



# Lesson 1 | Warmup

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

## Code Elements

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## Problem 1

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





# Lesson 1 | Worksheet 1

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

## Code Elements



## Example



|   |   |
|---|---|
| 1 | ↑ |
| 2 | → |
| 3 | 🎨 |

## Problems

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



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|---|---|
| 1 | → |
| 2 | → |
| 3 | 🎨 |
| 4 | ↑ |



|   |   |
|---|---|
| 1 | → |
| 2 | 🎨 |
| 3 | ↑ |
| 4 | 🎨 |





# Lesson 1 | Worksheet 1 (cont'd)



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| 2 | ↖ |
| 3 | ← |
| 4 | ↗ |



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|---|---|
| 1 | ↖ |
| 2 | ← |
| 3 | ↖ |
| 4 | ↓ |
| 5 | ↗ |



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|---|---|
| 1 | ↖ |
| 2 | ↑ |
| 3 | ↖ |
| 4 | ↑ |
| 5 | ↖ |





# Lesson 10 | Warm-up

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

## Code Elements

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

## Problems

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



# { } Lesson 10 | 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? Be 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 10| Worksheet 1 (cont'd)

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

## Code Elements

`drill(size)`



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Program the golfer to hit the ball 3 different distances.

## Code Elements

`swing(club)`



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# Lesson 10 | 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.



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



# Lesson 10 | 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 11 | Worksheet

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  
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☐ done  
☐ explained





# Lesson 11 | Exit Ticket

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

## Problems

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



Code Link





# Lesson 12 | Exit Ticket

Match the artist with the blocks of code that complete the shape he is drawing.



```
move forward ▾ by 100 pixels  
turn right ▾ by 120 degrees  
move forward ▾ by 100 pixels
```

```
move forward ▾ by 100 pixels  
turn right ▾ by 90 degrees  
move forward ▾ by 100 pixels
```

```
move forward ▾ by 100 pixels  
turn right ▾ by 60 degrees  
move forward ▾ by 100 pixels
```

```
turn right ▾ by 120 degrees  
move forward ▾ by 100 pixels
```





## Lesson 2 | Warmup

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

### Code Elements



### Example



|   |   |
|---|---|
| 1 | → |
| 2 | 🎨 |
| 3 | ↑ |
| 4 | ↑ |
| 5 | 🎨 |

### Problems

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



|   |   |
|---|---|
| 1 | ↑ |
| 2 | → |
| 3 | 🎨 |
| 4 | ↑ |
| 5 | → |
| 6 | 🎨 |
| 7 | ↓ |
| 8 | ↓ |
| 9 | 🎨 |





# Lesson 2 | Worksheet 1

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

## Code Elements



## Problem

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



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| 1 |  |
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## Lesson 3 | Warmup

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

### Code Elements



### Problem

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



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# Lesson 3 | Worksheet 1

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

## Code Elements



## Problem

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



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# Lesson 3 | Worksheet 2

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

## Code Elements



## Problem

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



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# Lesson 3 | Worksheet 3

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

## Code Elements



## Problem

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



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# Lesson 3 | Worksheet 4

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

## Code Elements



## Problem

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



|    |  |
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| 18 |  |
| 19 |  |
| 20 |  |





# Lesson 3 | Exit Ticket

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

## Code Elements



## Problem

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



1  
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# 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 exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Code Elements

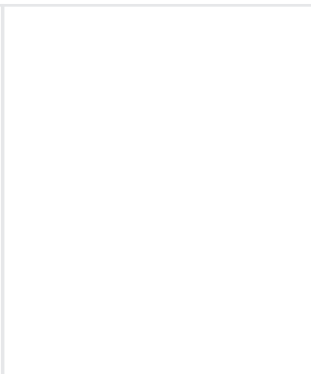


## Problem

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



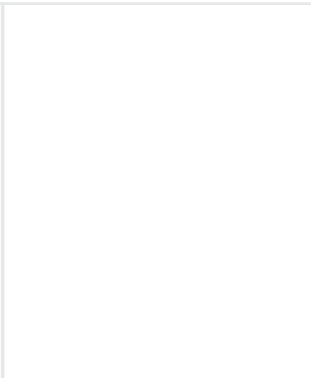
1  
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12



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12





# Lesson 6 | Warmup

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

## Code Elements



## Problem

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



|    |  |    |  |
|----|--|----|--|
| 1  |  | 16 |  |
| 2  |  | 17 |  |
| 3  |  | 18 |  |
| 4  |  | 19 |  |
| 5  |  | 20 |  |
| 6  |  | 21 |  |
| 7  |  | 22 |  |
| 8  |  | 23 |  |
| 9  |  | 24 |  |
| 10 |  | 25 |  |
| 11 |  | 26 |  |
| 12 |  | 27 |  |
| 13 |  | 28 |  |
| 14 |  | 29 |  |
| 15 |  | 30 |  |





# Lesson 6 | 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.



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# Lesson 6 | Worksheet 2

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This is a Dance Bot exercise. In Dance Bot we program bots to dance.

## Code Elements

---

|                         |                          |
|-------------------------|--------------------------|
| <code>up()</code>       | <code>down()</code>      |
| <code>left()</code>     | <code>right()</code>     |
| <code>spinLeft()</code> | <code>spinRight()</code> |
| <code>wait()</code>     |                          |

## Problem

---

You are a coder. Write code to command your bot to perform the same dance your teacher is doing.

|    |  |    |  |
|----|--|----|--|
| 1  |  | 16 |  |
| 2  |  | 17 |  |
| 3  |  | 18 |  |
| 4  |  | 19 |  |
| 5  |  | 20 |  |
| 6  |  | 21 |  |
| 7  |  | 22 |  |
| 8  |  | 23 |  |
| 9  |  | 24 |  |
| 10 |  | 25 |  |
| 11 |  | 26 |  |
| 12 |  | 27 |  |
| 13 |  | 28 |  |
| 14 |  | 29 |  |
| 15 |  | 30 |  |





# Lesson 7 | 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





# 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



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained





# Lesson 7 | 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()

## Problems

---

1) Which of the following has a syntax error:

- a. up()
- b. down()
- c. right)
- d. left()

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



|   |  |
|---|--|
| 1 |  |
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# 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()                      down()  
left()                    right()  
paint()

## Problems

---

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



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# Lesson 8 | Exit Ticket

---

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. Assuming the Mouse Bot starts at the star facing the right, write code to get the cheese.



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# Lesson 9 | 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. Assuming the Mouse Bot starts at the star facing the right, write code to get the cheese.



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# Coders & Bots

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## Coders

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**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

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**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

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# Coding Paper

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# Coding Paper

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| 4  |  | 34 |  | 64 |  |
| 5  |  | 35 |  | 65 |  |
| 6  |  | 36 |  | 66 |  |
| 7  |  | 37 |  | 67 |  |
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| 27 |  | 57 |  | 87 |  |
| 28 |  | 58 |  | 88 |  |
| 29 |  | 59 |  | 89 |  |
| 30 |  | 60 |  | 90 |  |



# Small Pixel Grids

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# Medium Pixel Grids

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# Large Pixel Grids

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# Challenge Problems - 1

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## Challenge Problems - 2

