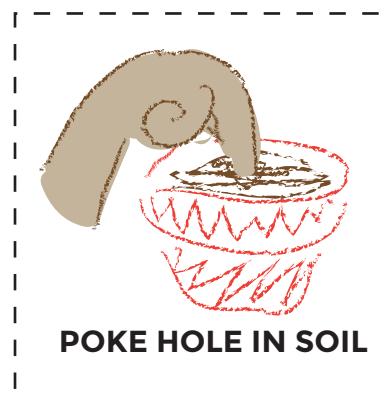
Cut out the steps of planting a seed below, then work together to glue the six the correct steps, in order, onto a separate piece of paper. Trade your finished algorithm with another person or group and let them use it to plant their seed!



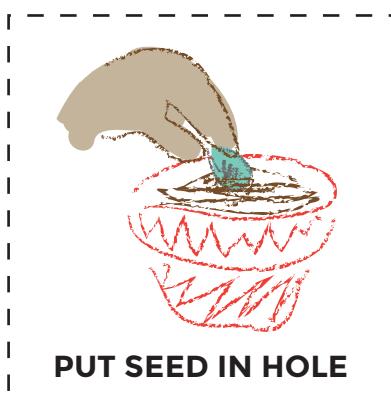
# Sample Solution



1. FILL POT WITH SOIL



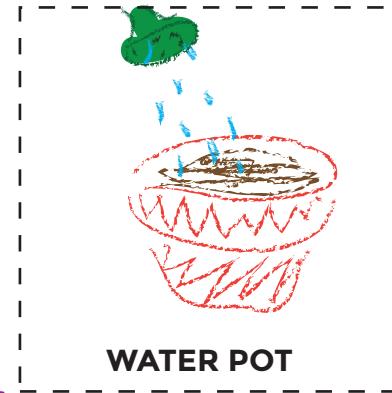
2. POKE HOLE IN SOIL



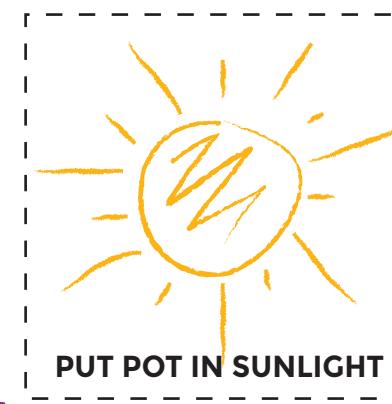
3. PUT SEED IN HOLE



4. COVER SEED WITH SOIL



5. WATER POT



6. PUT POT IN SUNLIGHT

# Real-Life Algorithms

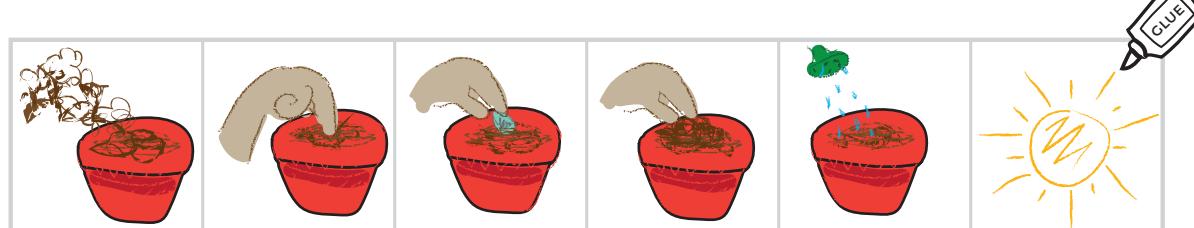
## Assessment Worksheet

C O  
D E

An algorithm is a list of steps that you can follow to finish a task. We follow algorithms every day when it comes to activities like making the bed, making breakfast, or even getting dressed in the morning.

Connie the Coder just woke up and is still feeling very sleepy. Can you put together some algorithms to help Connie get ready for the day?

---

**Help Connie Put on Shoes:****Help Connie Brush her Teeth:****Help Connie Plant a Seed:**

# Getting Loopy

## Unplugged Loops Activity

C	O
D	E

Looping can save space!

What if we wanted to take The Iteration dance below and make more loops inside? Can you circle the actions that we can group into a loop and cross out the ones that we don't need anymore? Write a number next to each circle to let us know how many times to repeat the action.

The first line has been done for you.

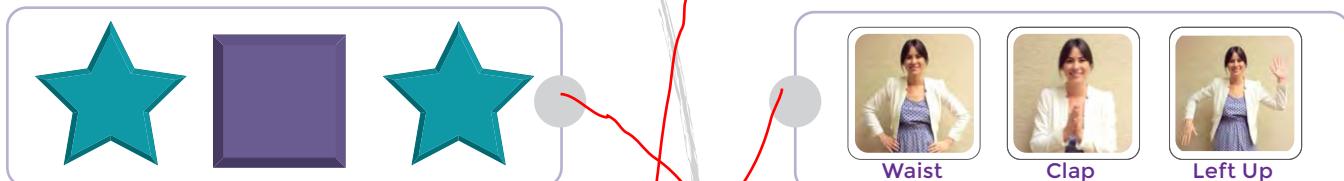


# The Big Event

## Controlling by Events Assessment

You've been given a magical controller that makes your principal do funny things with her arms.

Take a look below to see what each button does. Can you figure out which series of button events will cause your principal to do each dance? Draw a line from each set of pictures to the button combination that causes it. The first one has been done for you.



