

Numbers

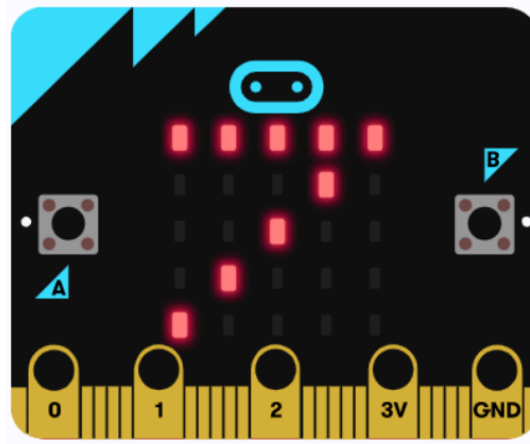
Textbook

Numbers



I'm sure you know how to tell time, but picture a clock with no number...just words. It might take you a little longer I bet. Just like words, numbers are essential for computers to display information, but they work a little differently than strings. In this lesson, we'll explore how to use **numbers in coding**.

You learned how to add words and numbers to the micro:bit algorithms using a `string` block. However, there is another way we can add numbers to our algorithm. We can use the `show number` block.



Code It! - Numbers

1. Drag the `on start` block into the code editor.
2. Drag the `show number` block into the code editor and connect it in the `on start` block.
3. Type the number you want seen. For example, the number 7. This tells the computer that when we start our code, we want the number 7 to show on the micro:bit.

Code It! - Coding Multiple Blocks

You can put as many blocks into one algorithm as you'd like. For example, what if you wanted the robot to show your age, favorite color, and a happy face? To do this:

1. Drag a `show number` block into the algorithm and type your age.
2. Drag a `string` block and connect it under the `show number` block. Type your favorite color in the `string` block.
3. Drag a `show icon` or `Show LEDs` block and connect it under the `string` block. Make a happy face.

By dragging these blocks in this order, the computer will read the algorithm and show them in this sequence.

Adopted from microbit.org platform

Critical Thinking Questions

1. Why do computers treat numbers differently from words (strings) in programming?
2. How do people in different parts of the world use numbers in special ways, like in writing, calendars, or games?
3. If the micro:bit showed the number '5' and then immediately scrolled a sad face icon, what might you infer about what just happened in the program?

Questions (5)

1. What block do you use in the micro:bit to display a number?

MULTIPLE CHOICE

Choose the correct answer:

- A. Show icon block
- B. String block
- C. Show number block
- D. Play sound block

2. Which of these is not an example of a number in programming?

MULTIPLE CHOICE

Choose the correct answer:

- A. 3
- B. 42
- C. "42"
- D. 100

3. What happens when you put multiple number blocks in a micro:bit algorithm?

MULTIPLE CHOICE

Choose the correct answer:

- A. Only the first block works
- B. The program gets confused
- C. The micro:bit shows them in order
- D. It shows them randomly

4. You want your micro:bit to display your age (12), your favorite color ("Blue"), and a smiley face. Which block should come first?

MULTIPLE CHOICE

Choose the correct answer:

- A. String block
- B. Show icon block
- C. On shake block
- D. Show number block

5. Why do computers treat numbers and strings differently?

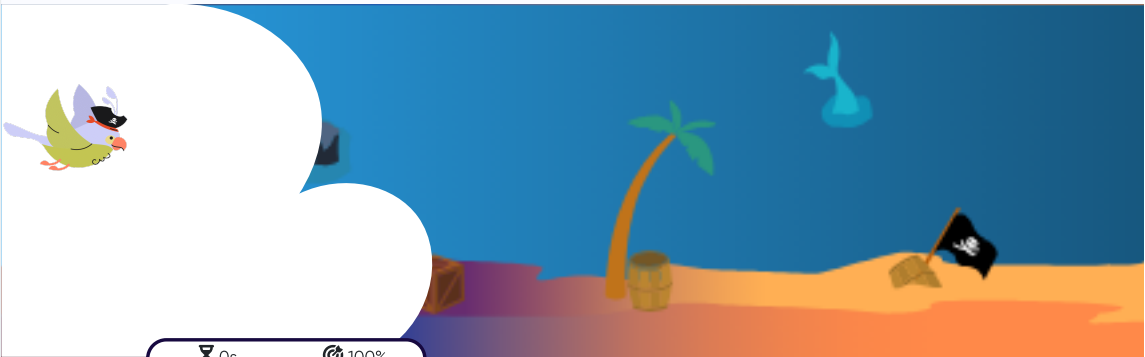
Choose the correct answer:

