Teacher Answer Key

Code Studio Lesson Keys
for
Courses 1 - 4
Happy Map 1

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

Happy Map 2

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

Happy Map 3

Happy Map 4
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.
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.
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:

1. [Image: Illustration of a hand putting on a shoe]
2. [Image: Illustration of a shoe]
3. [Image: Illustration of a hand tying a shoelace]

Help Connie Brush her Teeth:

1. [Image: Illustration of a cat with open mouth]
2. [Image: Illustration of toothpaste being placed on a toothbrush]
3. [Image: Illustration of a cat with toothpaste on its mouth]
4. [Image: Illustration of a cat brushing its teeth]
5. [Image: Illustration of a cat with a smile]

Help Connie Plant a Seed:

1. [Image: Illustration of a hand planting a seed]
2. [Image: Illustration of a hand adding soil]
3. [Image: Illustration of a hand watering the seed]
4. [Image: Illustration of a plant sprouting]
5. [Image: Illustration of a sunny day]
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 Iteration

Belly Laugh

Then do this

Repeat this part 3 times!
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.
Keep It Private
Learning to be Safe and Responsible Assessment

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

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

Circle Any Below

- THE JUNGLE
- OUTER SPACE
- THE OCEAN

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

- My birth is February 5th, 2006
- My address is 2524 Sycamore Lane.

- I like watermelon.
- I like swimming.

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

Draw anything
Teacher Answer Key

Course 2
There are many options, here are the most efficient:

1. Image 1:
   - → → → ↓ ← ← ← →

2. Image 2:
   - ↓ ↓ ↓ ↓ → ↓ ↓ ↓

3. Image 3:
   - → → → → → → ↓ ↓ ↓

4. Image 4:
   - → → → ↓ ← ← ← → → → ↓ ↓ ↓

5. Image 5:
   - → → → → ↓ ← ← ← → → → ↓ ↓ ↓

6. Image 6:
   - → → → → ↓ ↓ ↓ ← ← ← → → → ↓ ↓ ↓

Teacher Key
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.

- Move One Square Forward
- Move One Square Backward
- Move One Square Up
- Move One Square Down
- Fill-In Square with Color

Start Here

There are multiple options. Here are some good ones:

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

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

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

Now, read the program below and draw the image that it describes.
1. Crease paper down the center
2. Fold top corners to center
3. Fold corner sides to center
4. Fold paper in half again
5. Pull sides down
6. Toss finished plane
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 it’s 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
```
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.

Repeat this part 3 times!

Then do this

Belly Laugh

The Iteration
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

Start Here

