Unit 2.2: We are games testers

Working out the rules for games

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Unit learning objectives

In this unit you will:

- observe and describe what happens in computer games
- use **logical reasoning** to make predictions of what a **program** will do
- test your predictions
- think critically about computer games, and how to use them safely
- create sequences of instructions for a virtual robot in a game
- work out strategies for playing a game well

Do you know what the **bold words** mean?
Click on this box to see the definitions.

Session 1: Addition race game

To work out the rules (algorithms) for a simple arithmetic game

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Let’s do

Think about some computer games that you like to play.

Let’s discuss

Answer the questions about computer games:

1. What computer games do you like to play?
2. Have you played computer games in school?
3. Can you give examples of computer games?
4. What happens in these sorts of games?
5. What are the rules for these games?

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Let's learn

Computer games are just like the robot and **ScratchJr** programs we've worked on before.

Let's discuss

Think with a partner.
What do they have in common? Use the answers to your questions in the previous activity.

Do you remember what **Scratch** is?

Click on this box to see the answer.

Let’s learn

Computer games are just like the Scratch programs you have worked on because:

- ü They are created by programmers, who often work in a team together.
- ü The programmers have to think carefully about the **algorithm** they want to use and what they want to happen in their game.
- ü Once the programmers are clear about the steps or rules of their algorithm, they write a program, in code, based on the algorithm that the player can then play.

Do you remember what an **algorithm** is?

Click on this box to see the definition.

Let’s review

Are these the ideas you came up with?
Did you have any other ideas?

Let’s learn

When you play a computer game, one great strategy is to work out the rules, or algorithms.

We will be playing simple games in this unit and working out what the algorithms are.

The first game we will be looking at is called ‘Addition Race’.

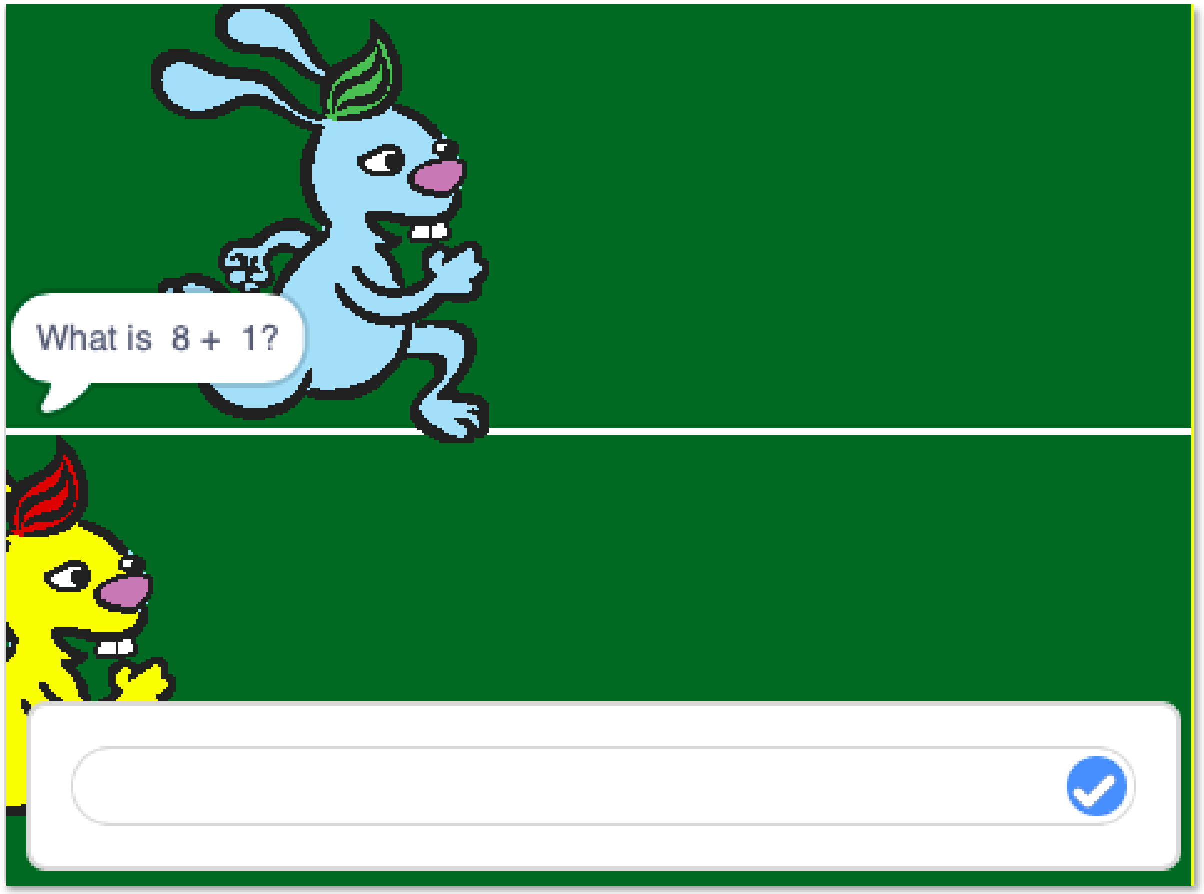
Let’s discuss

What do you predict you will have to do in the Addition Race game?

