Unit 4 Lesson 1

Graph Paper Programming

Resources

Name: _____

Graph Paper Programming

Activity Worksheet

Choose one of the images below. Don't let your partner see which one you pick!

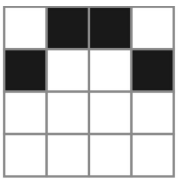

Image 1

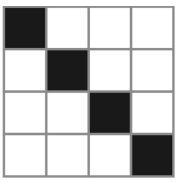

Image 2

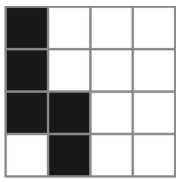

Image 3

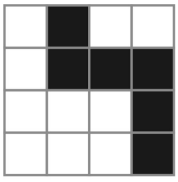

Image 4

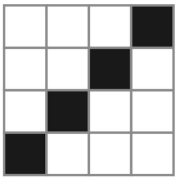

Image 5

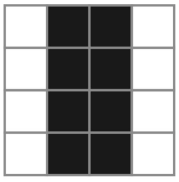

Image 6

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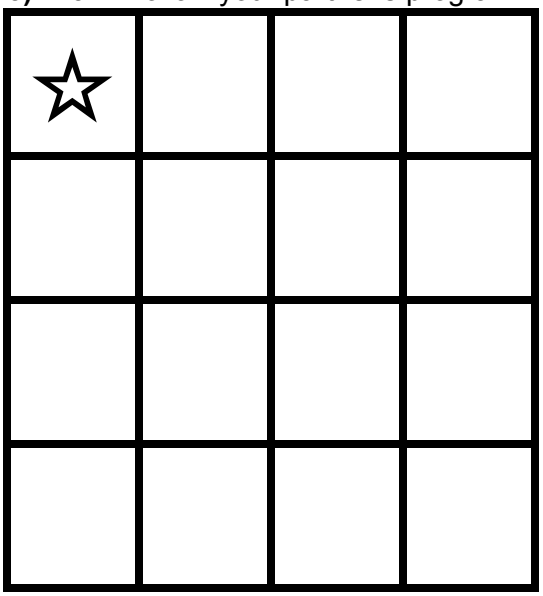
1) Write a program. (Use → ← ↑ ↓)

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

2) Trade this worksheet with a partner.

3) Draw! Follow your partner's program:



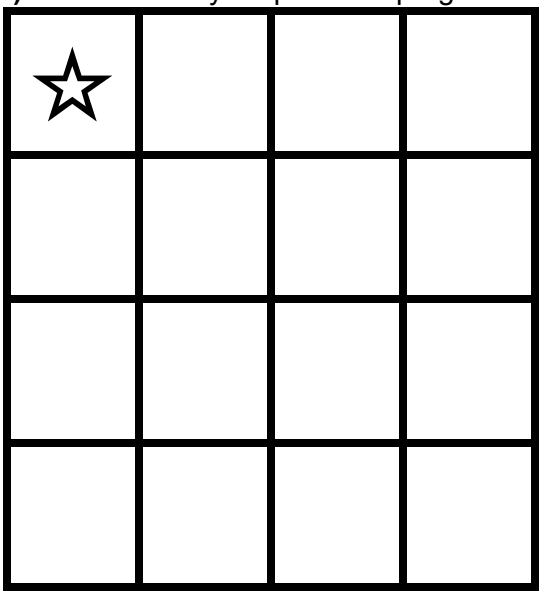
Play Again!

1. Write a program. (Use → ← ↑ ↓)

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

2) Trade this worksheet with a partner.

3) Draw! Follow your partner's program:



TEACHER KEY

Graph Paper Programming

Activity Worksheet

There are many options. Here are the most efficient.

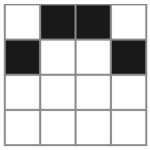


Image 1

→ ↯ → ↯ → ↓ ↯ ← ← ← ↯

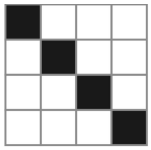


Image 2

↯ → ↓ ↯ → ↓ ↯ → ↓ ↯

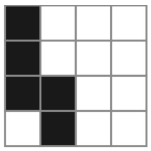


Image 3

↯ ↓ ↯ ↓ ↯ → ↯ ↓ ↯

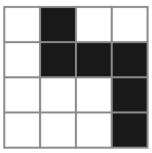


Image 4

→ ↯ ↓ ↯ → ↯ → ↯ ↓ ↯ ↓ ↯

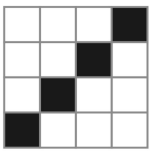


Image 5

→ → → ↯ ↓ ← ↯ ↓ ← ↯ ↓ ← ↯

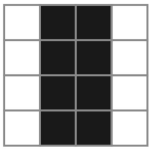


Image 6

→ ↯ → ↯ ↓ ↯ ← ↯ ↓ ↯ → ↯ ↓ ↯ ← ↯

Name(s)_____ Period _____ Date _____

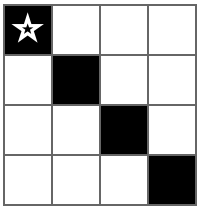
Graph Paper Programming

Assessment Worksheet

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.

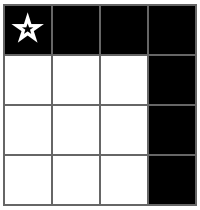
Use the symbols below to write a program that would draw each image.

Start here



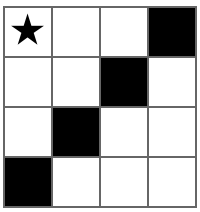
Step 1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Start here



Step 1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

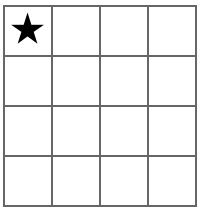
Start here



Step 1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

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

Start here



Step 1	2	3	4	5	6	7	8	9	10
11									

TEACHER KEY

Graph Paper Programming

Assessment Worksheet

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

Move One Square Forward

Move One Square Backward

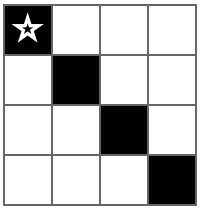
Move One Square Up

Move One Square Down

Fill in Square With Color

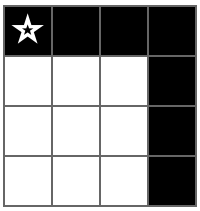
There are multiple options. Here are some good ones.

Start here



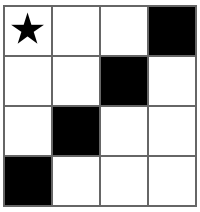
Step 1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Start here



Step 1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

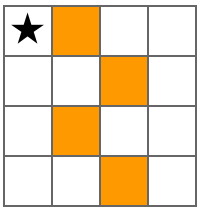
Start here



Step 1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

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

Start here



Step 1	2	3	4	5	6	7	8	9	10
11									

Unit 4 Lesson 2

Introduction to Online Puzzles

Resources

Unit 4 Lesson 3

Relay Programming

Resources

TEACHER KEY

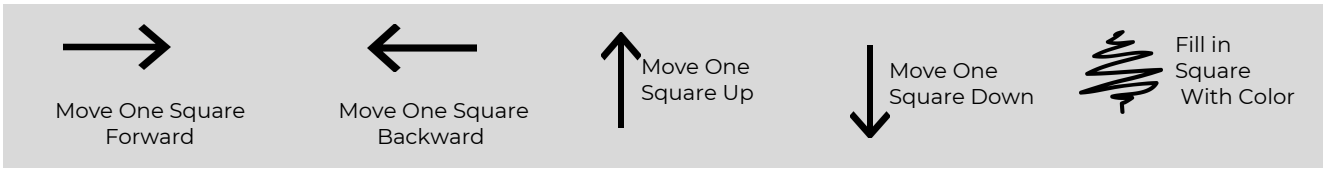
Relay Programming

Worksheet

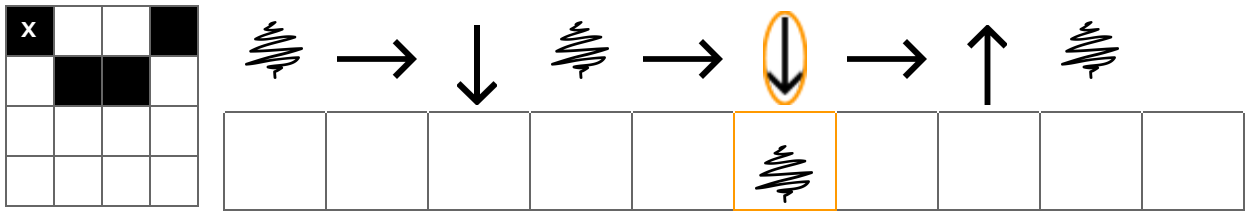
Sometimes when you are coding in groups, someone will make an error that will affect everyone.

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.

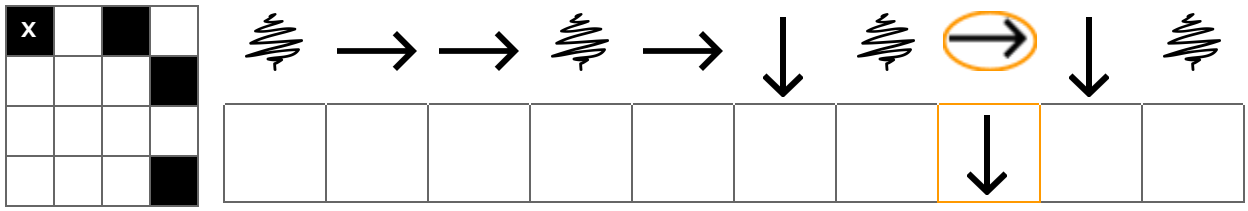
Each program should use the symbols to draw the image to its left.