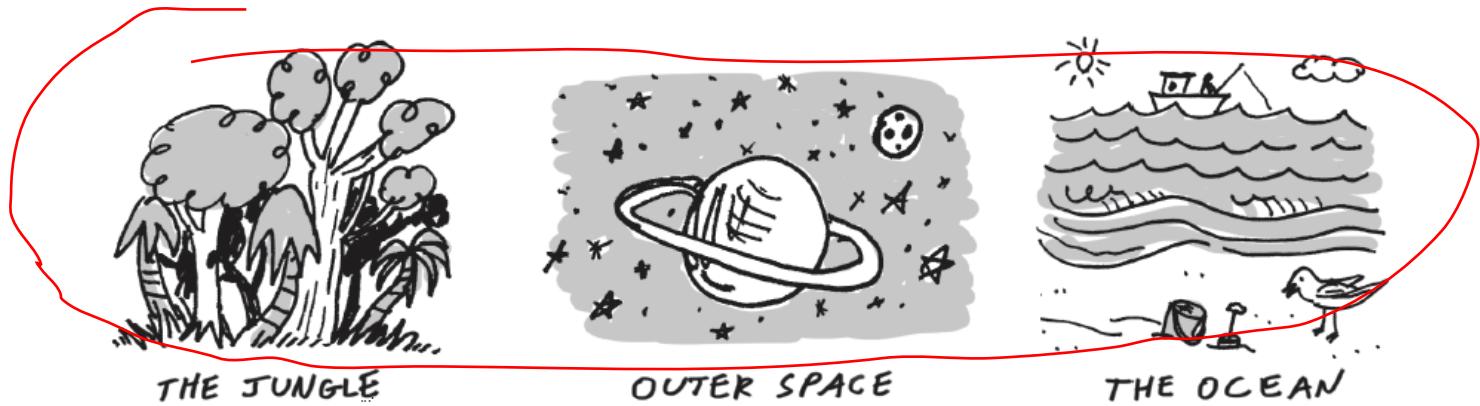
# Keep It Private

Learning to be Safe and Responsible Assessment

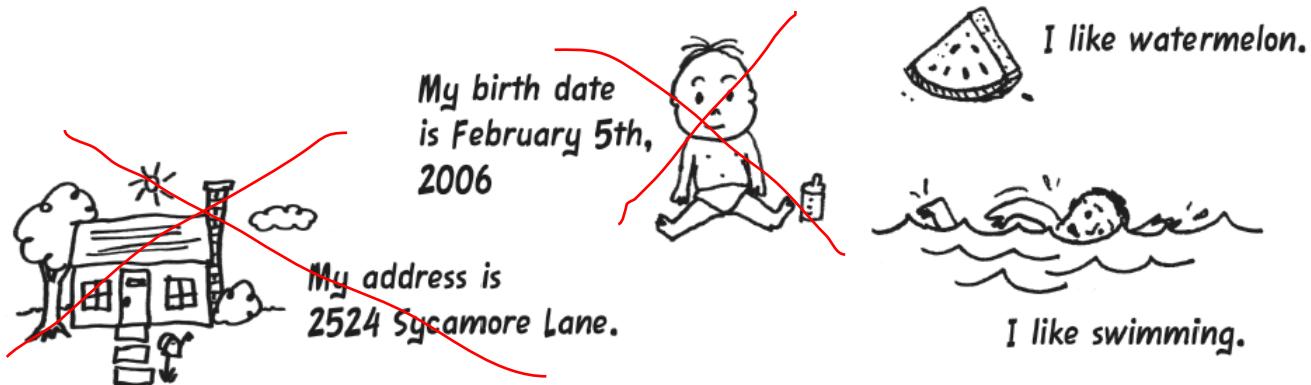
C O  
D E

Just because you can share something online doesn't mean that you should!

1) Circle the place you would most like to visit online



2) Can you spot the private information? Mark "X" through the information that you should not share with people you do not know well.



3) On the back of this paper, draw something that you enjoy and want to share on the Internet.

# Graph Paper Programming

## Four-by-Fours Activity Worksheet

C	O
D	E

Choose one of the drawings below to program for a friend. Don't let them see which one you choose!

Write the program on a piece of paper using arrows. Can they recreate your picture?

---

Use these symbols to write a program that would draw each image.