```
  1  2  3  4
  5  6  7  8
  9 10 11 12
```

```
→ → ↓ ↓ → →  ▼
```

Start Here

```
  1  2  3  4
  5  6  7  8
  9 10 11 12
```

```
→ → → → ↓  ▼
```

Start Here

```
  1  2  3  4
  5  6  7  8
  9 10 11 12
```

```
→ ↓ ▼
```

Start Here

```
  1  2  3  4
  5  6  7  8
  9 10 11 12
```

```
○→ →  ▼
```

Start Here

```
  1  2  3  4
  5  6  7  8
  9 10 11 12
```

```
○→ → ↓ → → →
```

Start Here

```
  1  2  3  4
  5  6  7  8
  9 10 11 12
```

```
○→ ▼
```

Revision 160422.1a
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:

<table>
<thead>
<tr>
<th>TEAM #1</th>
<th>END OF ROUND SCORE</th>
<th>TEAM #2</th>
<th>END OF ROUND SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROUND #1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>ROUND #2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>ROUND #3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3 + 0 + 0)</td>
<td></td>
<td>(1 + 1 + 4 + 0)</td>
<td></td>
</tr>
</tbody>
</table>
Use the Binary Decoder Key below to decode the message at the bottom of the sheet.

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

Can you figure out what the message says?

CODE IS FUN

Revision 160422.1a
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.
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.

Circle One:
A) Fran the Fish
B) Betty the Bird
C) Tony the Tiger
Follow The Digital Trail

Directions

Follow the trails of Mizzle the Mouse and Electra the Elephant. Fill in the chart below. Then answer the questions.

<table>
<thead>
<tr>
<th>Question</th>
<th>Mizzle the Mouse</th>
<th>Electra the Elephant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Whose full name do you know?</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>2. Whose house could you find?</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>3. Whose birth date do you know?</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>4. Whose username and password do you know?</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>5. Who let out a secret on the Internet?</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>6. Which animal can you describe better from his or her photo?</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Question

1. Who can the detectives find out more about, and why?
   Electra, because we now know where Electra lives, what she looks like, and private and personal information about her life.
   (Point out to students that having a bigger digital footprint means the detectives can learn more about them too.)

2. Which animal has a bigger digital footprint?
   Electra, because she put more private and personal information online than Mizzle.
3. Mizzle says some funny things about himself on the Internet. What are they?

He says he likes Swiss cheese, his photo is of cheese, and he has a pet flea.

4. Is there anything that Electra posted on the Internet that could become a problem for her? If so, what and why?

Private and personal information (e.g., address, full name) allows others to learn more about her.

This could be unsafe. Saying that she fights with her brother could hurt her brother’s feelings because it is public.
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 __________.”
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.

2)    It’s fun to read books.               It’s fun to read magazines.

3)    I love my cat’s whiskers.               I love my dog’s tail.

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

It’s fun to read ______.

I love my ______.

There ___ a ____  in the _____
that looks like a ______.
**Example:**

**SKILL 1**
1) Bead
2) Knot
3) Bead
4) Knot
5) Spacer
6) Knot

**SKILL 2**
1) Special Bead
2) Finishing Knot
3)
4)
5)
6)

**PROGRAM**
1) **Skill 1**
2) **Skill 1**
3) **Skill 2**
4)
5)
6)

There are several other ways. Can you find 2 more?
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) ________
2) ________
3) ________
4) ________
5) ________
6) ________
7) ________
8) ________
9) ________
10) ________
11) ________
12) ________
13) ________
14) ________

**NEW PROGRAM**

1) ________
2) ________
3) ________
4) ________
5) ________

**SKILL 1**

1) ________
2) ________
3) ________
4) ________
5) ________

**SKILL 2**

1) ________
2) ________
3) ________
4) ________
5) ________

**SKILL 3**

1) ________
2) ________
3) ________
4) ________
5) ________

**NEW PROGRAM**

1) ________
2) ________
3) ________
4) ________
5) ________
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'.
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 understand the Dice Race game.

The hardest part about getting a problem ready for a computer can be figuring out how to describe real-life activities. We’re going to get some practice by playing and describing the Dice Race game.

Read the rules below, then play a couple rounds of the Dice Race game. As you’re playing, think about how you would describe everything that you’re doing. What would it look like from the computer’s point of view?

The Rules:
1) Set each player’s score to 0.
2) Have the first player roll.
3) Add points from that roll to player one’s total score.
4) Have the next player roll.
5) Add points from that roll to player two’s total score.
6) Each player should go again two more times.
7) Check each player’s total score to see who has the most points.
8) Declare Winner.

### Game 1

<table>
<thead>
<tr>
<th>Turn 1</th>
<th>Turn 2</th>
<th>Turn 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Player 1</td>
<td>3</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Player 2</td>
<td>4</td>
<td>10</td>
<td>12</td>
</tr>
</tbody>
</table>

Circle the Winner: 12

### Game 2

<table>
<thead>
<tr>
<th>Turn 1</th>
<th>Turn 2</th>
<th>Turn 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Player 1</td>
<td>6</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Player 2</td>
<td>1</td>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

Circle the Winner: 13
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.

<table>
<thead>
<tr>
<th>Turn 1</th>
<th>Turn 2</th>
<th>Turn 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Player 1</td>
<td>3</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Player 2</td>
<td>1</td>
<td>7</td>
<td>12</td>
</tr>
</tbody>
</table>

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.

Step 1: Set scores to 0

Repeat 3 times:

Step 2: Roll Player 1

Step 3: Add roll to P1 total score

Step 4: Roll Player 2

Step 5: Add roll to P2 total score

Step 6: Compare scores

Step 7: Circle Winner

Circle the Winner
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

<table>
<thead>
<tr>
<th>#</th>
<th>URL</th>
<th>IP ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>code.org</td>
<td>54.243.71.82</td>
</tr>
<tr>
<td>2</td>
<td>csisfun.com</td>
<td>100.42.50.110</td>
</tr>
<tr>
<td>3</td>
<td>thinkersmith.org</td>
<td>64.14.68.10</td>
</tr>
<tr>
<td>4</td>
<td>light-bot.com</td>
<td>54.209.61.132</td>
</tr>
<tr>
<td>5</td>
<td>KhanAcademy.org</td>
<td>23.23.224.106</td>
</tr>
</tbody>
</table>