Let's do

Play Addition Race as a class.

1. Does it remind you of some of the maths games you have played in school or at home?
2. What is the same and what is different?



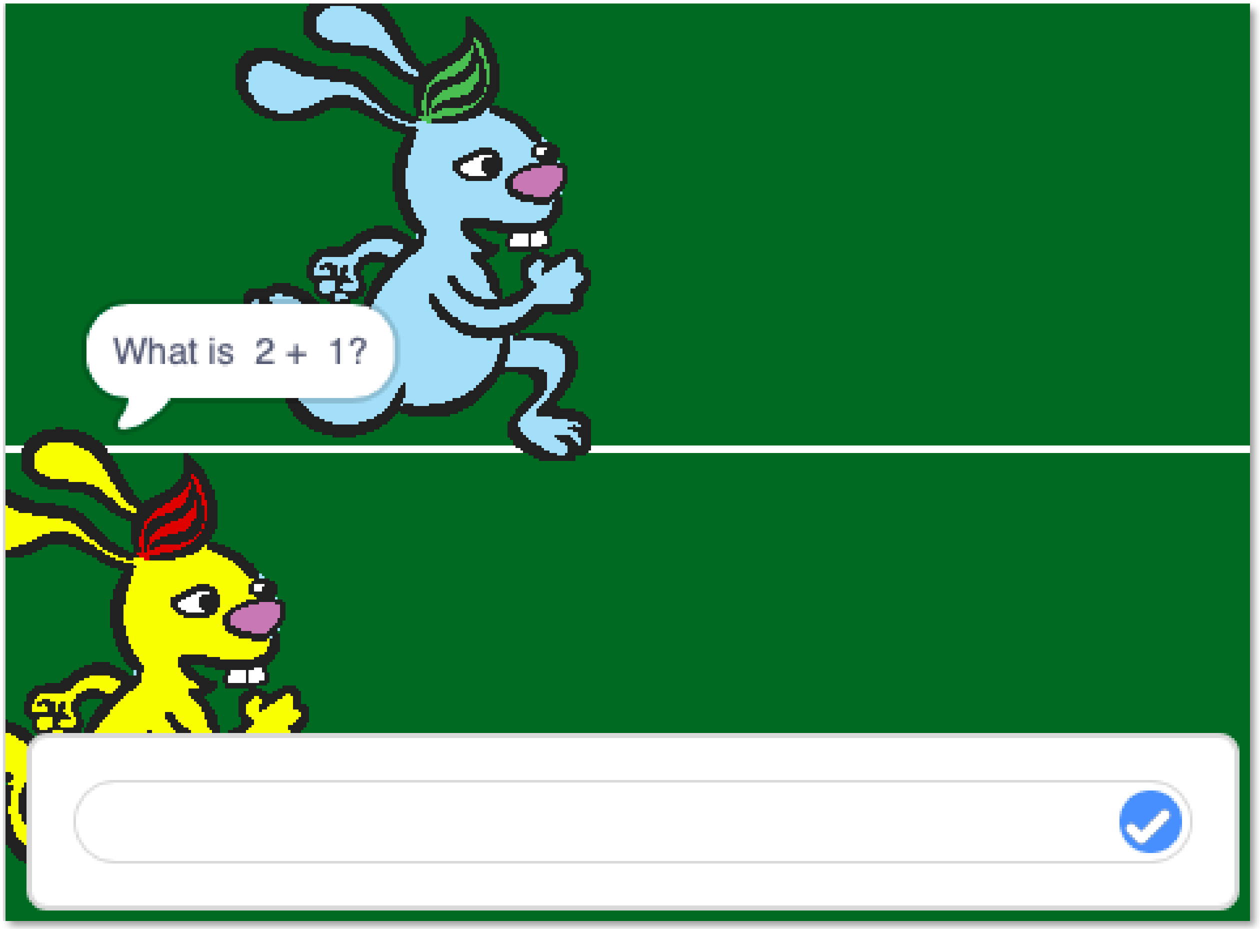
Click on the image to open the game!