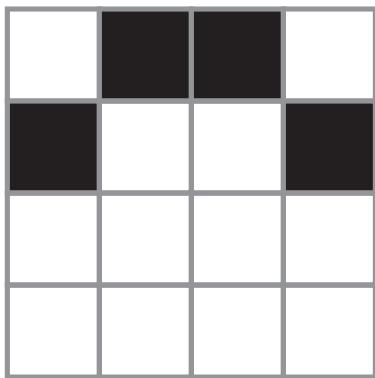


Image 1

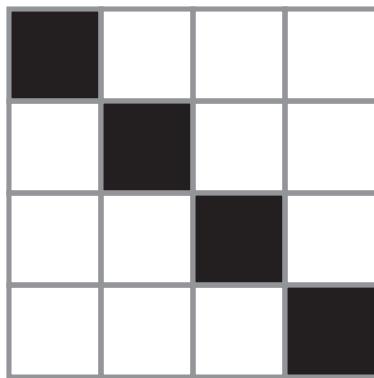


Image 2

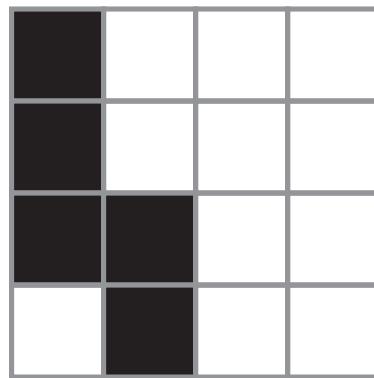


Image 3

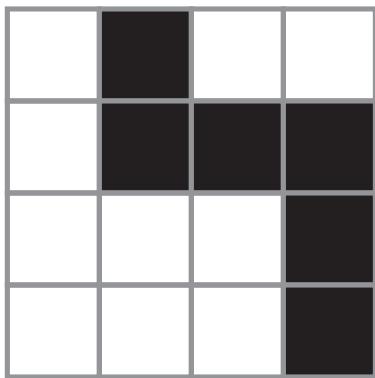


Image 4

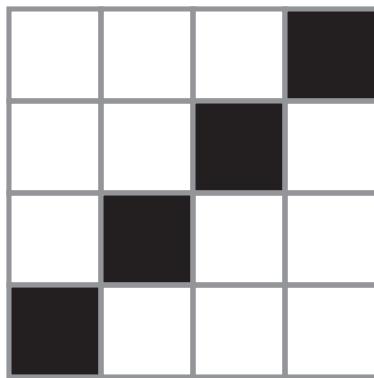


Image 5

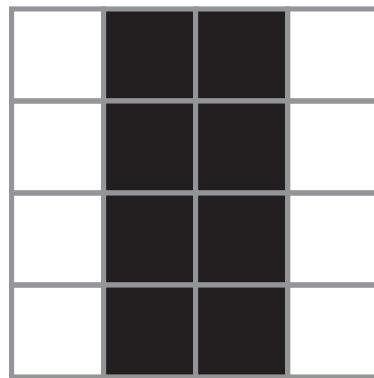


Image 6

*There are many options,  
here are the most efficient*

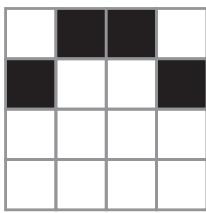


Image 1

→ ↘ → ↘ → ↓ ↗ ← ← ← ↗

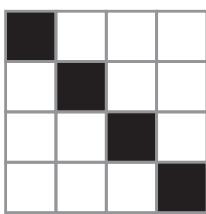


Image 2

↖ → ↓ ↘ → ↓ ↗ → ↓ ↘

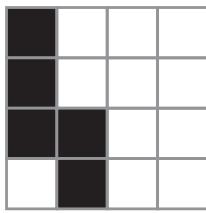


Image 3

↖ ↓ ↘ ↓ ↗ → ↘ ↓ ↘

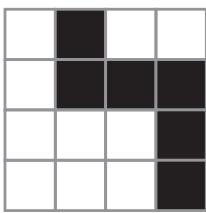


Image 4

→ ↘ ↓ ↘ → ↗ → ↘ ↓ ↘ ↓ ↘

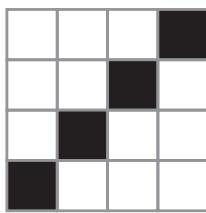


Image 5

→ → → ↘ ↓ ← ↘ ↓ ← ↘ ↓ ← ↘

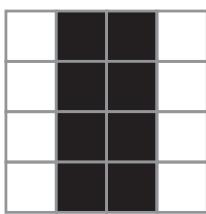


Image 6

→ ↘ → ↘ ↓ ↘ ← ↗ ↓ ↘ → ↘ ↓ ↘ ← ↘

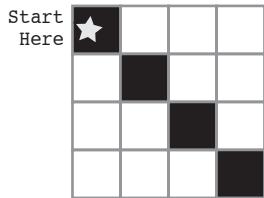
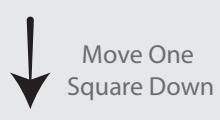
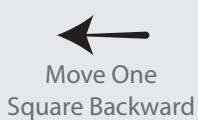
# Graph Paper Programming

## Assessment Worksheet

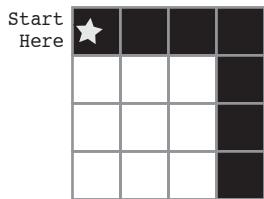
C	O
D	E

You have just learned how to create algorithms and programs from drawings, and how to draw an image from a program that someone gives to you. During the lesson, you worked with other people to complete your activities. Now you can use the drawings and programs below to practice by yourself.

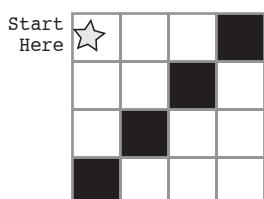
Use the symbols below to write a program that would draw each image.



	→	↓		→	↓		→	↓	
Step 1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19

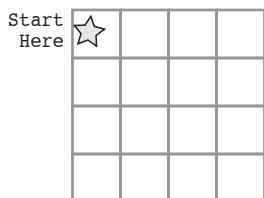


	→		→		→		↓		↓
Step 1	2	3	4	5	6	7	8	9	10
	11	12		14	15	16	17	18	19



→	→	→		↓	←		↓	←	
Step 1	2	3	4	5	6	7	8	9	10
	11	12		14	15	16	17	18	19

Now, read the program below and draw the image that it describes.



→		→	↓		←	↓		→	↓
Step 1	2	3	4	5	6	7	8	9	10

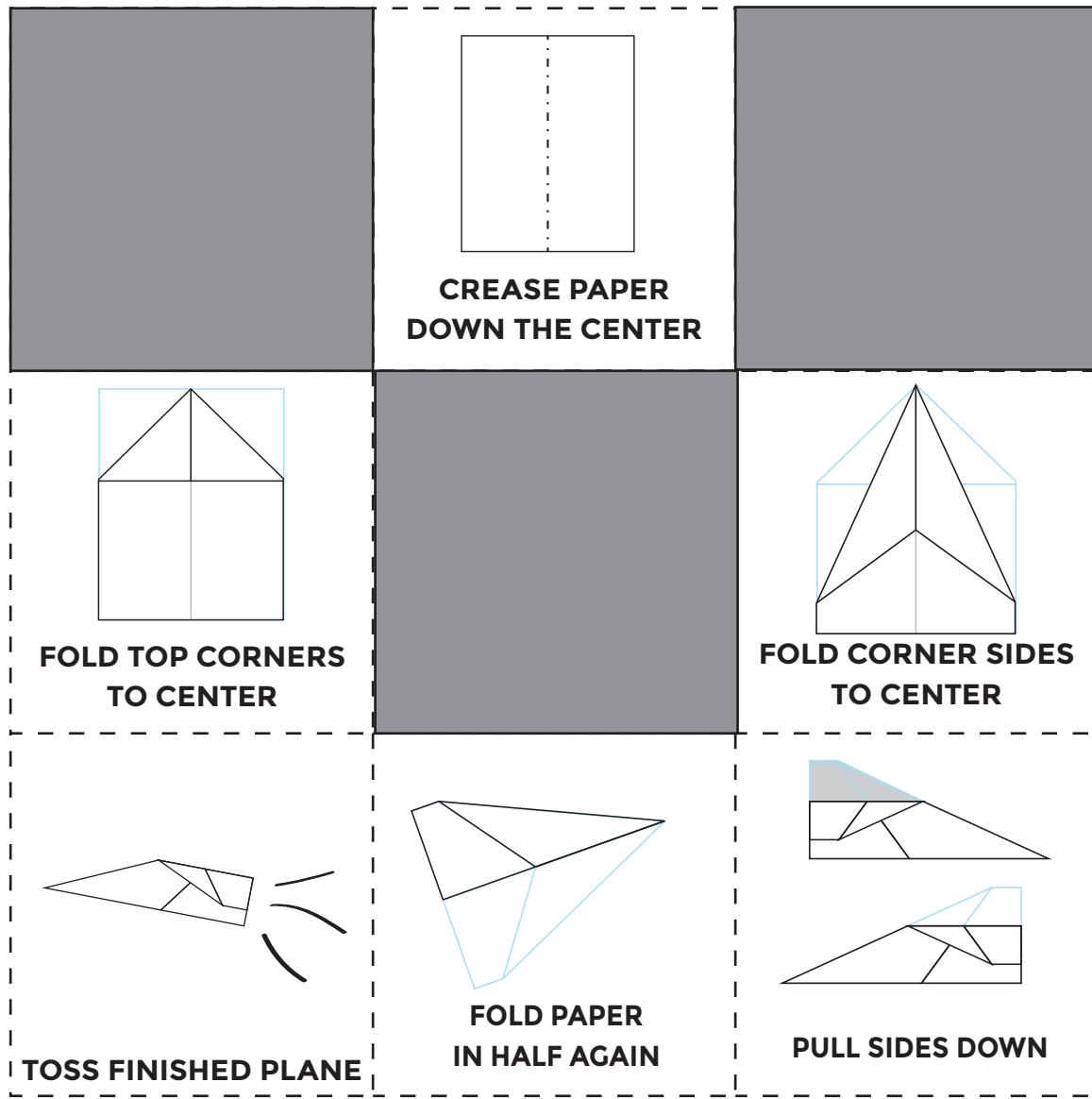
# Real-Life Algorithms

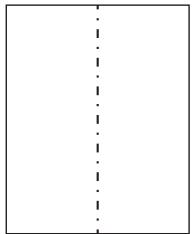
## Paper Airplane Worksheet

C	O
D	E

You can use algorithms to help describe things that people do every day. In this activity, we will create an algorithm to help each other make paper airplanes.