- A. Numbers take longer to process
- B. Numbers and strings have the same function
- C. Numbers are used for calculations, while strings are used for text
- D. Strings are faster

Games (2)

1. Numbers Typing

Full Screen Audio Instructions Restart Pause



0s 100%

Just like words, numbers

2. Numbers Memory

Full Screen

Audio

Instructions

Answer Key

Pause

Flips: 0

1

42

5

37

3

42

4

9

2

9

6

3

7

3

8




0

9

0

10

37



Robotics Challenges (10)

1. Lucky Number

Challenge

Textbook

Lucky Number

Program the micro:bit to show your lucky number using the **show number** block.

Requirements

Show your lucky number

Answer Key

Submit

Step 1

Begin with the **on start** block.

Lucky Number Step 1 of 4

1

Next

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Search...

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Input

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Led

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Loops

Logic

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Math

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2. Classmates

Challenge

Textbook

Classmates

Count the number of students in your class and program the micro:bit to show how many students are here today using the **show number** block.

Requirements

Show the number of students in your class today

Answer Key

Submit

Step 1

Begin with the **on start** block.

Classmates Step 1 of 4

1

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3. Add It Up

Challenge

Textbook

🔊 Add It Up

Program an addition problem using the **show number** block. Use the **show string** block to write an addition and equal sign symbol.

Requirements

Use show number blocks to write a math equation

Use two show string blocks to write the math symbols in your equation

Answer Key

Submit

Step 1

Begin with the **on start** block.

Add It Up Step 1 of 5

1

Next

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Scratch stage with a black background and yellow base. A red speech bubble with 'A' is on the left, and a blue speech bubble with 'B' is on the right. A red speech bubble with 'C' is in the center.

4. Subtraction

Challenge

Textbook

🔊 Subtraction

Program a subtraction problem using the **show number** block for numbers, and using the **show string** block to write a subtraction and equal sign symbol.

Requirements

Use show number blocks to write a math equation

Use a show string block to write the subtraction symbol in your equation

Use a show string block to write the equals symbol in your equation

Answer Key

Step 1

Begin with the **on start** block.

Add It Up Step 1 of 5

1

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Scratch stage with a black background and yellow base. A red speech bubble with 'A' is on the left, and a blue speech bubble with 'B' is on the right. A red speech bubble with 'C' is in the center.

5. The Score

Challenge

Textbook

The Score

Think of a sporting event you've been to. Program the micro:bit to show the score between the two teams so it shows something like this: "4 to 7"

Requirements

Use show number blocks to write the score of a game

Use at least one string block

Answer Key

Submit

Step 1

Begin with the **on start** block.

The Score

Step 1 of 2

1

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6. Your Birthday

Challenge

Textbook

Your Birthday

Program the micro:bit to show the date of your birthday. Spell out the month and show the numbers that represent the date and year.

Requirements

One string block

At least two number blocks

Answer Key

Submit

Step 1

Begin with the **on start** block.

Your Birthday

Step 1 of 2

1

Next

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7. Alarm Clock

Challenge

Textbook

Alarm Clock

Imagine you are making an alarm clock. Code your bedtime on your robot to act as a clock. Use a separate 'show number' block for each number. You will also need a string block to show the colon (:).

Requirements

Use at least two number blocks to show your bedtime.

Use a string block to show a colon.

Answer Key

Submit

Step 1

Begin with the **on start** block.