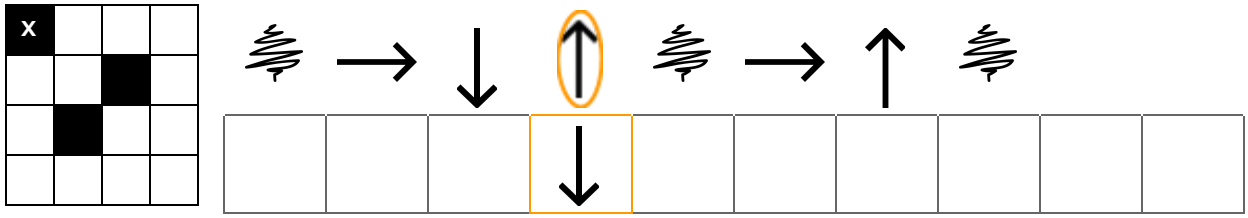
Start here



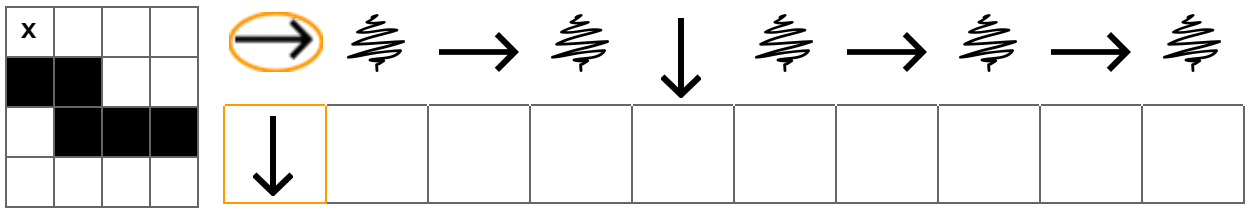
Start here



Start here



Start here



Name(s)_____ Period _____ Date _____

Relay Programming

Worksheet

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

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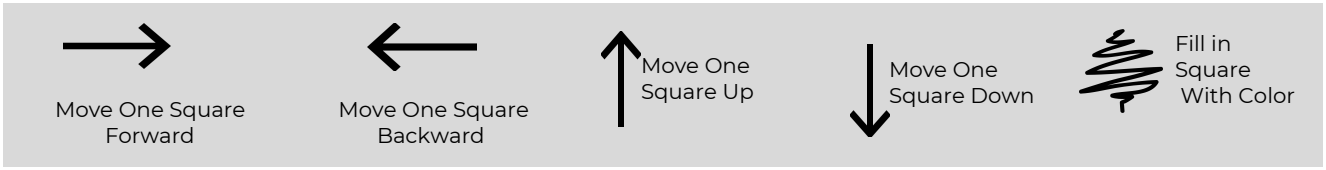
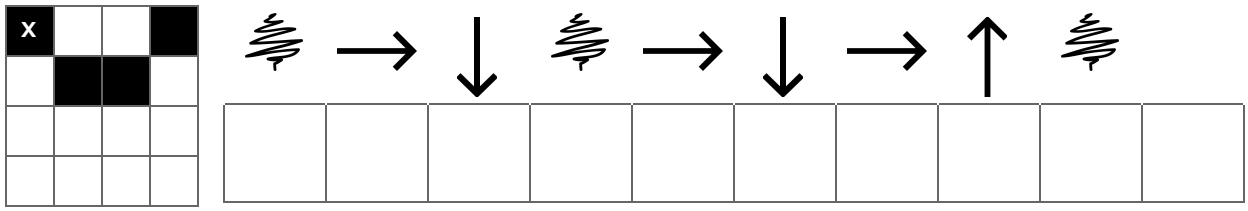
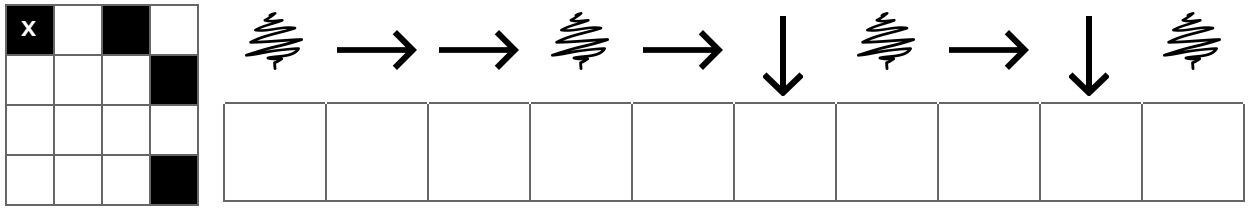