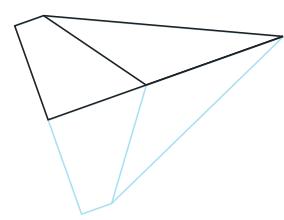
Cut out the steps of making an airplane below. Glue the six the correct steps, in order, onto a separate piece of paper. Trade your finished algorithm with another person or group and let them use it to make an actual flying model paper plane!





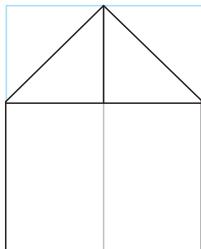
**CREASE PAPER  
DOWN THE CENTER**

1



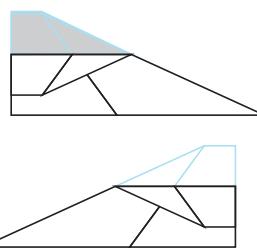
**FOLD PAPER  
IN HALF AGAIN**

4



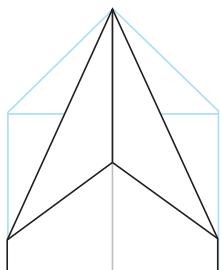
**FOLD TOP CORNERS  
TO CENTER**

2



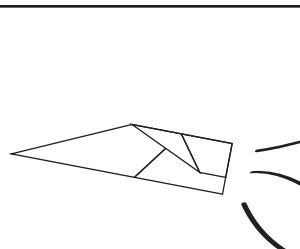
**PULL SIDES DOWN**

5



**FOLD CORNER SIDES  
TO CENTER**

3



**TOSS FINISHED PLANE**

6

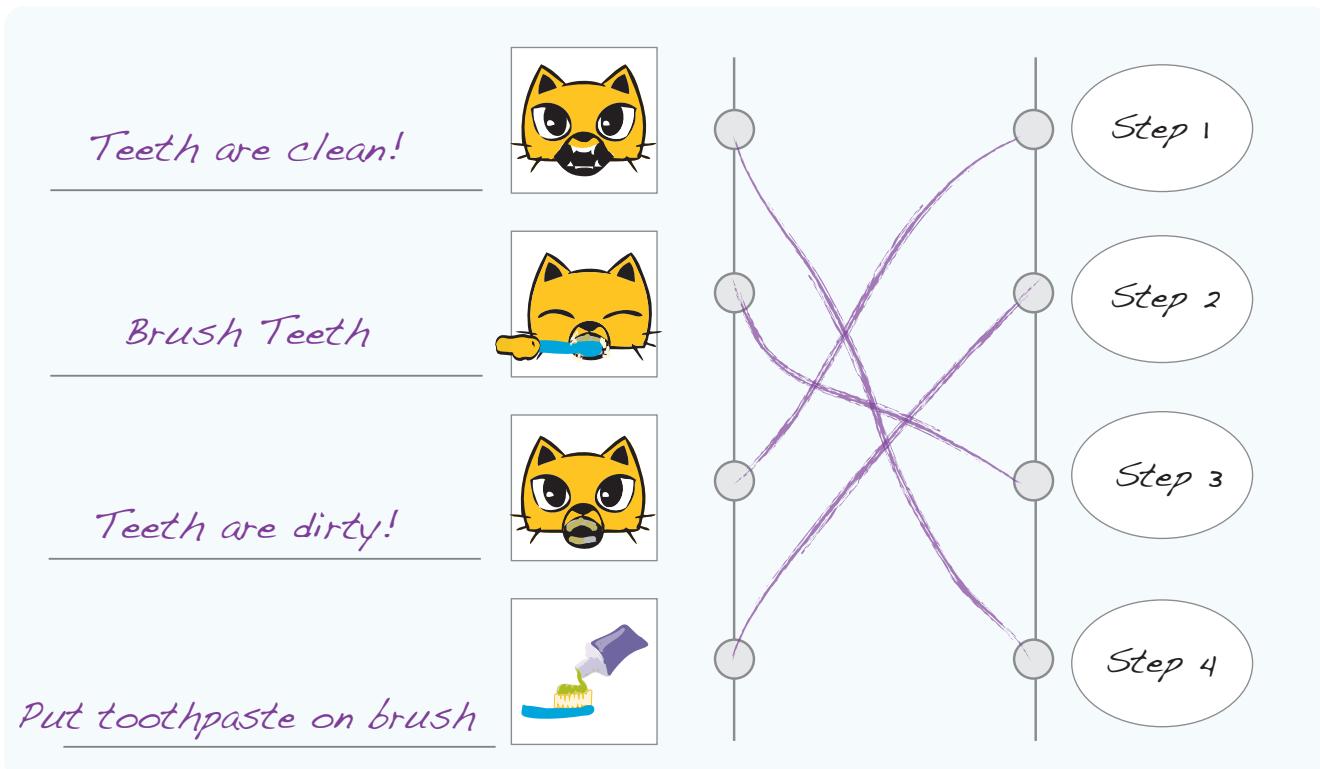
# Daily Algorithms

## Assessment Worksheet

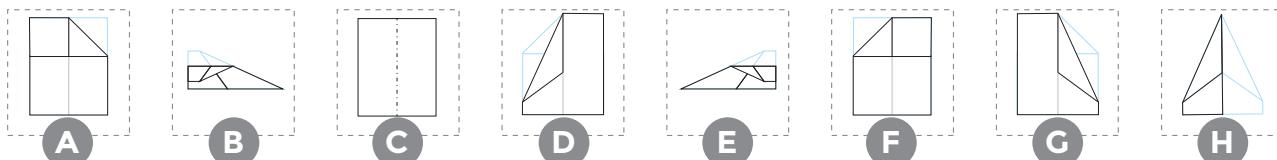
C	O
D	E

An algorithm is a list of instructions for accomplishing a task. We follow algorithms everyday when it comes to activities like making the bed, making breakfast, or even getting dressed in the morning.

These images are not in order. First, describe what is happening in each picture on the line to its left, then match the action to its order in the algorithm. The first one has been done for you as an example.



Sometimes you can have more than one algorithm for the same activity. The order of some of these steps can be changed without changing the final product. Use the letters on the images below to create two algorithms for making a paper airplane.



ALGORITHM 1: C    F    A    D    G    H    B    E

ALGORITHM 2: C    A    F    G    D    H    E    B

# Getting Loopy

## Unplugged Loops Activity

C	O
D	E

Looping can save space!

What if we wanted to take The Iteration dance below and make more loops inside? Can you circle the actions that we can group into a loop and cross out the ones that we don't need anymore? Write a number next to each circle to let us know how many times to repeat the action.

The first line has been done for you.



# Debugging

## Assessment Worksheet

C	O
D	E

Sometimes when you are coding in groups, someone will make an error that will affect everyone.