Alarm Clock Step 1 of 3



1

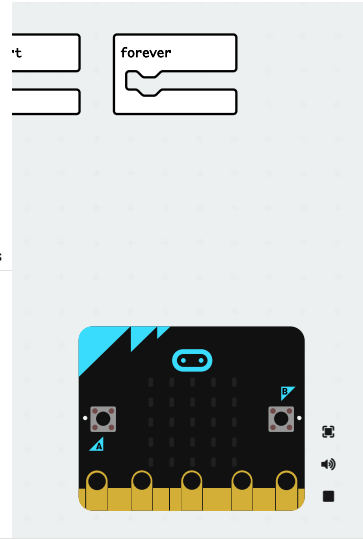
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8. Blast Off

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Blast Off

Imagine you are sending a rocket into space. Program the micro:bit to do the countdown from 3 to 0.

Requirements

Create a countdown from 3 to 0

Answer Key

Submit

Step 1

Begin with the **on start** block.

Blast Off Step 1 of 3



1

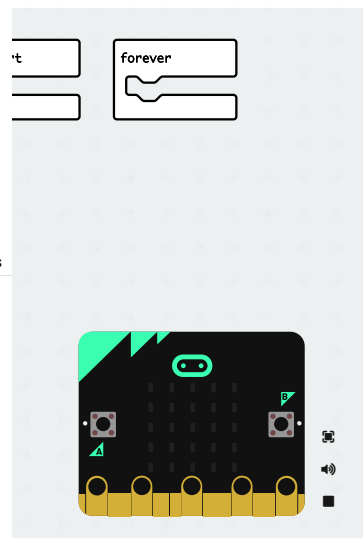
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9. Lemonade Stand

Challenge

Textbook

Lemonade Stand

Imagine you are opening a lemonade stand! Create a sign using the micro:bit to advertise your lemonade and list its price. Use a string block and number block in your code.

Requirements

Use a string block to advertise your lemonade

Use a number block to show the price

Answer Key

Submit

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10. Grocery Store

Challenge

Textbook

Grocery Store

Pretend you walked into a grocery store to buy some food. Use your blocks to code prices for each of the following items:

- Ice cream
- Bananas
- Water bottle
- Cereal

Use a string block to list the item followed by a number block to share its price.

For example, **apples 1** or **milk 2**

Requirements

List each item using a string block

Follow each item with its price using a number block

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Answer Keys & Solutions

Questions

1. What block do you use in the micro:bit to display a number?

MULTIPLE CHOICE

Correct Answer:

- A. Show icon block ✗ Incorrect
- B. String block ✗ Incorrect
- C. Show number block ✓ Correct
- D. Play sound block ✗ Incorrect

Explanation:

This block is made specifically for showing digits on the screen.

2. Which of these is not an example of a number in programming?

MULTIPLE CHOICE

Correct Answer:

- A. 3 ✗ Incorrect
- B. 42 ✗ Incorrect
- C. "42" ✓ Correct
- D. 100 ✗ Incorrect

Explanation:

If it has quotation marks, it's a string—not a number.

3. What happens when you put multiple number blocks in a micro:bit algorithm?

MULTIPLE CHOICE

Correct Answer:

A. Only the first block works

✗ Incorrect

B. The program gets confused

✗ Incorrect

C. The micro:bit shows them in order

✓ Correct

D. It shows them randomly

✗ Incorrect

Explanation:

Code is read in sequence, top to bottom.

4. You want your micro:bit to display your age (12), your favorite color ("Blue"), and a smiley face. Which block should come first?

MULTIPLE CHOICE

Correct Answer:

A. String block

✗ Incorrect

B. Show icon block

✗ Incorrect

C. On shake block

✗ Incorrect

D. Show number block

✓ Correct

Explanation:

Start with the number first, then the string and icon.

5. Why do computers treat numbers and strings differently?

MULTIPLE CHOICE

Correct Answer:

A. Numbers take longer to process

✗ Incorrect

B. Numbers and strings have the same function

✗ Incorrect

C. Numbers are used for calculations, while strings are used for text

✓ Correct

D. Strings are faster

✗ Incorrect

Explanation:

Computers can do math with numbers, but not with strings.

1. Numbers Typing

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

2. Numbers Memory

Memory Game Pairs:

1. ↔
2. ↔
3. ↔
4. ↔
5. ↔

Students must find all matching pairs by flipping cards and remembering their positions.