



# Lesson 1 | Warmup

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we will program bots to paint pictures using Code Elements.

## Code Elements

<code>up()</code>	<code>down()</code>
<code>left()</code>	<code>right()</code>
<code>paint()</code>	

## Problem 1

---

Pixel Bot Read Code: You are a pixel bot. Read the code and paint the picture.



```
up()  
paint()  
right()
```



```
up()  
right()  
paint()
```





# Lesson 1 | Worksheet 1

---

This is a Pixel Bots Javascript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

up()                      down()  
left()                    right()  
paint()

## Example

---



```
1 up()  
2 right()  
3 paint()
```

## Problems

---

You are a pixel bot. Read the code and paint the picture.



```
1 right()  
2 right()  
3 paint()  
4 up()
```



```
1 right()  
2 paint()  
3 up()  
4 paint()
```





# Lesson 1 | Worksheet 1 (cont'd)



```
1 down()  
2 paint()  
3 left()  
4 paint()
```



```
1 paint()  
2 left()  
3 paint()  
4 down()  
5 paint()
```



```
1 paint()  
2 up()  
3 paint()  
4 up()  
5 paint()
```





# Lesson 10 | Wrap up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

<code>up(steps)</code>	<code>down(steps)</code>
<code>left(steps)</code>	<code>right(steps)</code>
<code>paint(color)</code>	

## Problems

---

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.

lines of code: 16





# Lesson 11 | Worksheet

## Emoji Design Thinking Handout

### Empathize

I am creating an emoji for \_\_\_\_\_

List interests and likes of this person.

---

---

---

---

---

---

Emotions and feelings to convey in emoji.

---

---

---

---

---

---

### Ideate

List your pixel emoji ideas.

---

---

---

---

---

---

---

---

Sketch your ideas.





# Lesson 11 | Worksheet

---

## Prototype #1



## Decompose your emoji

What are the key features of your pixel emoji? (Example: face, face outline, mouth, eyes)  
Circle features and write what the feature is and the color.





# Lesson 11 | Worksheet

---

## Prototype #2



## Decompose your emoji

What are the key features of your pixel emoji? (Example: face, face outline, mouth, eyes)  
Circle features and write what the feature is and the color.





# Lesson 12 | Worksheet 1

---

## Feature List

---

---

---

---

---

---

---

---

---

## To Do List

Today's date \_\_\_\_\_

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_







# Lesson 12 | Worksheet 1

---

To Do List    Today's date \_\_\_\_\_

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_



# { } Lesson 2 | Warmup

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

up()                      down()  
left()                    right()  
paint()

## Example



```
1 right()  
2 paint()  
3 up()  
4 up()  
5 paint()
```

## Problems

You are a pixel bot. Read the code and paint the picture.



```
1 up()  
2 right()  
3 paint()  
4 up()  
5 right()  
6 paint()  
7 down()  
8 down()  
9 paint()
```





# Lesson 2 | Worksheet 1

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

up()	down()
left()	right()
paint()	

## Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	





# Lesson 2 | Worksheet 2-1

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

up()	down()
left()	right()
paint()	

## Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.





## Lesson 2 | Worksheet 2-2

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

### Code Elements

---

up()	down()
left()	right()
paint()	

### Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.





## Lesson 2 | Worksheet 2-3

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

### Code Elements

up()	down()
left()	right()
paint()	

### Problem

You are a coder. Write code to command the pixel bot to paint the picture.





## Lesson 3 | Warmup

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

### Code Elements

---

up()                      down()  
left()                    right()  
paint()

### Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	
7	
8	
9	
10	





# Lesson 3 | Worksheet 1

---

This is a Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

up()  
left()  
paint()  
down()  
right()

## Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.







## Lesson 3 | Worksheet 2

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

### Code Elements

---

<code>up()</code>	<code>down()</code>
<code>left()</code>	<code>right()</code>
<code>paint()</code>	

### Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.





# Lesson 3 | Worksheet 3

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

up()                      down()  
left()                    right()  
paint()

## Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.





# Lesson 3 | Worksheet 4

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

<code>up()</code>	<code>down()</code>
<code>left()</code>	<code>right()</code>
<code>paint()</code>	

## Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.





# Lesson 3 | Worksheet 5

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

up()	down()
left()	right()
paint()	

## Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.





# Lesson 3 | Worksheet 6

---

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

up()	down()
left()	right()
paint()	

## Problem

---

You are a coder. Write code to command the pixel bot to paint the picture.





# Lesson 3 | Exit Ticket

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

up()                      down()  
left()                    right()  
paint()

## Problem

You are a coder. Write code to command the pixel bot to paint the picture.



1  
2  
3  
4  
5  
6  
7  
8  
9  
10

11  
12  
13  
14  
15  
16  
17  
18  
19  
20





# Lesson 4 | Worksheet 1

This is an online Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Problems

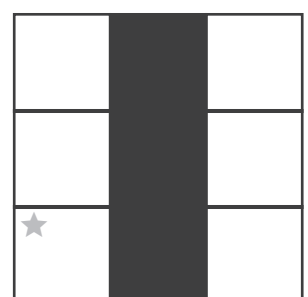
You are a coder. Write code to command the pixel bot to paint the pictures.