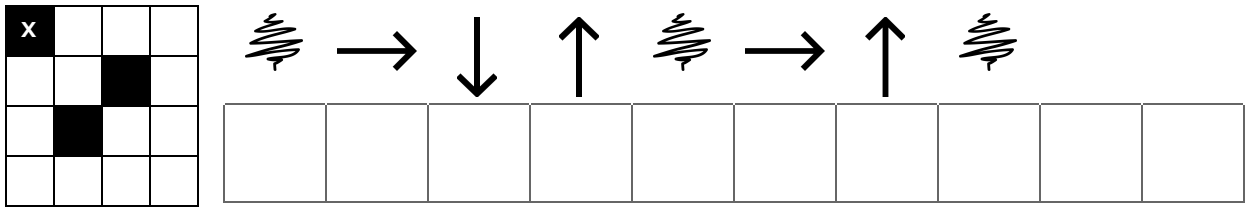
Start here



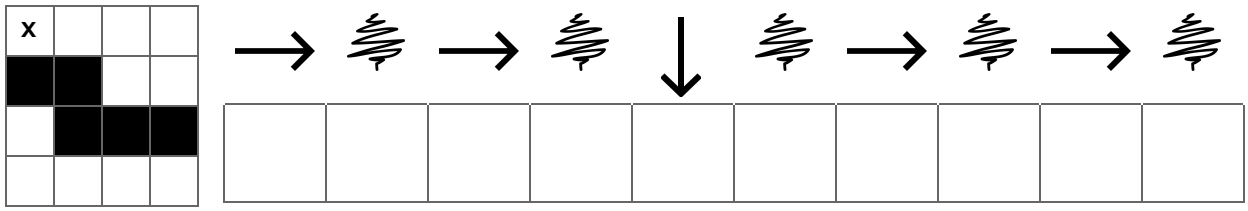
Start here



Start here



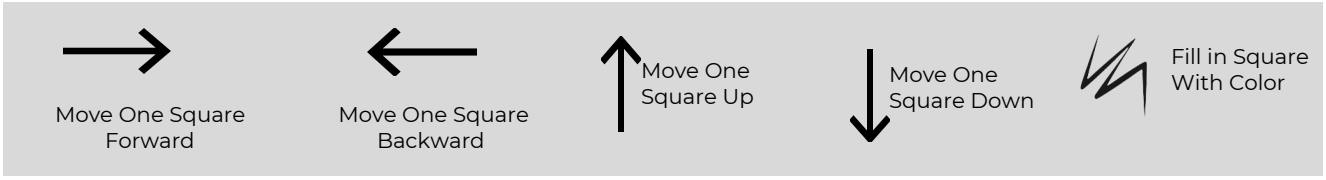
Start here



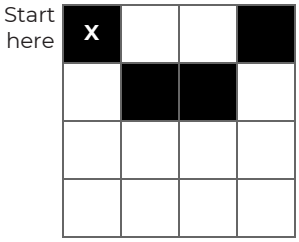
Debugging

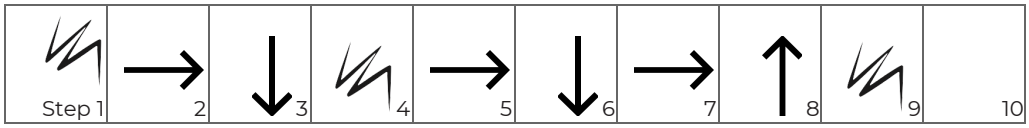
Persistence and Frustration

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



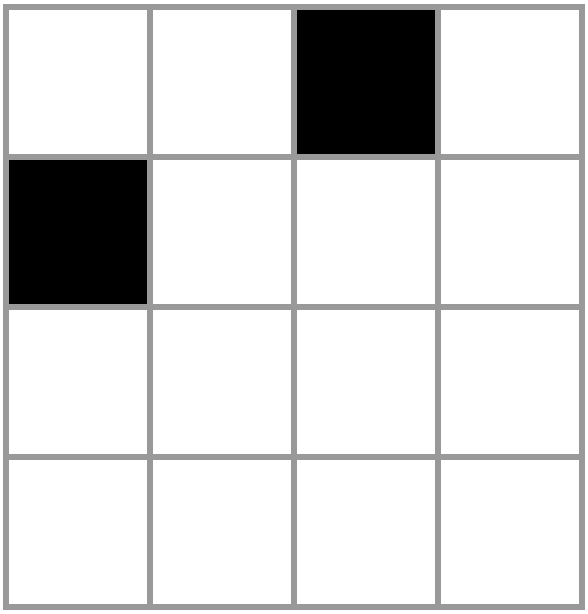
Start here





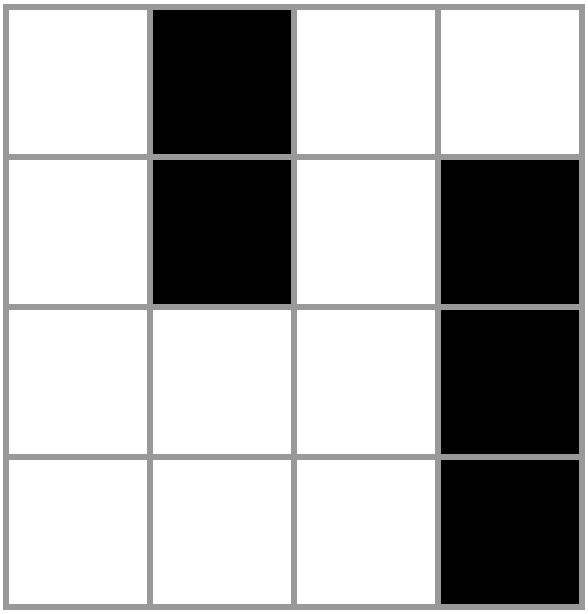
Relay Programming

Relay Image 1



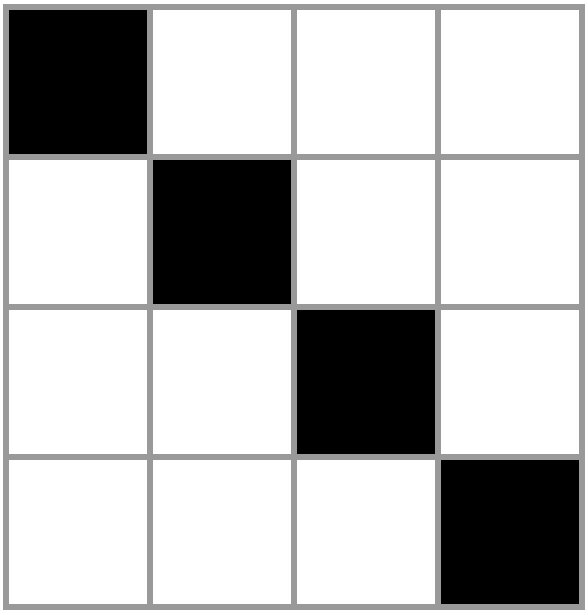
Relay Programming

Relay Image 2



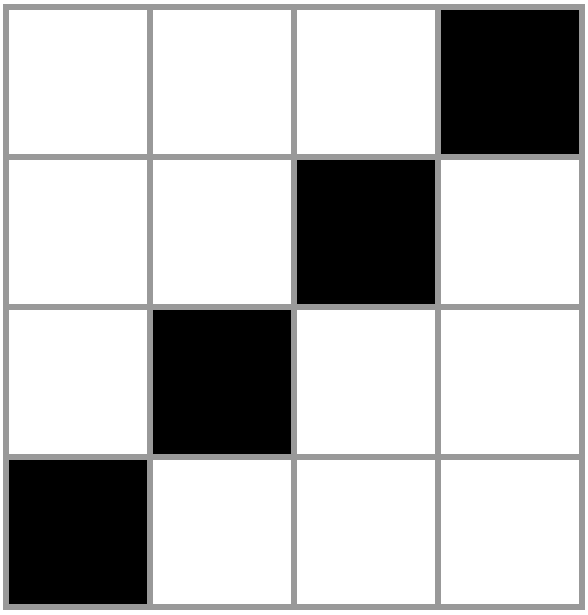
Relay Programming

Relay Image 3



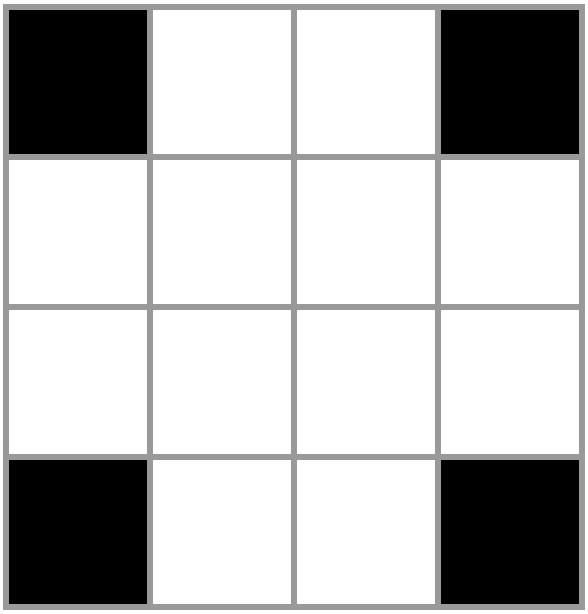
Relay Programming

Relay Image 4



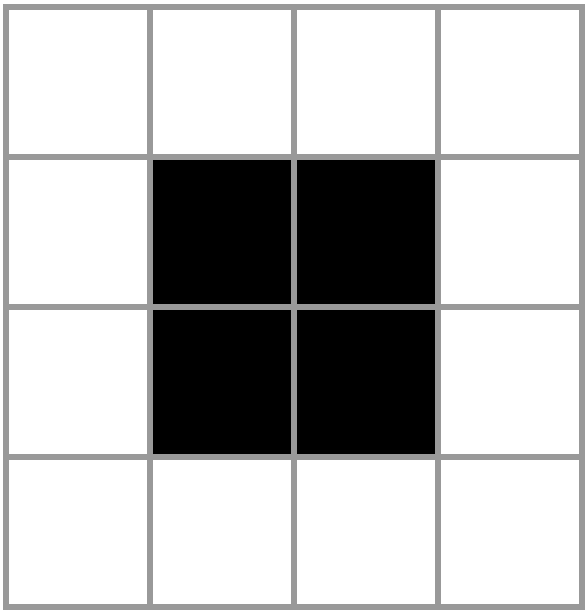
Relay Programming

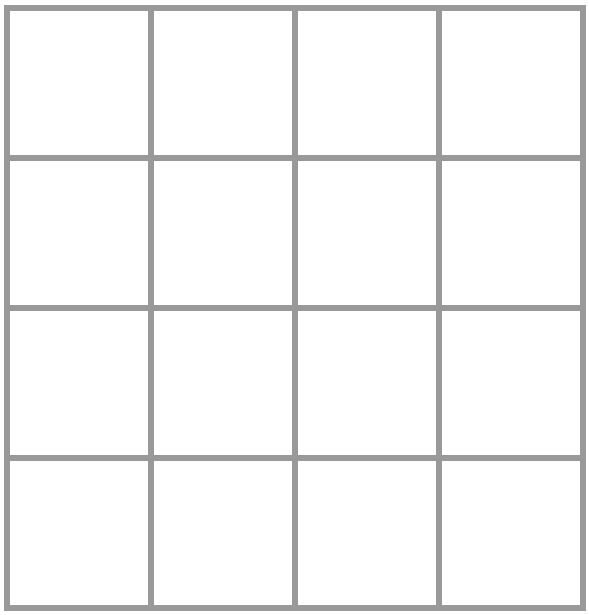
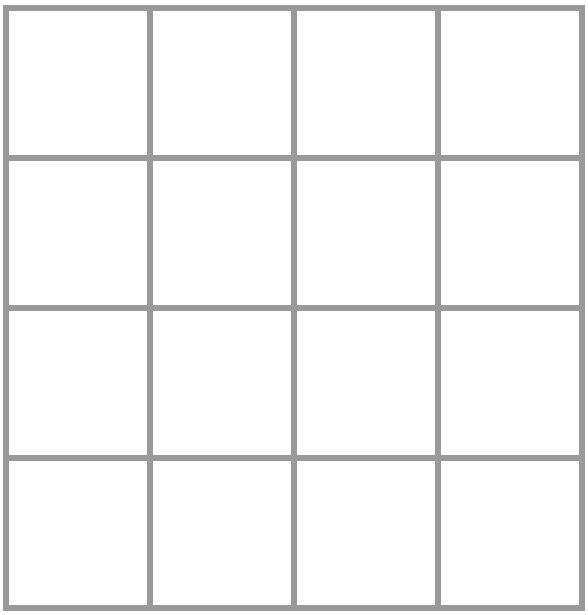
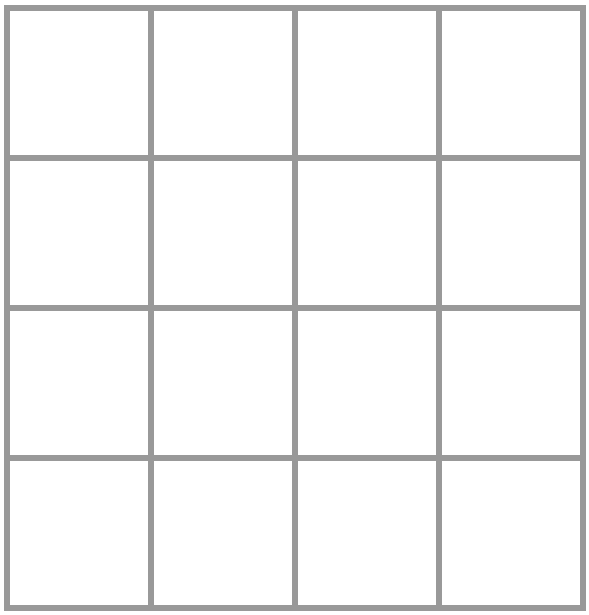
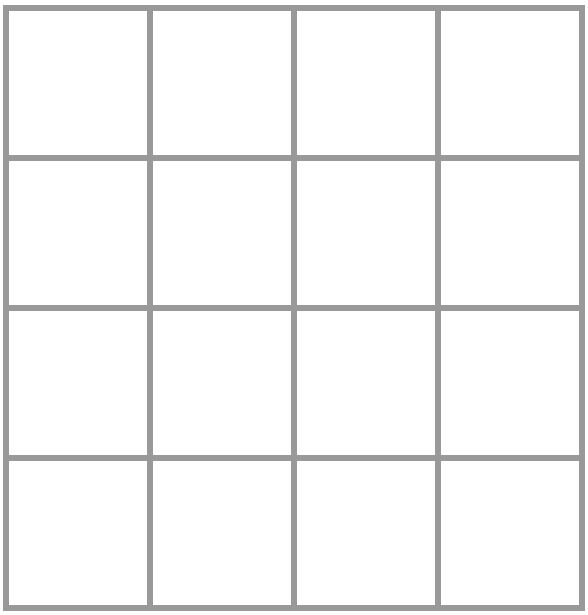
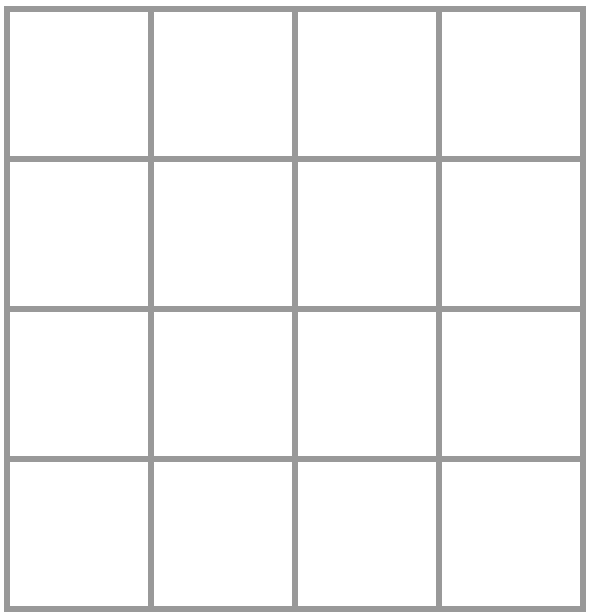
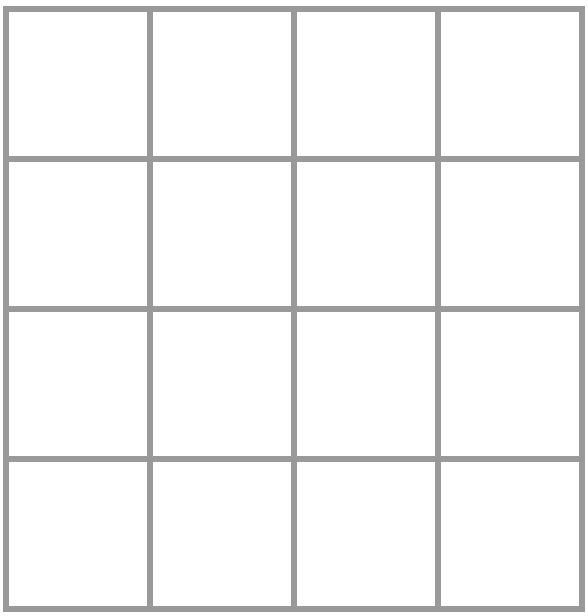
Relay Image 5