Somebody has already written programs for the images below, but each one has a mistake! Figure out what the programs are *supposed* to look like, and circle the error in each one. Then, draw the correct symbol in the box beneath.

Each program should use the symbols below to draw the image to its left.



Move One Square Right



Move One Square Left



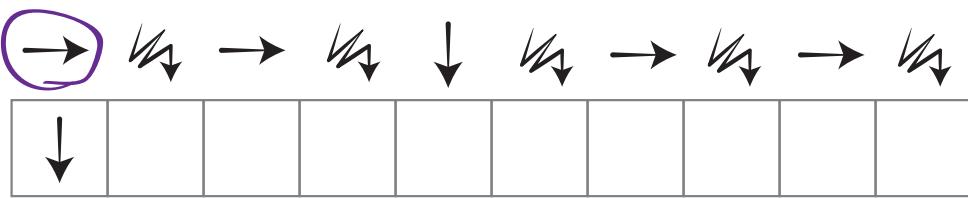
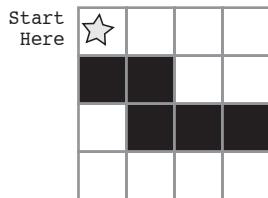
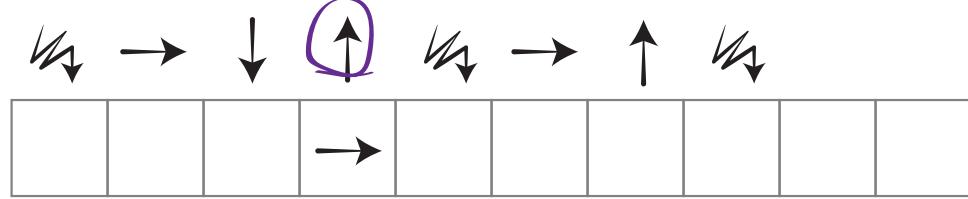
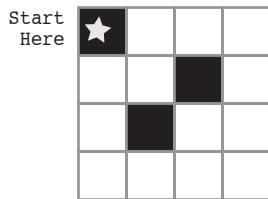
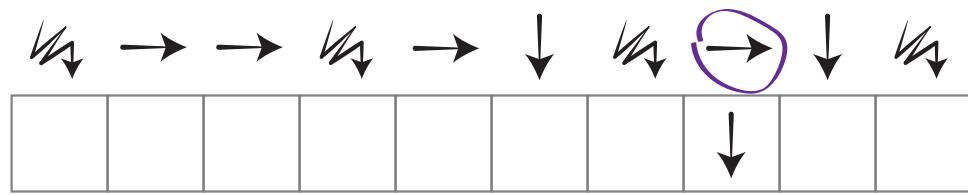
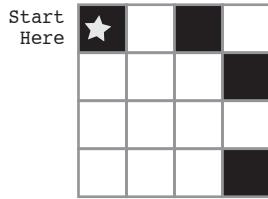
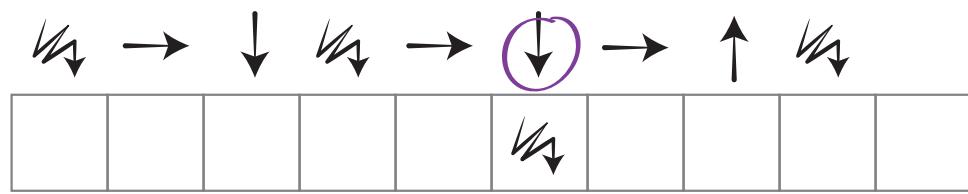
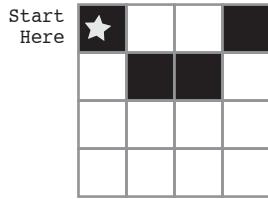
Move One Square Up



Move One Square Down



Fill-In Square with Color



# Conditionals with Cards

## Assessment Activity

C	O
D	E

Look at the program below.

The steps below show each team taking turns to play the Conditionals Game. See if you can figure out what happens for each draw. Write down the score during each round along the way. After three rounds, circle the winner.

```
If (CARD is lower than 5)
  If ( CARD is BLACK)
    Award YOUR team the same
    number of points on the card.

  Else
    Award OTHER team 1 point.

Else
  If ( CARD is HEARTS)
    Award YOUR team 1 point
```

Here's how the game went:

	TEAM #1	END OF ROUND SCORE	TEAM #2	END OF ROUND SCORE
ROUND #1		<u>3</u>		<u>1</u>
ROUND #2		<u>3</u>		<u>6</u>
ROUND #3		<u>3</u>		<u>6</u>

# Binary Bracelets

## Assessment for Binary Bracelets Lesson

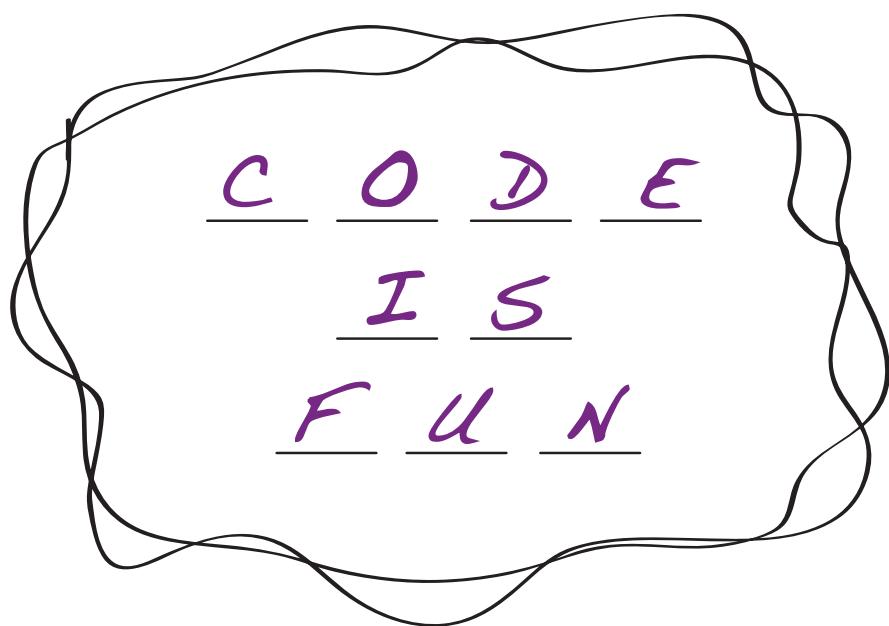
C	O
D	E

Use the Binary Decoder Key below to decode the message at the bottom of the sheet.