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



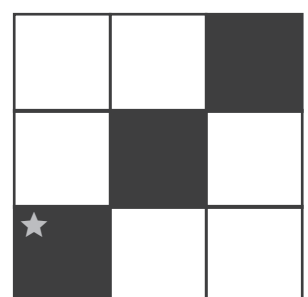
- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained





# Lesson 4 | Exit Ticket

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

up()                      down()  
left()                    right()  
paint()

## Problem

You are a coder. Write code to command the pixel bot to paint the picture.



1  
2  
3  
4  
5  
6


7  
8  
9  
10  
11  
12




1  
2  
3  
4  
5  
6


7  
8  
9  
10  
11  
12








# Lesson 5 | Warm-up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

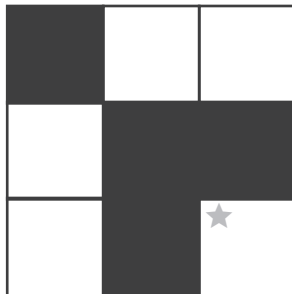
---

up()                      down()  
left()                    right()  
paint()

## Problems

---

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	
7	
8	
9	
10	





# Lesson 5 | Exit Ticket

This is a Mouse Bot JavaScript exercise. In Mouse Bot we program the bot to eat the cheese.

## Code Elements

faceUp()  
faceRight()  
move()  
getCheese()

## Problems

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	
7	
8	





# Lesson 6 | Warm Up

This is a Mouse Bot JavaScript exercise. In Mouse Bot we program the bot to eat the cheese.

## Code Elements

faceUp()      move()  
faceRight()    getCheese()

## Problems

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	
7	
8	
9	
10	





# Lesson 7 | Warm-up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

<code>up()</code>	<code>down()</code>
<code>left()</code>	<code>right()</code>
<code>paint()</code>	

## Problems

---

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.



# { } Lesson 7 | Worksheet 1



1) This is a drill. A drill creates holes by spinning a drill bit. How would you create a bigger hole with a drill bit? Bit creative.



2) This is a golfer. A golfer hits a golf ball with a golf club. How would the golfer hit the ball further? Be creative.



# Lesson 7 | Worksheet 1 (cont'd)

Now try programming the drill to create 3 different size holes using one coding element.

## Code Elements

`drill(size)`



1	
2	
3	
4	
5	
6	

Program the golfer to hit the ball 3 different distances.

## Code Elements

`swing(club)`

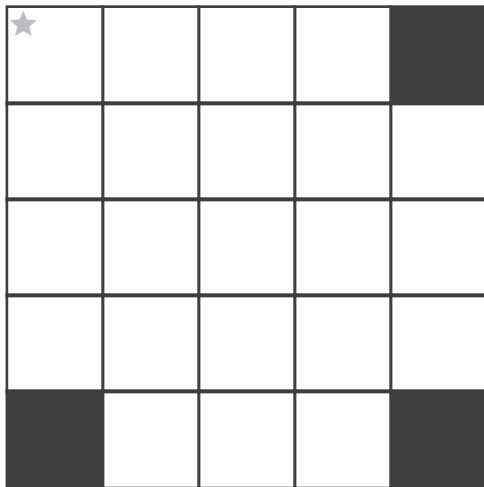


1	
2	
3	
4	
5	
6	



## Lesson 7 | Worksheet 1 (cont'd)

5) Now it's time to return to Pixel Bot. Can you come up with a way to paint the picture in 6 lines? Think about problems 3 and 4.



1	
2	
3	
4	
5	
6	

6) What are the similarities between drilling, golf, and moving the pixel bot multiple steps?



# Lesson 7 | Worksheet 2

This is an online Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Problems

You are a coder. Write code to command the pixel bot to paint the pictures.



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained







# Lesson 8 | Warm-up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

`up(steps)`

`left(steps)`

`paint()`

`down(steps)`

`right(steps)`

## Problems

---

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.





# Lesson 8 | Worksheet 1

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

`up(steps)`

`left(steps)`

`paint()`

`down(steps)`

`right(steps)`

## Problems

---

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.