Relay Programming

Relay Image 6



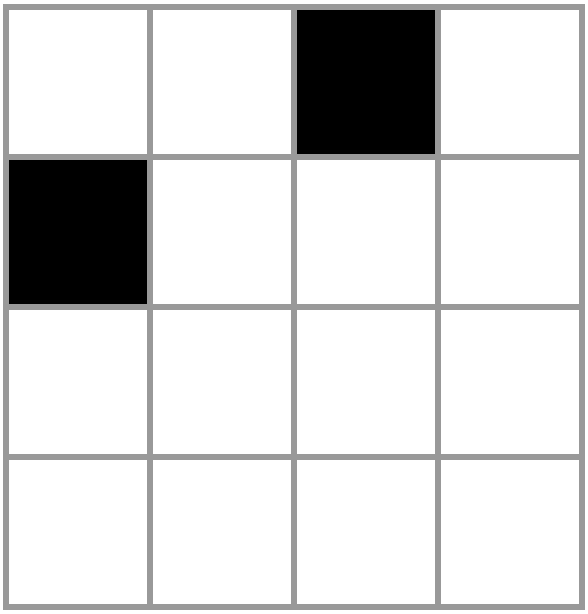
Unit 4 Lesson 4

Debugging with Laurel

Resources

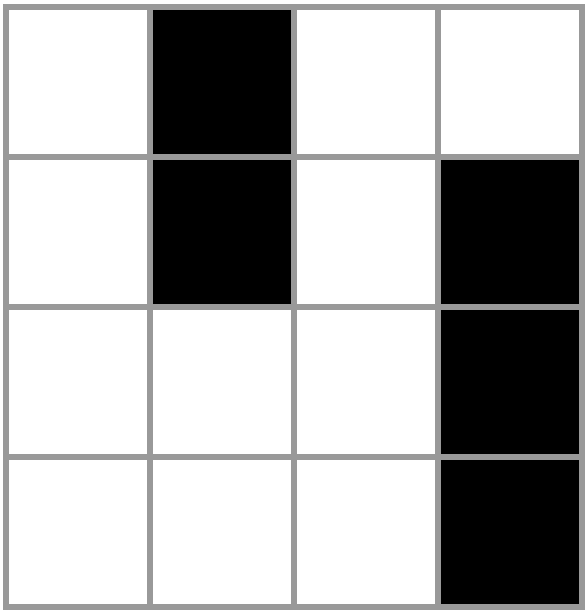
Relay Programming

Relay Image 1



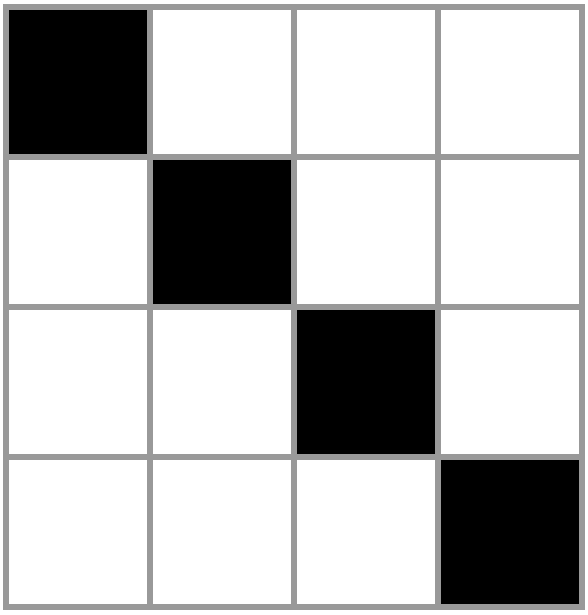
Relay Programming

Relay Image 2



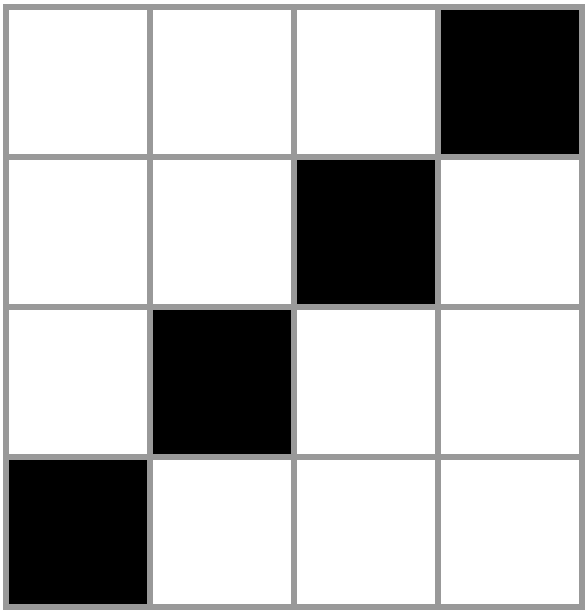
Relay Programming

Relay Image 3



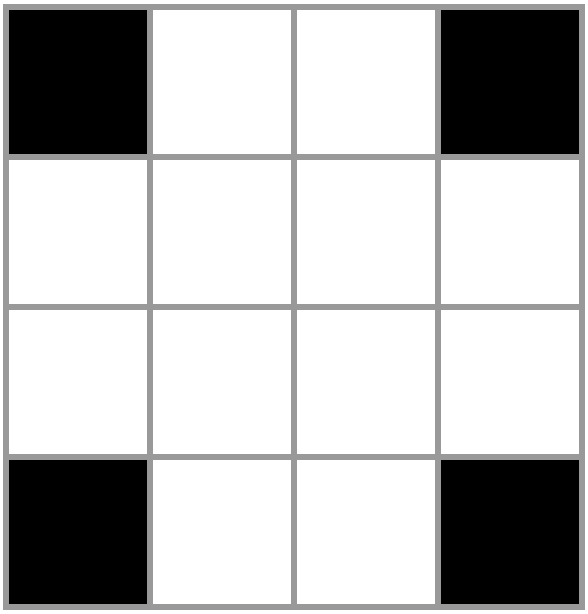
Relay Programming

Relay Image 4



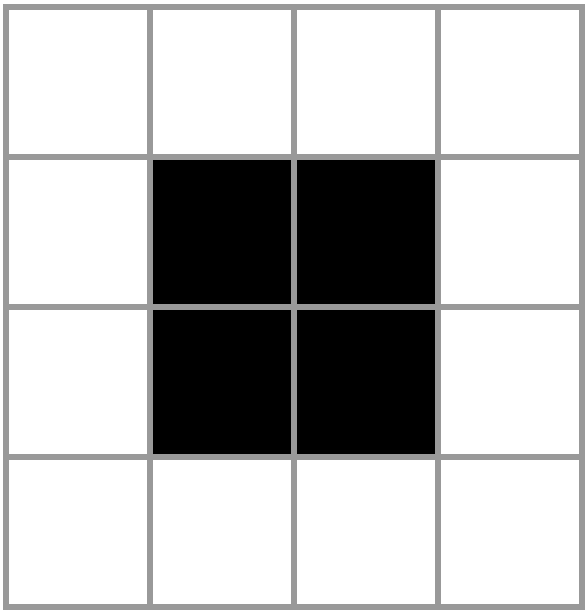
Relay Programming

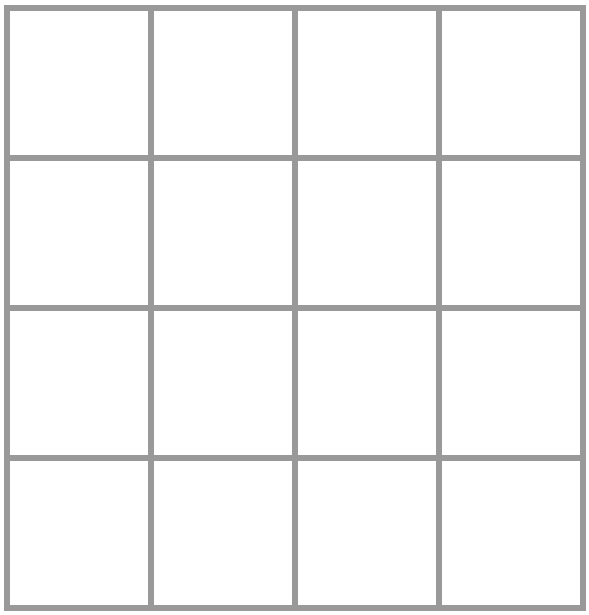
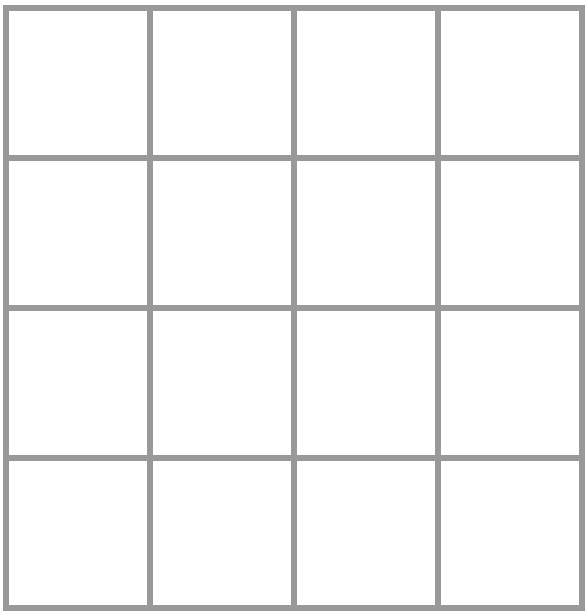
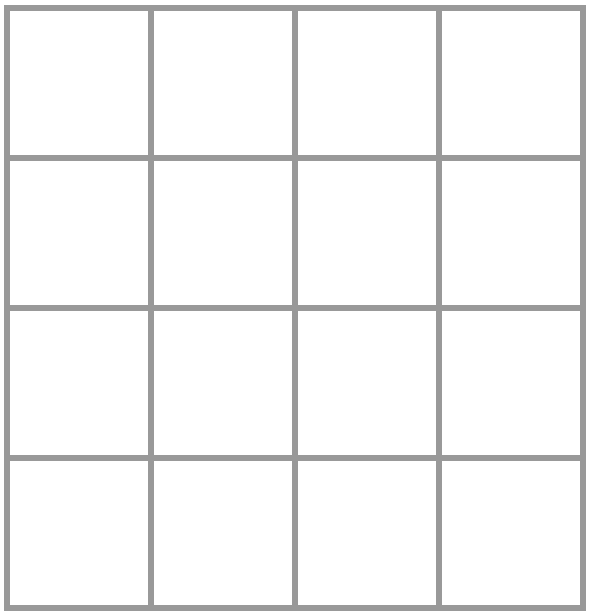
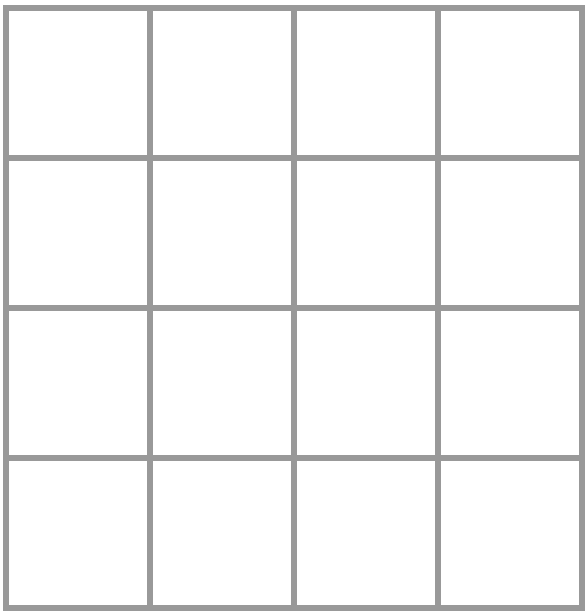
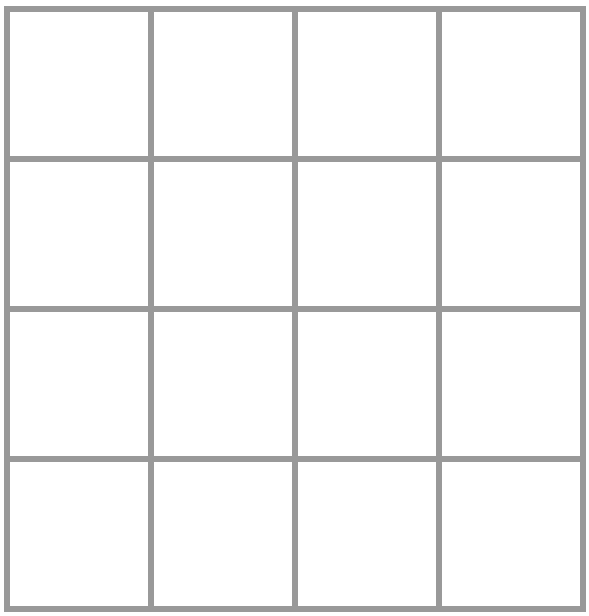
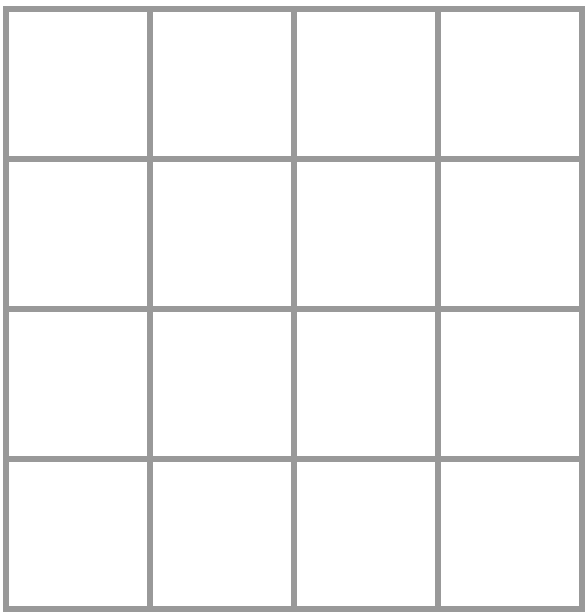
Relay Image 5