A	■□■■	■■■□	N	■□■■	□□□■
B	■□■■	■■□■	O	■□■■	□□□□
C	■□■■	■■□□	P	■□■■	■■■■
D	■□■■	■□■■	Q	■□■■	■■■□
E	■□■■	■□■□	R	■□■■	■■□■
F	■□■■	■□□■	S	■□■■	■■□□
G	■□■■	■□□□	T	■□■■	■□■■
H	■□■■	□■■■	U	■□■■	■□■□
I	■□■■	□■■□	V	■□■■	■□□■
J	■□■■	□■□■	W	■□■■	■□□□
K	■□■■	□■□□	X	■□■■	□■■■
L	■□■■	□□■■	Y	■□■■	□■■□
M	■□■■	□□■□	Z	■□■■	□■□■

Can you figure out what the message says?

■□■■	■■■□	<u>C</u>
■□■■	□□□□	<u>O</u>
■□■■	■□■■	<u>D</u>
■□■■	■□■□	<u>E</u>
■□■■	□■■□	<u>I</u>
■□■■	□■□■	<u>S</u>
■□■■	■□□■	<u>F</u>
■□■■	□□■■	<u>U</u>
■□■■	□□□■	<u>N</u>

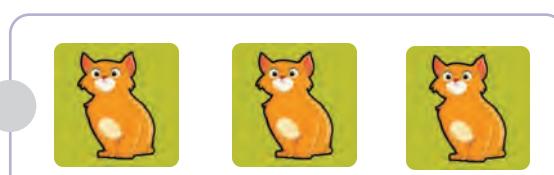
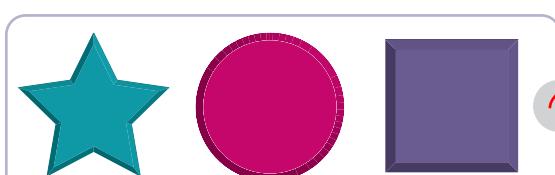
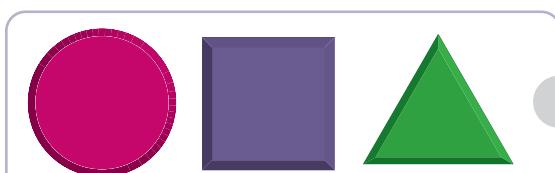
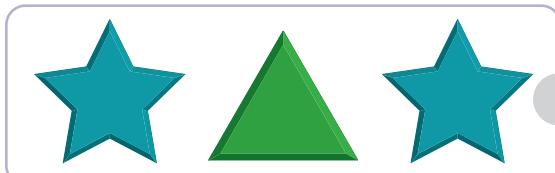
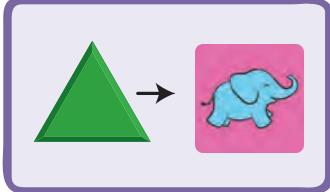
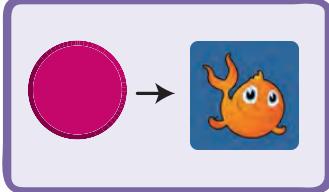
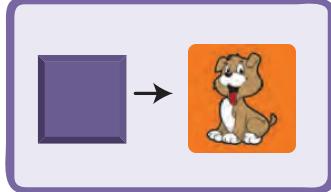


# The Big Event

## Controlling by Events Assessment

You've been given a magical controller that changes the picture on the frame on your desk.

Take a look below to see what each button does. Can you figure out which series of button events will cause your frame to show the pictures on the right? Draw a line from each set of pictures to the button combination that causes it. The first one has been done for you.



- Tell students that just as they should stay safe in the real world, they should stay safe when they go into the online world (visiting websites). Make parallels between the answers students gave you about their neighborhood and the online world.

Play [Pause and Think Online](#) video.

- Introduce the idea that there are three different kinds of websites that students may have the opportunity to visit.
  - Green: A “green” website is:
    - A good site for kids your age to visit
    - Fun, with things for you to do and see
    - Has appropriate words
    - Doesn’t let you talk to people you don’t know
  - Yellow: A “yellow” website is:
    - A site you are not sure is right for you
    - One that asks for information such as who you are, where you live, your phone number or email address, etc.
    - A place where you are allowed to communicate freely with others
  - Red: A “red” website is:
    - A site that is not right for you
    - A place you might have gone to by accident
    - Filled with things that are for older kids or adults
  - Discuss examples of each of these kinds of sites.

#### LESSON TIP

*If you have access to a computer, feel free to navigate to sites that might showcase each of these types (using extreme caution with your RED selection).*

Now, let's see what we can do to keep ourselves safe.

## ACTIVITIES: (20 MIN)

### 4) [Follow the Digital Trail](#)

- Peruse the [Follow the Digital Trail](#) lesson on the Common Sense Media webpage.
- Give each student an [Animal Tracks Chart](#) (page 7).

	Mizzle the Mouse	Electra the Elephant
1. Whose full name do you know?		✓
2. Whose house could you find?		✓
3. Whose birth date do you know?		✓
4. Whose user name and password do you know?		✓
5. Who let out a secret on the Internet?		✓
6. Which animal can you describe better from his or her photo?		✓

# Your Digital Footprint

Staying Safe and Responsible Assessment

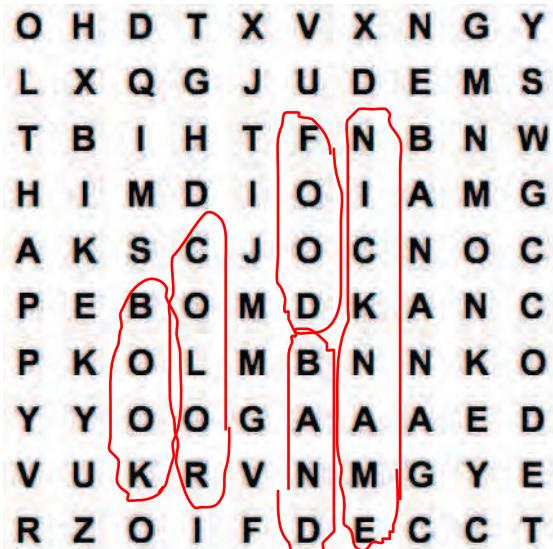
C	O
D	E

Just because you can share something online doesn't mean that you should!

Cross out the information that you should not share online. Use the words that are leftover as the key to what you should find in the word search.

## WORDS

- 1) Your Real Name (NAME)
- 2) Your Online Name (NICKNAME)
- 3) Your Address (ADDRESS)
- 4) Your Email (EMAIL)
- 5) Your Favorite Color (COLOR)
- 6) The Last Book you Read (BOOK)
- 7) Your Credit Card Info (CARD)
- 8) Your Favorite Band (BAND)
- 9) Your Phone Number (PHONE)
- 10) What You Ate Today (FOOD)
- 11) Your Birthday (BIRTHDAY)



Which animal below has the digital footprint that leaves him or her most unsafe?

