

Loops

Textbook

Loops



"Dance, Dance, Dance"

Riley and Casey were building a robot in their school. The robot had wheels, lights, and even a speaker that said "Beep!"

"Let's make it do a little dance!" Riley said, pressing the start button.

The robot moved forward, spun in a circle, and blinked its lights. Then it did the same thing again... and again... and again!

Casey looked at the robot. "Is it stuck?"

Riley replied, "Nope! I programmed it to repeat those steps using something called a loop."

"A loop?" Casey asked. "Like a circle?"

"Sort of!" Riley said. "A loop is a command that tells the robot to do the same steps over and over without writing them again. Instead of typing 'forward, spin, blink' five times, I just told the robot to do those three steps in a loop."

Casey nodded. "That saves time."

"Exactly!" said Riley. "Loops make our programs shorter and easier to fix. Plus, if we want the robot to dance ten times instead of five, we just change one number!"

Casey thought about it. "So if we didn't use loops, we'd have to copy and paste a lot?"

"Yep! But with loops, we keep our code nice and clean," Riley replied.

The robot beeped one more time and did its final spin. Casey said, "Let's teach it how to wave next!"

Think About It!

1. Do you ever do something the same way every time, like brushing your teeth?
2. Wouldn't it be easier if you didn't have to say every step over and over?

Let's Learn From Riley and Casey

A loop is a way to repeat steps in a program without writing them again and again.

Instead of listing each step many times, we tell the computer to repeat the same steps.

For example, imagine you're brushing your teeth:

1. Pick up toothbrush
2. Add toothpaste
3. Brush up and down
4. Brush side to side
5. Brush in circles

You don't just brush once—you do those brushing steps again and again. That's like using a loop!

Loops help:

- Save time
- Write shorter programs
- Make changes more easily
- Avoid repeating the same steps over and over

Loops are like saying: "Do these steps 5 times!"



Critical Thinking Questions

1. Why do you think loops are helpful when writing instructions or code?
2. Can you think of something you do at home that uses the same steps every day?
3. What might happen if we didn't use loops and wrote everything out each time?

Sentence Stems

When you read or listen to the word, (blank), think of a word or an example that you can use to fill that space. For instance, if you see a sentence that says "My favorite color is (blank)," you should fill that (blank) space with your favorite color.

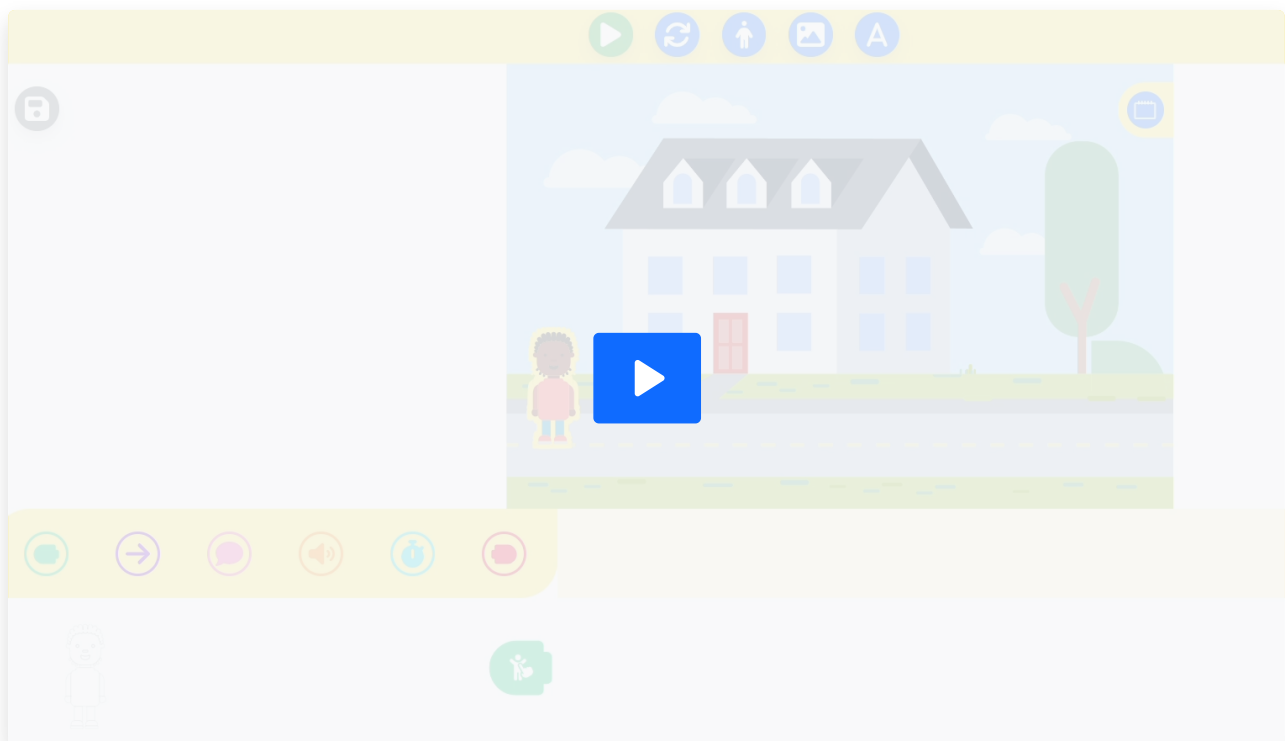
These sentence starters help us talk about loops and practice academic language:

1. "A loop tells the computer to (blank) again and again."
2. "Instead of writing (blank) many times, I use a loop to (blank)."
3. "Loops help me because (blank) and (blank)."

Blocks Platform

Watch the video to learn about repeat loops.

You have two options for a loop. You can do a repeat loop found in the control blocks or if you want the loop to continue forever, add the red repeat forever block.



Questions (5)

1. What is a loop?

MULTIPLE CHOICE

Choose the correct answer:

- A. A dance move
- B. Repeating steps more than once
- C. A fun game
- D. A new kind of toy

2. Why do we use loops?

Choose the correct answer:

- A. To make things harder
- B. To make us think more
- C. To repeat steps more easily
- D. To add more steps

3. What would happen if you didn't repeat steps when you should?

Choose the correct answer:

- A. You'd be done faster
- B. You'd have to start over
- C. You'd get a prize
- D. The task might take longer

4. Which of these is an example of a loop?

Choose the correct answer:

- A. Brushing your teeth every morning
- B. Eating a snack only once
- C. Playing a game only once
- D. Doing your homework once

5. What is the main reason loops are helpful?

Choose the correct answer:

- A. They make things more confusing
- B. They make repeating steps easier and faster
- C. They help you skip steps
- D. They take longer to do

Games (3)

1. Loops Typing Race

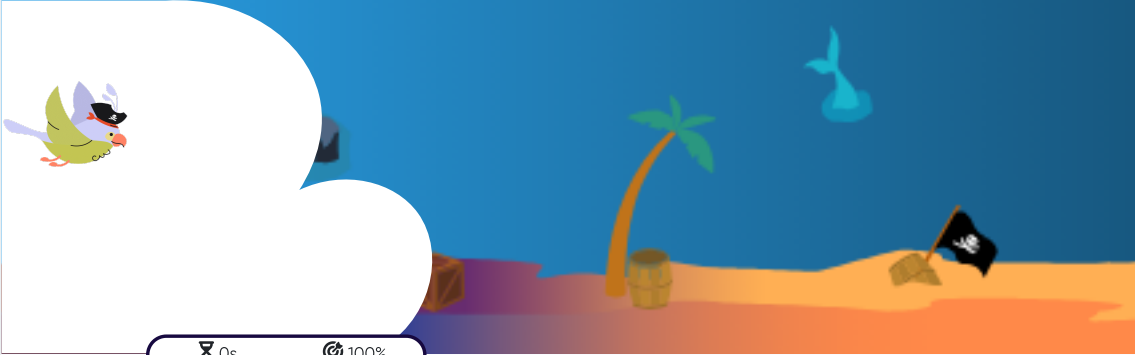
Full Screen

Audio

Instructions

Restart

Pause



0s 100%

l o o p s s a v e t i m e

2. Loops Matching

Full Screen

Audio

Instructions

Answer Key

Pause

Clear All

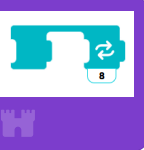
Check Matches


Attempts: 0


The loop repeats forever


The section of algorithm will repeat 5 times

The section of algorithm will repeat 8 times









3. Loops, Events, Looks Categories

Full Screen

Audio

Instructions

Answer Key

Pause

Clear All

Check Order

Attempts: 0

Avoid repeating
same step over
and over

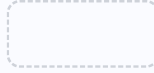
When things
happen, like
pressing play

Changes look of
your sprite

Loops

Events

Looks



Blocks Challenges (5)

1. Jump!



Jump!

Use the bedroom background and code your sprite jumping on the bed without ever stopping.

1 → 6 1



Submit ↑



2. Take Off!



Take Off!

Build an algorithm that moves your rocket ship back and forth through space. Try using a loop for this never ending flight!