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.
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.

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

---

Revision 140625.1a
Very specific algorithms help multiple people create identical products.

Less specific algorithms allow a great deal of flexibility for every person to have something different.

Circle the drawing that does not follow the algorithm provided.

**Algorithm #1**
1) Put two large triangles at the bottom of the image.
2) Put a square on top of those two triangles.
3) Put two little triangles beside the square.

Circle the algorithm that goes with Drawing 1.

**Algorithm A**
1) Use two triangles, a square, and another piece
2) Line two triangles up with the square
3) Put the last piece on top of the square

**Algorithm B**
1) Use three triangles, a rhombus, and another piece
2) Put the rhombus at the bottom
3) Put all three triangles above the rhombus
4) Put the final piece to the left of everything else

**Algorithm C**
1) Use three triangles, a square, and another piece
2) Line two triangles up with the square
3) Put a third triangle beneath the other shapes
4) Put the last piece on the left
Think about a robot. What is it supposed to do? What does it look like?

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

1. My robot’s name is _______.
   robotName = Elijah

2. My robot’s height is _______ (don’t forget units!).
   numUnitsTall = 27 feet

3. My robot’s primary purpose is _______.
   purpose = being awesome
Given the value of each variable envelope, fill-in the blanks to finish the sentence.

When I grow up, I want to own a guard ___monkey___.

I found a flower with ___22___ petals, so I picked it.

My dad just painted his house ___pink___ to match his car.

I love ___coding___. I do it every evening.

There is no such thing as a ___pink___ river, so if you find one, don’t swim in it!

The best sport in the world is ___golf___, do you agree?

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

$$\text{numOne} = 2$$

$$\text{numTwo} = 5$$

$$\text{numThree} = 7$$

$$\text{magicNumberA} = \frac{7}{\text{numThree}} - \frac{2}{\text{numOne}}$$

$$\text{magicNumberB} = \frac{5 \times 2}{\text{numTwo} \times \text{numOne}}$$

$$\text{magicNumberC} = \frac{2}{\text{numOne}} + \frac{5 \times 10}{\text{numTwo} \times \text{magicNumberB}}$$
The Mad Glib template that we used to make these stories has vanished! Look at the stories and figure out which words are supposed to be blanks, then recreate the template at the bottom of the page.

**Story 1**

Early last year, my mom gave me an old skateboard. She told me about the days when she would ride it from her school in her hometown. I tried to ride it once, but tripped over my shoelaces. It didn’t take long before I decided that it was best to leave the skateboarding to my mom.

**Story 2**

Sometime last year, my mom told me an old story. She told me about the days when she would hear it from her father in her childhood. I tried to tell it once, but tripped over my words. It didn’t take long before I decided that it was best to leave the storytelling to my mom.

Create new template here:

Just last year, my mom showed me an old computer. She told me about the days when she would program it to draw circles. I tried to use it once, but tripped over my fingers. It didn’t take long before I decided that it was best to leave the old machine to my mom.
Write a story using the Mad Glibs template below. Fill in the blanks with words to create something fun to share. Then, create a second story by writing another version on the lines at the bottom of the page.

**Story 1**

Example:

First you take your _______ then add a layer of _______ before you pour on a hearty dose of _______.

Next, press some _______ down into the _______ before covering with a sprinkle of _______.

That’s how we make a _______

**Story 2**

Example:

First, take your planter, then add a layer of soil before you pour on a hearty dose of water. Next, press some seeds down into the soil before covering with a sprinkle of moss.

That’s how we make a flower!
Directions:
* Use the number lines to trace the “for loop” for each turn
  * Start at the starting value of X
  * Count down the number line, circling the numbers at the correct interval
  * Stop when you get to the stopping value
* Add all of the circled values to get the score for your round
* Best 2 out of 3 Wins

**Sample Game Sheet**

**ROUND 1**
- **Player 1**
  - For values of X from __ to __ incrementing by __
  - Score: 21
- **Player 2**
  - For values of X from __ to __ incrementing by __
  - Score: 560

**ROUND 2**
- **Player 1**
  - For values of X from __ to __ incrementing by __
  - Score: 51
- **Player 2**
  - For values of X from __ to __ incrementing by __
  - Score: 15

**ROUND 3**
- **Player 1**
  - For values of X from __ to __ incrementing by __
  - Score: 18
- **Player 2**
  - For values of X from __ to __ incrementing by __
  - Score: 36

**Revision 140927.1a**
Below, you will find three rounds of the For Loop Game, along with what each player rolled during their turn. Fill out the number lines and tally the scores for each round. Who won the game?

**Directions:**

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

**WHO WON? PLAYER # 1**
Songwriting Worksheet Example
Using Lyrics to Explain Functions and Procedures

Group Name: _________________________
Date: _____________________________

Song Name: **Old MacDonald**

**Chorus:**

*Old MacDonald had a farm*
*e-i-e-i-o*

*And on that farm he had a P1*
*e-i-e-i-o*

*With a P2 here and a P2 there*

*Here a P2, there a P2*
*Everywhere a P2, P2*

**Parameter Examples:**

<table>
<thead>
<tr>
<th>Animal Name</th>
<th>Sound</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P1)</td>
<td>(P2)</td>
</tr>
</tbody>
</table>

**Song:**

*Chorus (Cow, Moo)*

*Chorus (Pig, Oink)*

*Chorus (Horse, Neeeeigh)*

*Old MacDonald had a farm*
*..............*
*..............*
*................*

*ohhhhhhhhhhhhhhh!*

Teacher Key: U T eacher Key

Revision 160422.1a
Song Name: Where is Thumbkin?

Chorus:
Where is P1?
Where is P1?
Here I am!
Here I am!
How are you today, sir?
Very well, I thank you.
Run away.
Run away.

Parameter Examples:

<table>
<thead>
<tr>
<th>Finger</th>
<th>Example 1</th>
<th>Example 2</th>
<th>Example 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(P2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(P3)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Song:

chorus (Thumbkin)
chorus (Pointer)
chorus (Middleman)
chorus (Ringman)
chorus (Pinkie)
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.

A) ★★★★★★★★★★★★★★★★★★★★★★★★★

★ = _______________ ★ = _______________  This encodes image # __2__

B) ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

● = _______________ ● = _______________  This encodes image # __1__

C) 🐄酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠酠

酠 = _______________ 🐄 = _______________  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.