HINT: Think about which animal shares the most private information online.

	A) Fran the Fish	B) Betty the Bird	C) Tony the Tiger
Hobbies	swimming	flying	going to the 3rd Street gym
Address	the sea	a nest	523 Green Street
Other	pet's name is Frank	I love seeds!	My real name is Thomas

## Circle One:

- A) Fran the Fish
- B) Betty the Bird
- C) Tony the Tiger

# Computational Thinking

## User Experience Scripts

C	O
D	E

Figure out how to play this game by looking at the players' phrases below. Circle the matching parts and underline words that are different from player to player. The first matching section has been circled for you.

**Player 1:**

"I chose a lion, and rolled a six, then a four, then a two. That means I need to draw a black cupcake on my lion's tail."

**Player 2:**

"I chose a donkey, and rolled a three, then a two, then a one. That means I need to draw a yellow pineapple on my donkey's head."

**Player 3:**

"I chose a puppy, and rolled a five, then a three, then a five. That means I need to draw a pink salmon on my puppy's nose."

Using pattern matching and abstraction, make yourself a template for game play by writing up the circled parts of the other students' experiences, and leaving the underlined sections as blanks.

"I chose a \_\_\_\_\_, and rolled a \_\_\_\_\_, then a \_\_\_\_\_, then a \_\_\_\_\_. That means I need to draw a \_\_\_\_\_  
\_\_\_\_\_ on my \_\_\_\_\_."

# Computational Thinking

## Lesson Assessment

C	O
D	E

Look at the problems below. Circle the matching sections and underline the places where there are differences. Once you've done that, write a template to create more phrases with the same pattern.

The first one has been done for you.

- 1) Triangles have three sides.

- Squares have four sides.

\_\_\_\_\_ have \_\_\_\_\_ sides.

- 2) It's fun to read books.

- It's fun to read magazines.

It's fun to read \_\_\_\_\_.

- 3) I love my cat's whiskers.

- I love my dog's tail.

I love my horse's tail.

I love my cat's tail.

I love my \_\_\_\_\_.

- 4) There is a cloud in the sky that looks like a dragon.

There is a leaf in the water that looks like a heart.

There was a rock in the yard that looks like a heart.

There \_\_\_\_\_ a \_\_\_\_\_ in the \_\_\_\_\_  
that looks like a \_\_\_\_\_.

## SKILL 1

- 1) Bead
- 2) Knot
- 3) Bead
- 4) Knot
- 5) Spacer
- 6) Knot

## SKILL 2

- 1) Special Charm
- 2) Final Knot
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_
- 6) \_\_\_\_\_

## PROGRAM

- 1) Skill 1
- 2) Skill 1
- 3) Skill 2
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_
- 6) \_\_\_\_\_

5) Once you have reviewed all of the groups' solutions, hand out supplies to the students.

- Point out that different people in the class may have different supplies, and they may all be different than the ones you used.
  - Ask if that should stop them from following the program.
    - Why not?
  - We can treat the words (Bead, Spacer, Knot, etc.) as "placeholders" for whatever items we are using that fit those descriptions.
  - These are called **variables**

6) Let the students get started on their suncatchers!

## WRAP-UP (5 MIN)

### 5) Flash Chat: What did we learn?

- What items did you use that could have been "variable" from person to person?
- How important do you think it was to have groups of skills that we could call for this lesson?
- What if we had done each set of steps 100 times instead of only twice?
- Can you think of anything else that we could group together once and call easily over and over again?
  - What about the chorus of a song?

#### LESSON TIP

*Flash Chat questions are intended to spark big-picture thinking about how the lesson relates to the greater world and the students' greater future. Use your knowledge of your classroom to decide if you want to discuss these as a class, in groups, or with an elbow partner.*

### 6) Vocab Shmocab



Unplugged

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Fun-ctional Skills

## Functions and Variables Assessment

C	O
D	E

Below, you will find three sets of skills, and a program that calls them.

Use the New Program and the skills that go with it to figure out what the steps of the Original Program were. Fill out the steps of the Original Program appropriately.

**ORIGINAL PROGRAM**

- 1) one
- 2) stinky
- 3) cat
- 4) one
- 5) stinky
- 6) banana
- 7) face
- 8) smells
- 9) cat
- 10) \_\_\_\_\_
- 11) \_\_\_\_\_
- 12) \_\_\_\_\_
- 13) \_\_\_\_\_
- 14) \_\_\_\_\_

**NEW****SKILL 1**

- 1) banana
- 2) face
- 3) smells
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_

**SKILL 2**

- 1) cat
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_

**SKILL 3**

- 1) one
- 2) stinky
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_

**NEW PROGRAM**

- 1) Skill 3
- 2) Skill 2
- 3) Skill 3
- 4) Skill 1
- 5) Skill 2

# Songwriting Worksheet

Using Lyrics to Explain Functions - Assessment

Song 1 Name: I'm a Nut

Chorus:

I'm a nut  
I'm a nut  
I'm a nut, I'm a nut, I'm a nut

Song 2 Name: Skip to my Lou

Chorus:

Lou, Lou, skip to my Lou,  
Lou, Lou, skip to my Lou,  
Lou, Lou, skip to my Lou,  
Skip to my Lou, my darlin'.