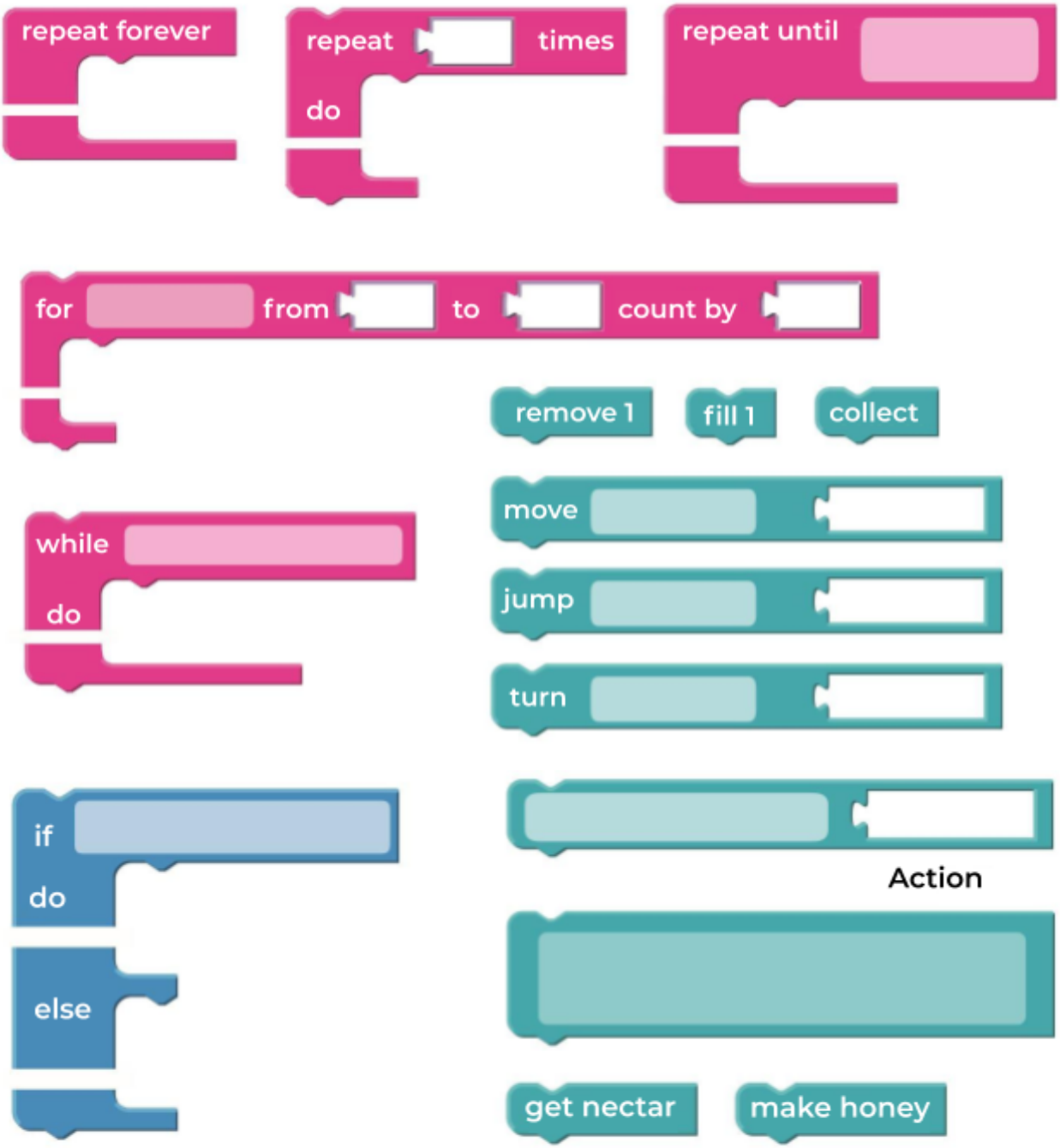
Relay Programming

Relay Image 6

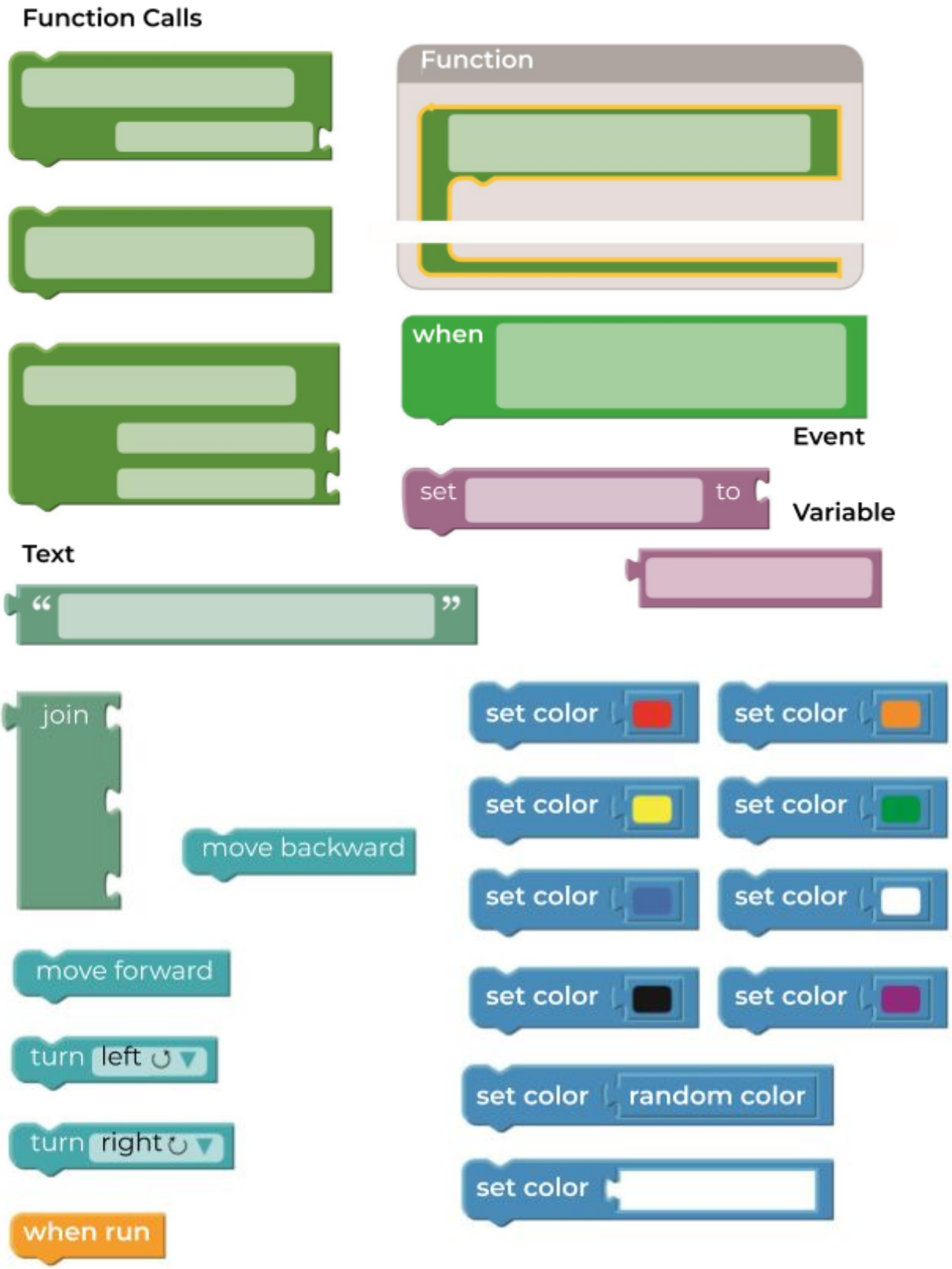


Unplugged Blocks (Courses C-F)



Unplugged Blocks (Courses C-F)



Unit 4 Lesson 5

Events in Bounce

Resources

Unit 4 Lesson 6

Build a Star Wars Game

Resources

Unit 4 Lesson 7

Loops in Ice Age

Resources

Great

Good

Okay

Bad

Sad

Angry

Frustrated

Confused

Unit 4 Lesson 8

Drawing Shapes with Loops

Resources

Unit 4 Lesson 9

Nested Loops in Maze

Resources

Unit 4 Lesson 10

Conditionals with Cards

Resources

Conditionals with Cards

Sample program as algorithm

```
If (CARD is RED)
        Award YOUR team 1 point

Else
        Award OTHER team 1 point
```

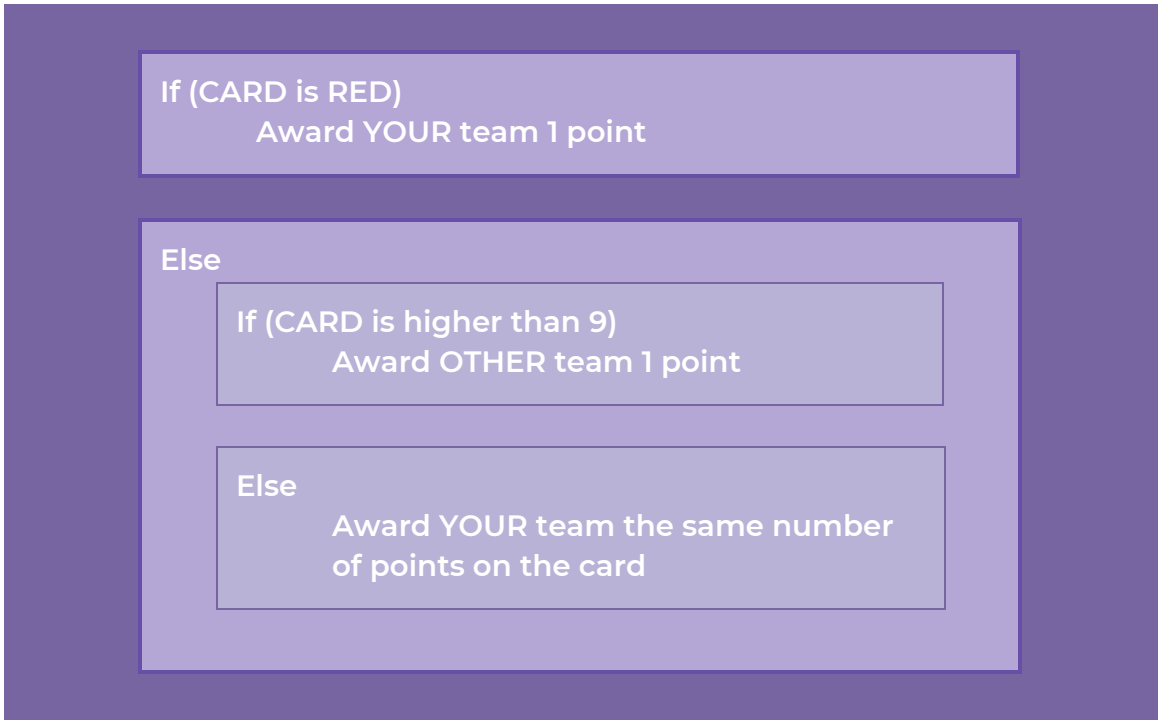
This program has you choose a card. If the card is red, your team gets a point. Else, the other team gets a point.