lines of code: 27





# Lesson 8 | Worksheet 2

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

`up(steps)`

`down(steps)`

`left(steps)`

`right(steps)`

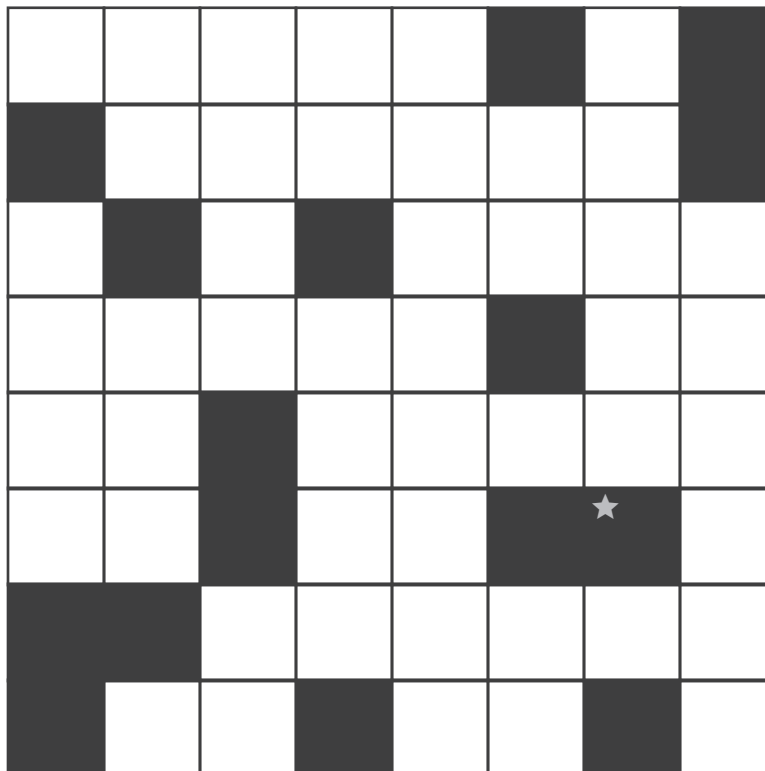
`paint()`

## Problems

---

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.

lines of code: 31





# Lesson 8 | Worksheet 3

This is an online Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Problems

You are a coder. Write code to command the pixel bot to paint the pictures.

lines of code: 18



- ☐ done
- ☐ explained

lines of code: 15



- ☐ done
- ☐ explained

lines of code: 21



- ☐ done
- ☐ explained

lines of code: 17



- ☐ done
- ☐ explained





# Lesson 9 | Warm-up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

---

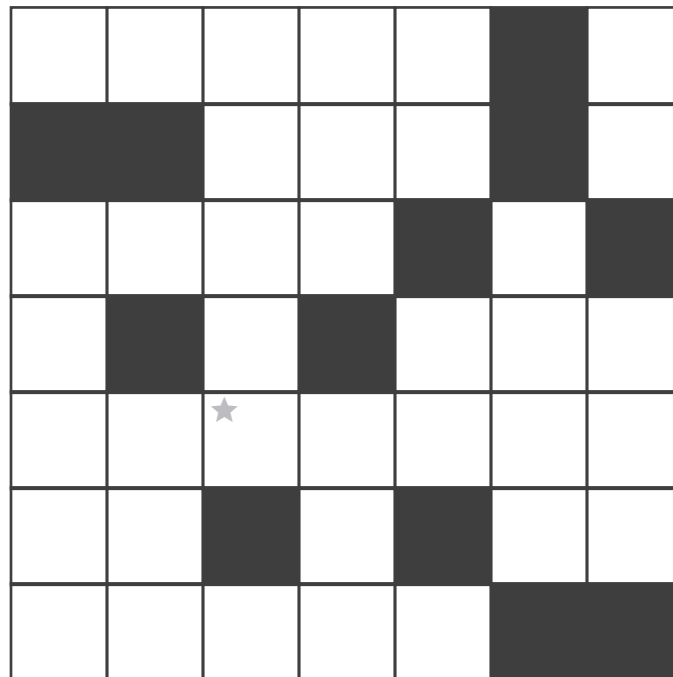
<code>up(steps)</code>	<code>down(steps)</code>
<code>left(steps)</code>	<code>right(steps)</code>
<code>paint()</code>	

## Problems

---

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.

lines of code: 24





# Coders & Bots

---

## Coders

---



**Navigator.** You are responsible for the overall plan for the program. Guide the Writer and keep track of what your program is doing.



**Writer.** Add code to your program. Pay attention to syntax.

## Bots

---



**Stepper.** Step through the program and read each step aloud. Keep your finger on the step you are reading.



**Actor.** Listen carefully to each line of code the Stepper says aloud. Using the materials available, show what each line of code does.

# Coding Paper

---

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

11	
12	
13	
14	
15	
16	
17	
18	
19	
20	



# Coding Paper

---

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	





# Coding Paper

---

1		31		61	
2		32		62	
3		33		63	
4		34		64	
5		35		65	
6		36		66	
7		37		67	
8		38		68	
9		39		69	
10		40		70	
11		41		71	
12		42		72	
13		43		73	
14		44		74	
15		45		75	
16		46		76	
17		47		77	
18		48		78	
19		49		79	
20		50		80	
21		51		81	
22		52		82	
23		53		83	
24		54		84	
25		55		85	
26		56		86	
27		57		87	
28		58		88	
29		59		89	
30		60		90	



# Small Pixel Grids

---





# Medium Pixel Grids

---





# Large Pixel Grids

---





# Challenge Problems - 1

---





## Challenge Problems - 2