# Dice Race

## Assessment Worksheet

C	O
D	E

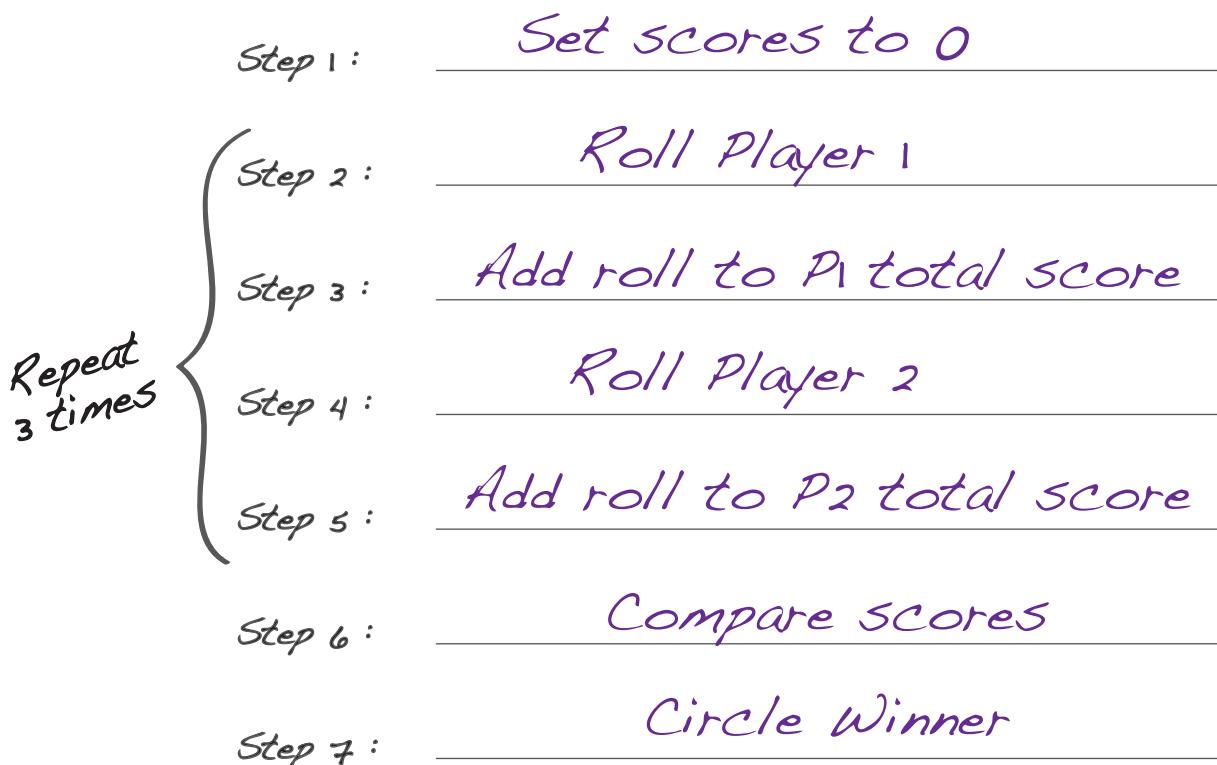
Use the space below to play through the Dice Race game.

When you're done, use the bottom of the page to create an algorithm (list of steps) that someone else could use to learn how to play.

	Turn 1	Turn 2	Turn 3	Total
Player 1	3	8	14	14
Player 2	1	7	12	12

} Circle the Winner

Now, take the steps that you've used to play the game above, and write them down in the slots below. Take advantage of the repeat loop to avoid having to write down instructions more than once.



# The Internet

## How the Internet Does What it Does

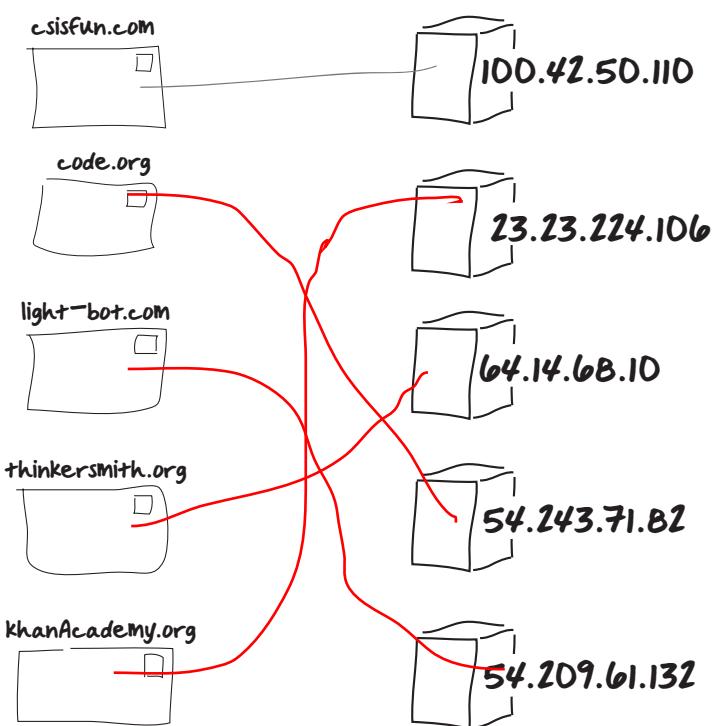
C	O
D	E

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.

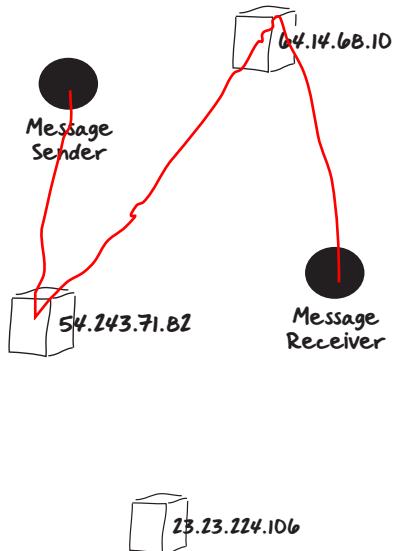
**DNS Look-Up Table**

#	URL	IP ADDRESS
1	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

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.



# Digital Citizenship

## Assessment Worksheet

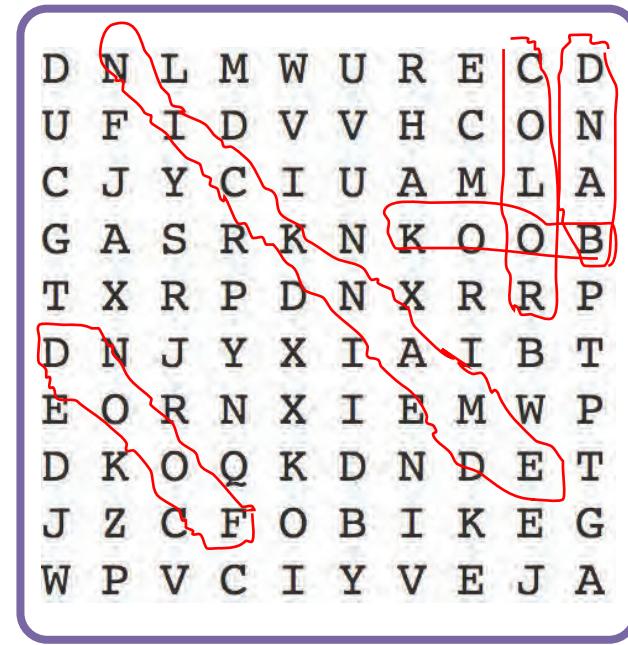
C	O
D	E

Just because you can do something online doesn't mean that you should!

Cross out the information that you should not share online. Use the words that are leftover as the key to what you should find in the word search.

### WORDS

- 1) Your Credit Card Info (CARD)
- 2) Your Online Name (NICKNAME)
- 3) What You Ate Today (FOOD)
- 4) Your Email (EMAIL)
- 5) Your Favorite Color (COLOR)
- 6) The Last Book you Read (BOOK)
- 7) The School You Attend (SCHOOL)
- 8) Your Favorite Band (BAND)
- 9) Your Phone Number (PHONE)
- 10) Your Address (ADDRESS)
- 11) Your Birthday (BIRTHDAY)



Write a paragraph in the area below, telling about what you will do when you're on the Internet to make sure that you practice kind and respectful behavior.

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