Sample program from above as pseudocode (like code, but in no particular language)

```
If (card.color == RED) {
        points.yours = points.yours + 1;
}

Else {
        points.other = points.other + 1;
{
```

Conditionals with Cards

Sample program as algorithm



This program has you choose a card. If the card is red, your team gets a point. Else, the card must be black. If your black card is higher than 9, then the other team gets a point, else your card must be black and lower than or equal to 9, and you get as many points as are on your card.

Sample program from above as pseudocode (like code, but in no particular language)

```
If (card.color == RED) {
        points.yours = points.yours + 1;
}

Else {
        If (card.value > 9) {
                points.other = points.other + 1;
        }

        Else {
                Points.yours. = points.yours + card.value;
        }
}
```

Name(s)_____ Period _____ Date _____

Conditionals with Cards

Assessment Activity

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
                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
		__0__		__0__
ROUND #1		____		____
ROUND #2		____		____
ROUND #3		____		____

TEACHER KEY

Conditionals with Cards

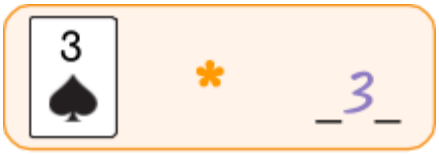
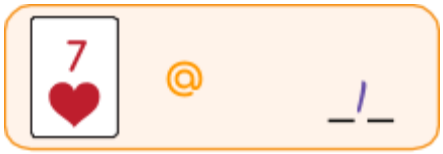
Assessment Activity

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
                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:

		End of Round Score		End of Round Score
	TEAM #1	_0_	**TEAM #2**	_0_
ROUND #1		_3_		_1_
ROUND #2		_3_		_6_
ROUND #3		_3_		_6_
	(3 + 0 + 0)		(1 + 1 + 4 + 0)	

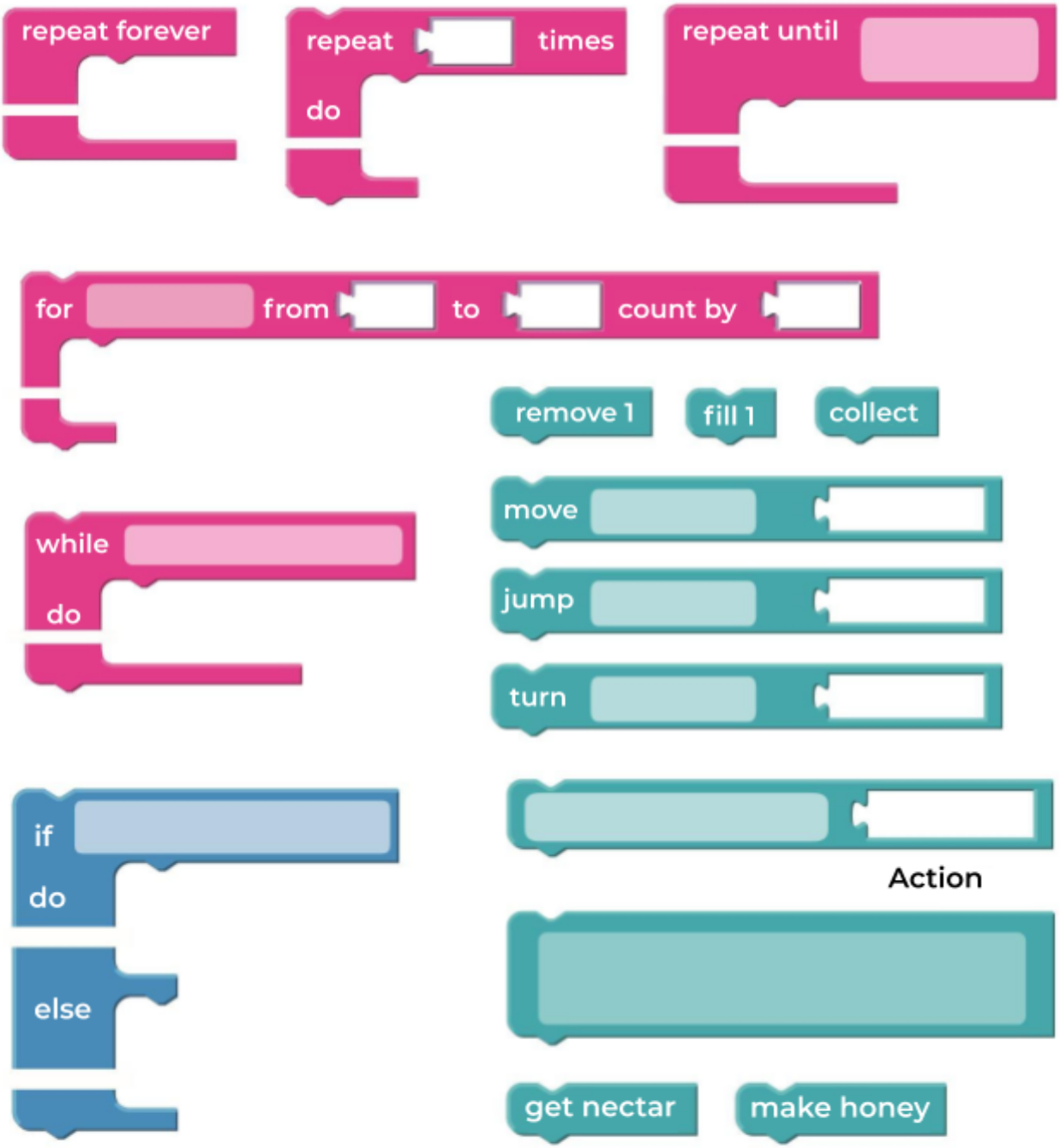
^
From team #1 in round #2

Unit 4 Lesson 11

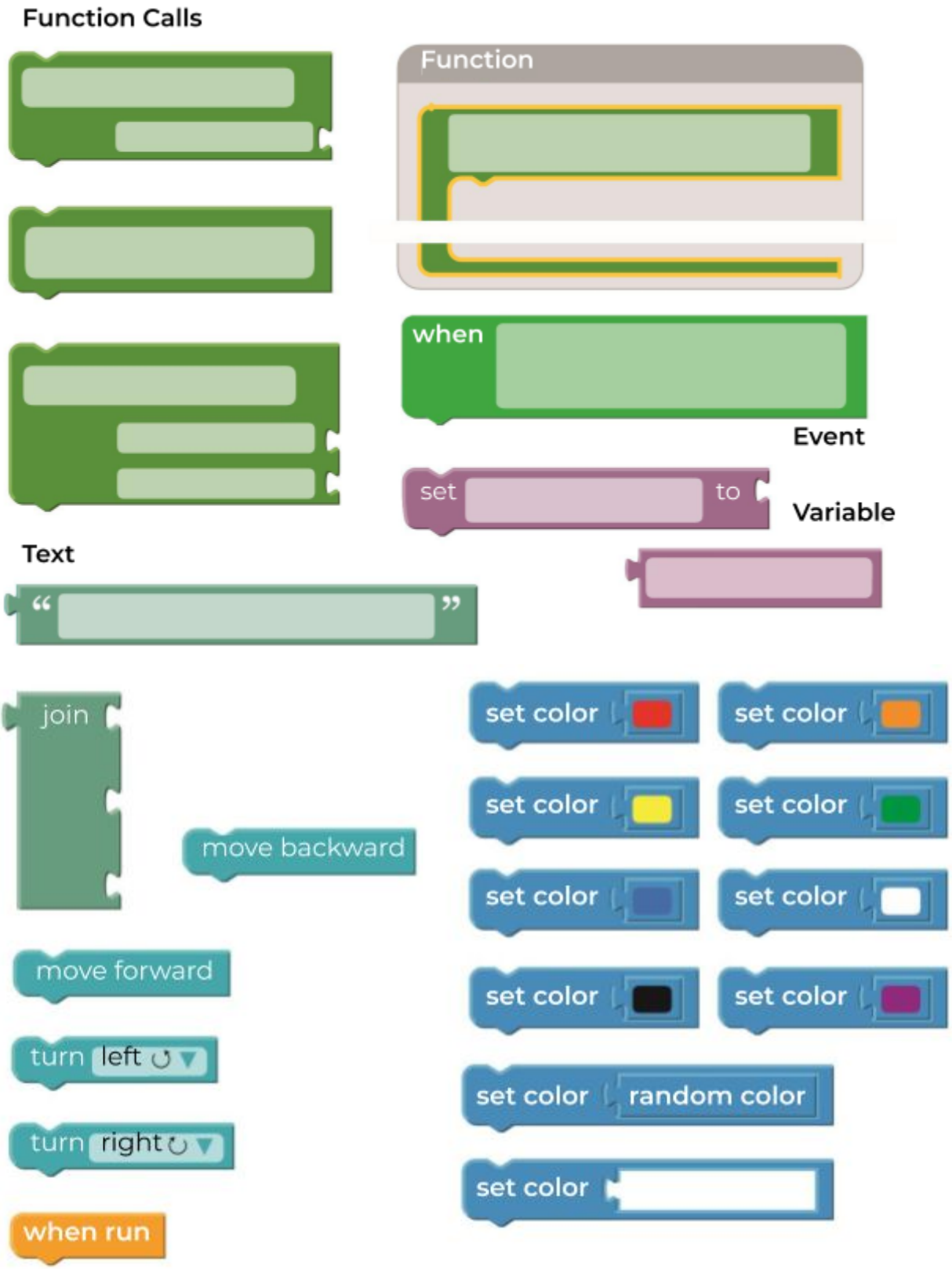
If/Else with Bee

Resources

Unplugged Blocks (Courses C-F)



Unplugged Blocks (Courses C-F)