1 → 4 1



Submit ↑



3. Slithering Around



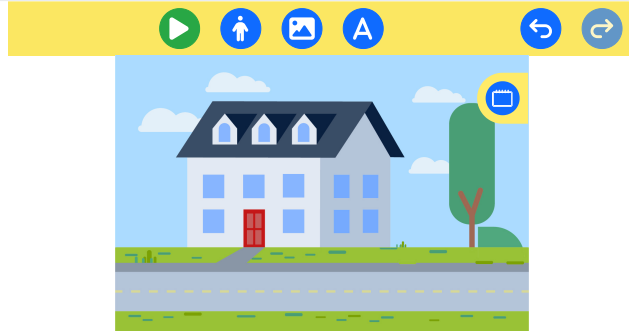
Slithering Around

Did you know that snakes move in patterns called "slithers"? A snake moves by repeating a wave-like motion called a serpentine movement that helps them travel long distances without legs!

Using the snake sprite, program your snake to move forward, turn right or left, and move forward again. Use the forever loop block to repeat the snake's movement!

1 3 1

Submit ↑



4. Bouncing Ball Loop



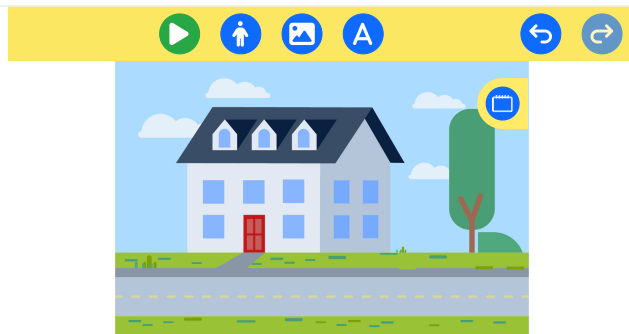
Bouncing Ball Loop

Select the ball sprite and make it bounce up and down on the screen.

Program the ball sprite to start at the bottom. Use motion blocks to make the ball move up and down. Use a loop to repeat the bouncing action 10 times.

1 2 1

Submit ↑



5. Let's Dance



Let's Dance

Program your sprite to make a dance using the motion blocks. Use a loop to have the dance repeat!

1 6 1



Submit ↑



Answer Keys & Solutions

Questions

1. What is a loop?

MULTIPLE CHOICE

Correct Answer:

- A. A dance move ✗ Incorrect
- B. Repeating steps more than once ✓ Correct
- C. A fun game ✗ Incorrect
- D. A new kind of toy ✗ Incorrect

Explanation:

It helps you do something over and over again without writing it all out.

2. Why do we use loops?

MULTIPLE CHOICE

Correct Answer:

- A. To make things harder ✗ Incorrect
- B. To make us think more ✗ Incorrect
- C. To repeat steps more easily ✓ Correct
- D. To add more steps ✗ Incorrect

Explanation:

Loops help us save time!

3. What would happen if you didn't repeat steps when you should?

MULTIPLE CHOICE

Correct Answer:

- A. You'd be done faster ✗ Incorrect

B. You'd have to start over

✗ Incorrect

C. You'd get a prize

✗ Incorrect

D. The task might take longer

✓ Correct

Explanation:

If you don't repeat, you might have to write everything again.

4. Which of these is an example of a loop?

MULTIPLE CHOICE

Correct Answer:

A. Brushing your teeth every morning

✓ Correct

B. Eating a snack only once

✗ Incorrect

C. Playing a game only once

✗ Incorrect

D. Doing your homework once

✗ Incorrect

Explanation:

Think of something you do every day, like brushing your teeth

5. What is the main reason loops are helpful?

MULTIPLE CHOICE

Correct Answer:

A. They make things more confusing

✗ Incorrect

B. They make repeating steps easier and faster

✓ Correct

C. They help you skip steps

✗ Incorrect

D. They take longer to do

✗ Incorrect

Explanation:


Loops help save time and energy!

1. Loops Typing Race

Typing game - no answer key needed. Students practice typing the provided content.

2. Loops Matching

Matching Game Solutions:

1. →  Red forever loop block

2. →  Repeat loop 5 times

3. →  Repeat loop 8 times

Students must drag items from the left to match with corresponding items on the right.

3. Loops, Events, Looks Categories

Category Solutions:

Category 1: Loops

- Avoid repeating same step over and over

Category 2: Events

- When things happen, like pressing play

Category 3: Looks

- Changes look of your sprite

Scoring:

- Gold: 1 attempts or fewer
- Silver: 2 attempts or fewer
- Bronze: 3 attempts or fewer

Students must sort items into their correct categories.