Unit 4 Lesson 12

While Loops in Farmer

Resources

Conditionals with Cards

Sample program as algorithm

```
If (CARD is RED)
        Award YOUR team 1 point

Else
        Award OTHER team 1 point
```

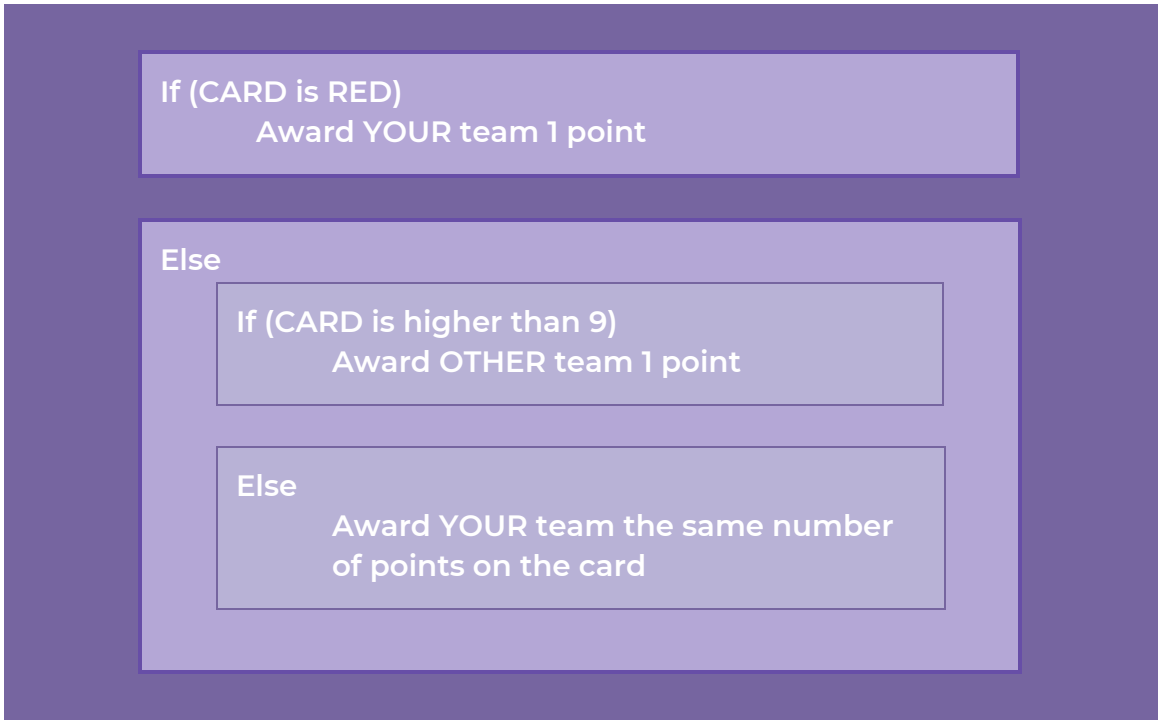
This program has you choose a card. If the card is red, your team gets a point. Else, the other team gets a point.

Sample program from above as pseudocode (like code, but in no particular language)

```
If (card.color == RED) {
        points.yours = points.yours + 1;
}

Else {
        points.other = points.other + 1;
{
```

Conditionals with Cards

Sample program as algorithm

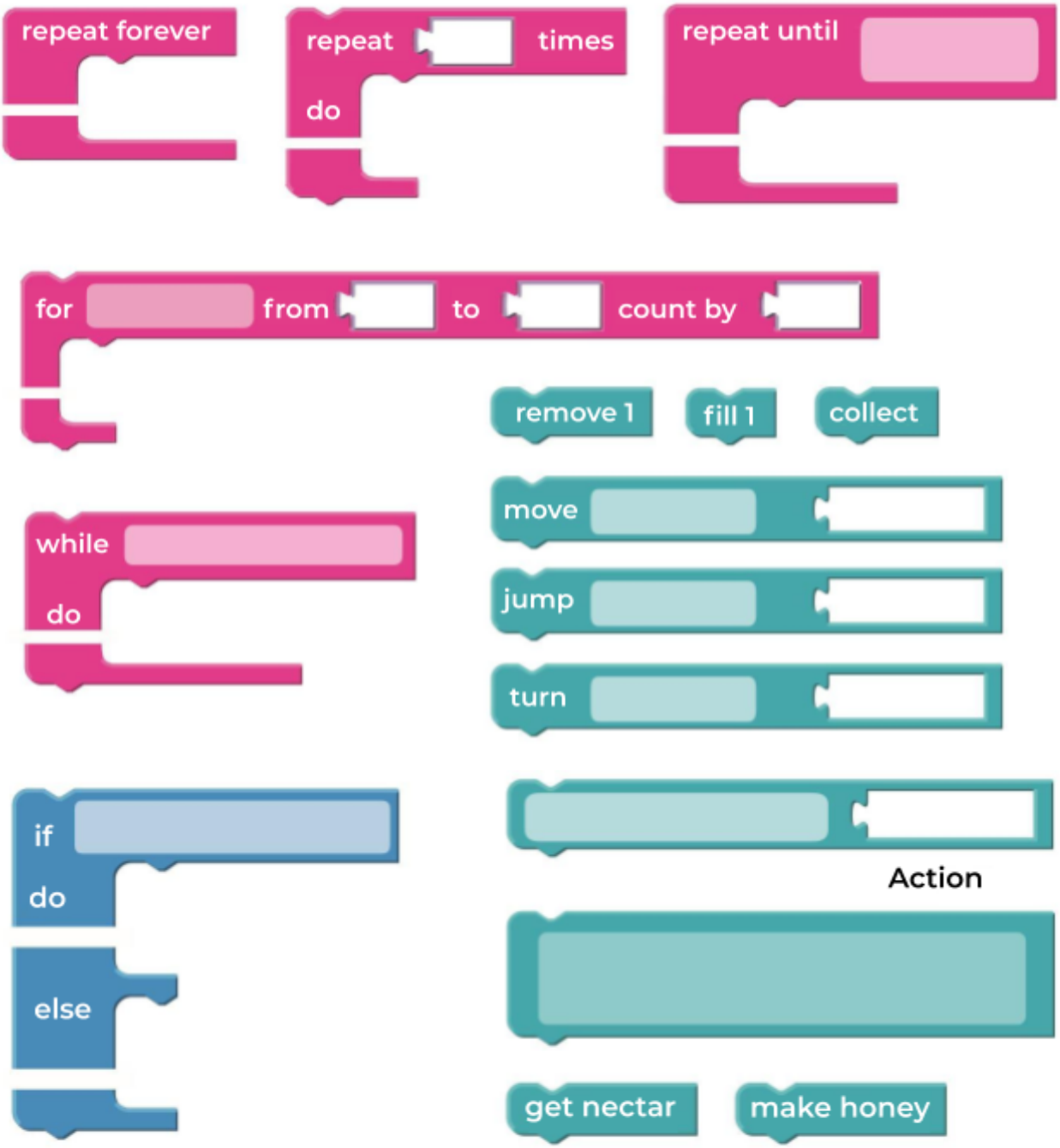


This program has you choose a card. If the card is red, your team gets a point. Else, the card must be black. If your black card is higher than 9, then the other team gets a point, else your card must be black and lower than or equal to 9, and you get as many points as are on your card.

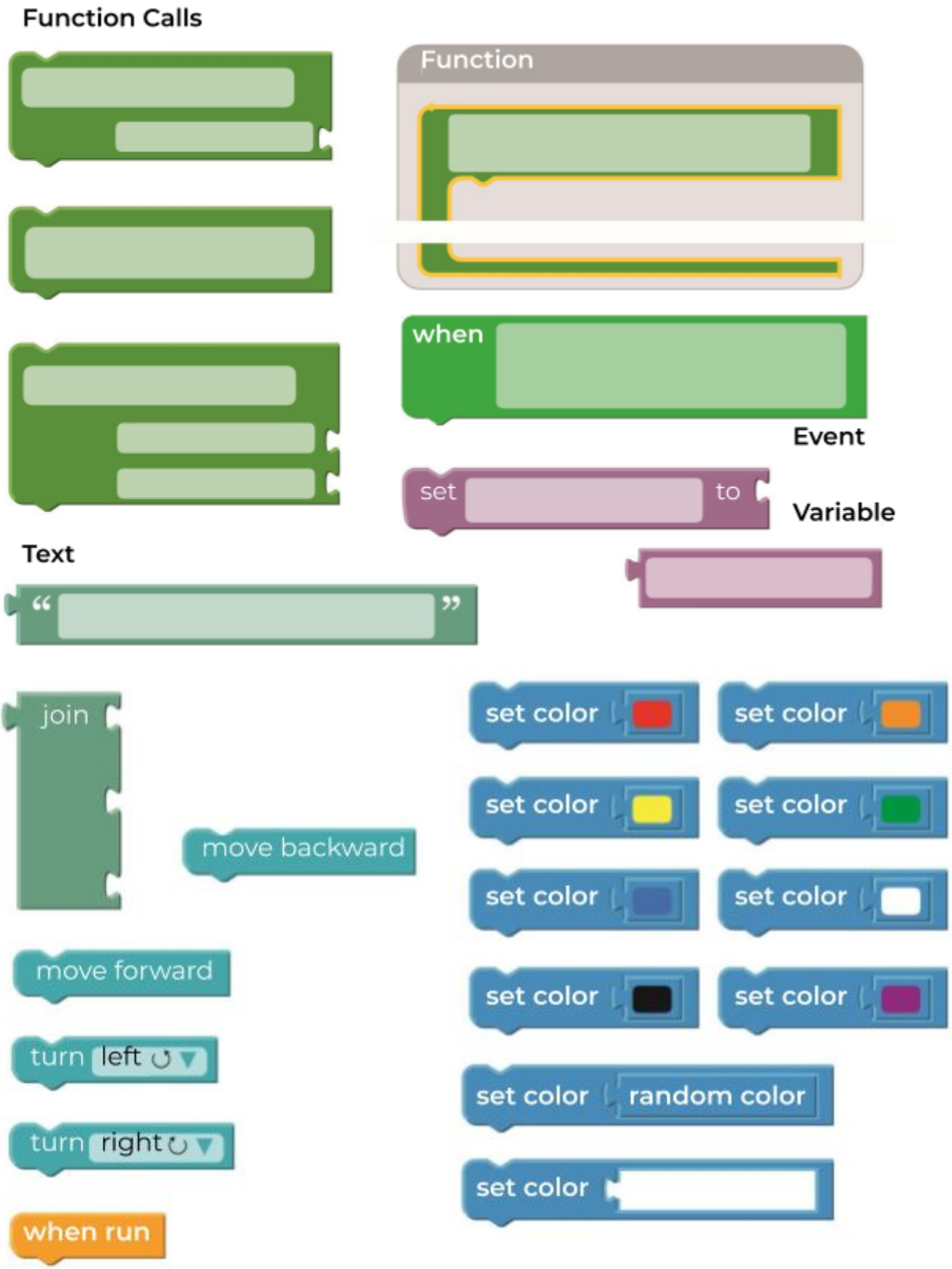
Sample program from above as pseudocode (like code, but in no particular language)

```
If (card.color == RED) {
        points.yours = points.yours + 1;
}

Else {
        If (card.value > 9) {
                points.other = points.other + 1;
        }

        Else {
                Points.yours. = points.yours + card.value;
        }
}
```

Unplugged Blocks (Courses C-F)



Unplugged Blocks (Courses C-F)



Unit 4 Lesson 13

Until Loops in Maze

Resources

Unit 4 Lesson 14

Harvesting with Conditionals

Resources

Unit 4 Lesson 15

Binary Images

Resources

Name(s)_____ Period _____ Date _____

Binary Images

Worksheet

Here are six images. Work with a partner to figure out how you can encode them into binary in such a way that another team can use the code to figure out what image you selected.

DIRECTIONS

1. Choose an image with your partner.
2. Figure out what your binary alphabet is going to be.
3. Encode your image using your new binary alphabet.
4. Trade your encoding with another team and see if you can figure out which picture they worked on.
5. Choose a Level
    * Easy: Let the other team know what your encoding method was
    * Tough: Have the other team guess your encoding method.

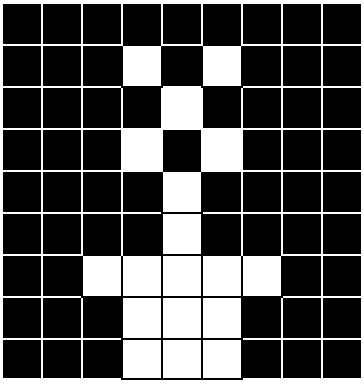


Image 1

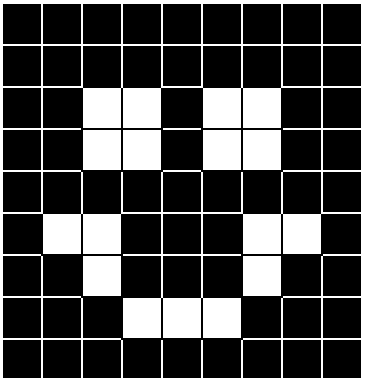


Image 2

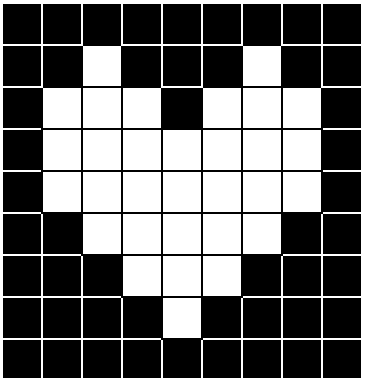


Image 3

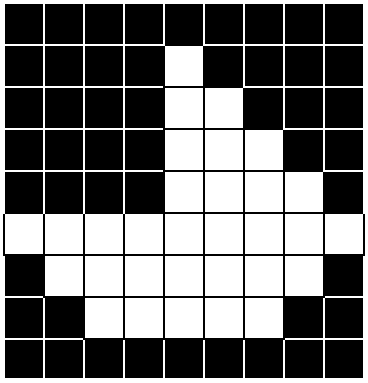


Image 4

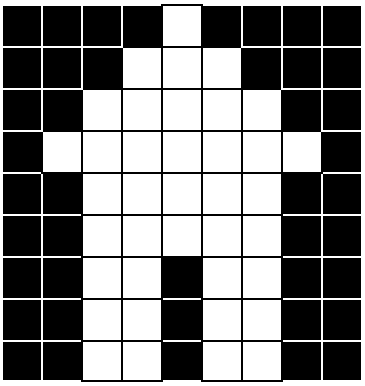


Image 5

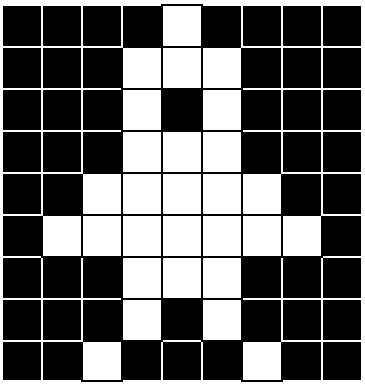


Image 6

Name(s)_____ Period _____ Date _____

Binary Images

Assessment

Match the image to the binary code that describes it. In order to get the images correct, you will need to figure out the binary alphabet for each encoding.

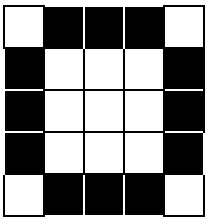


Image 1

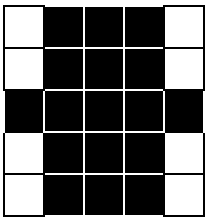


Image 2

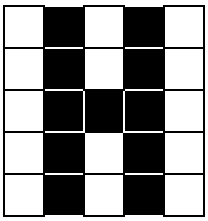


Image 3

A) ★□□□★★□□□★□□□□□★□□□★★□□□★

□ = _____ ★ = _____ This encodes image #_____

B) 𝄞♫𝄞♫♫𝄞♫♫𝄞♫♫𝄞

♫ = _____ 𝄞 = _____ This encodes image #_____

C) ▲❇▲❇▲▲❇▲❇▲▲❇❇❇▲▲❇▲❇▲▲❇▲❇▲

▲ = _____ ❇ = _____ This encodes image #_____

How do you know that your answers are correct?

_____

_____

_____

TEACHER KEY

Binary Images

Assessment

Match the image to the binary code that describes it. In order to get the images correct, you will need to figure out the binary alphabet for each encoding.

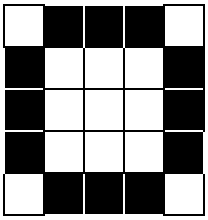


Image #1

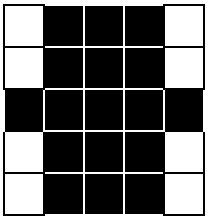


Image #2

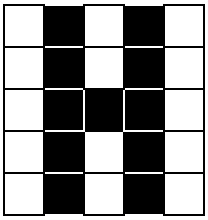


Image #3

A) ★□□□★★□□□★□□□□□★□□□★★□□□★

□ = 0 ★ = 1 This encodes image # 2

B) 𝄞♫♫𝄞♫♫𝄞♫♫𝄞♫♫𝄞

♫ = 1 𝄞 = 0 This encodes image # 1

C) ▲❇▲❇▲▲❇▲❇▲▲❇❇❇▲▲❇▲❇▲▲❇▲❇▲

▲ = 1 ❇ = 0 This encodes image # 3

How do you know that your answers are correct?

All of the corners are white, so those tell us what is 1. After that, all you have to do is match the pattern in each code to the pattern of each image when you spell it out line by line.

Unit 4 Lesson 16

Binary Images with Artist

Resources

Unit 4 Lesson 17

Digital Citizenship

Resources

Name(s)_____ Period _____ Date _____

Digital Citizenship

Assessment

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)

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

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.

TEACHER KEY

Digital Citizenship

Assessment

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)~~

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

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.

This can come from the lesson, or be additional items that the students have learned.

Unit 4 Lesson 18

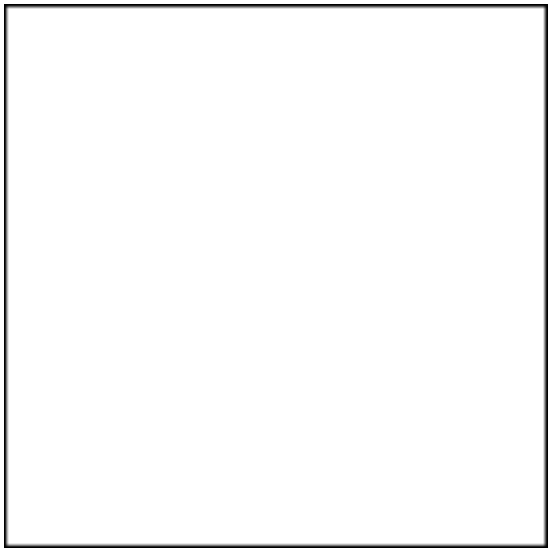
Dance Party

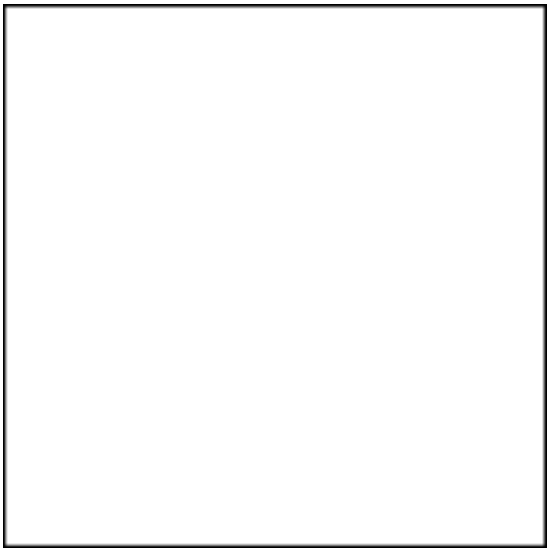
Resources

Name(s)_____ Date _____

Dance Party Project Planning Guide

You are going to create your own dance party!
A more exciting dance will have lots of different parts. For each part of the song you choose, use the space below to draw and explain what your dancers will be doing.





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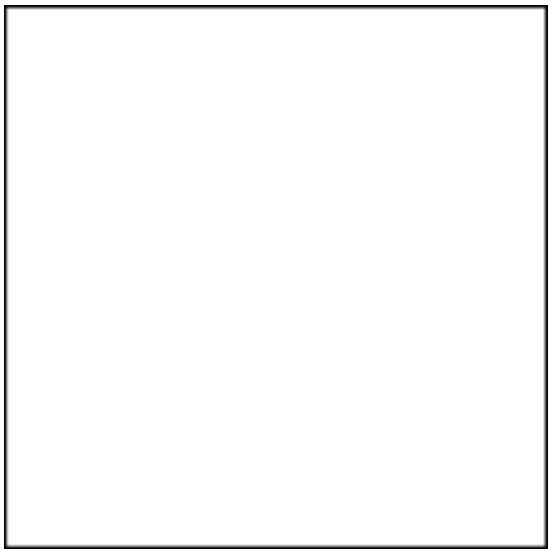

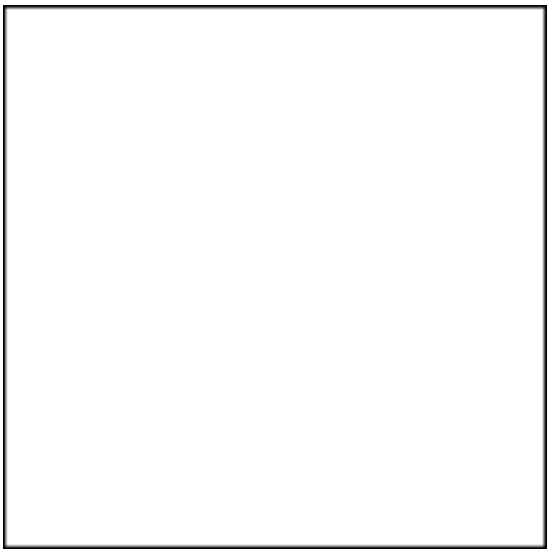

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