Let's do

Now, you play Addition Race.

Answer the following questions:

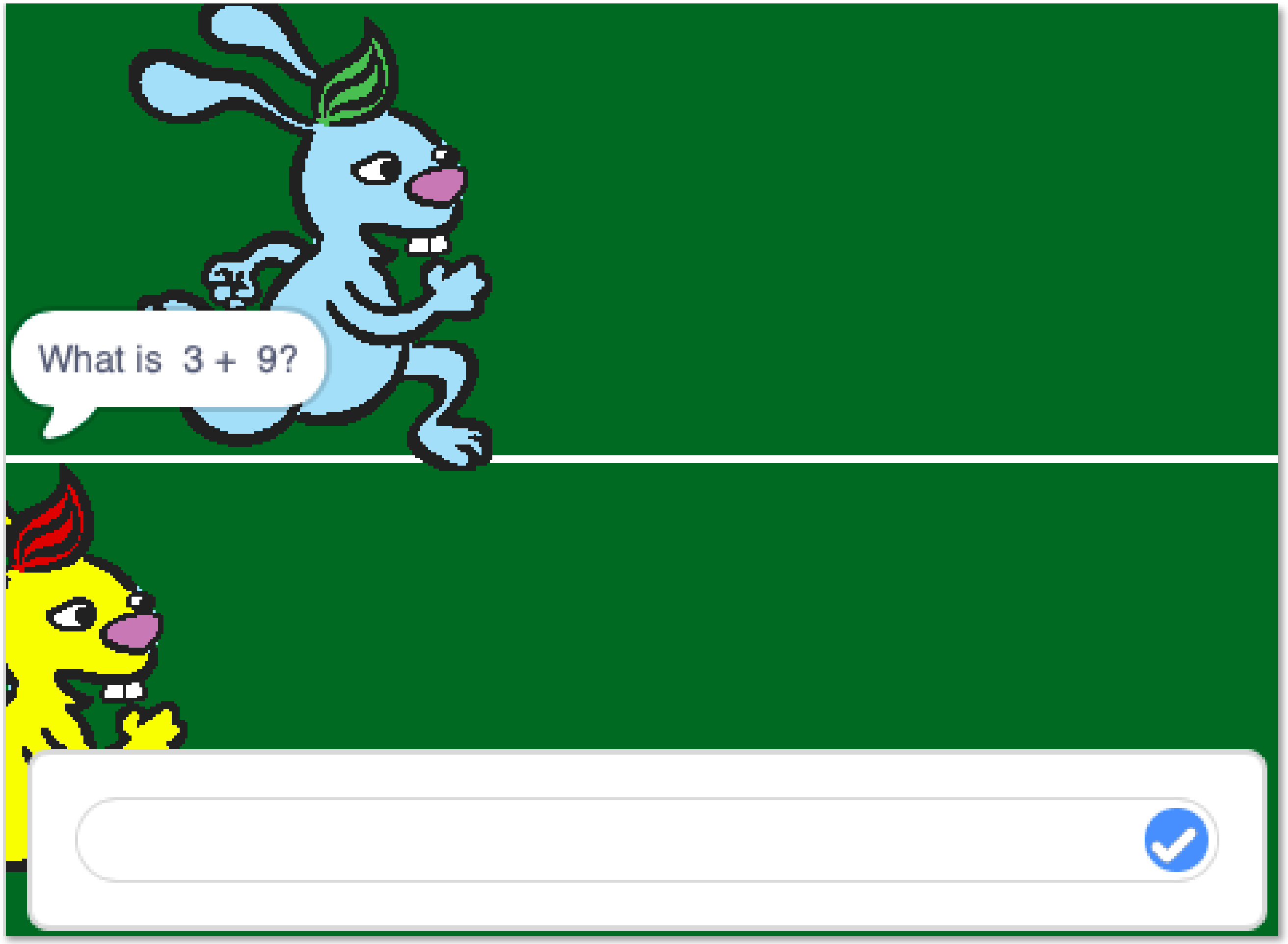
1. Can you predict what happens if you get an answer right?
2. What about if you get an answer wrong?
3. What happens at the end of the game?
4. Test your predictions.
5. Were you right?



Let's do

Work with a partner:

1. Can you work out what the rules of the game are?
2. What algorithm has the programmer coded here?
3. Share your ideas with the class.



Click on the image to see the answers.

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Let's learn

Use the 'See inside' button in Scratch to look at the **source code**. Remember to leave full-screen mode.

Let's do

Read the code and answer the questions:

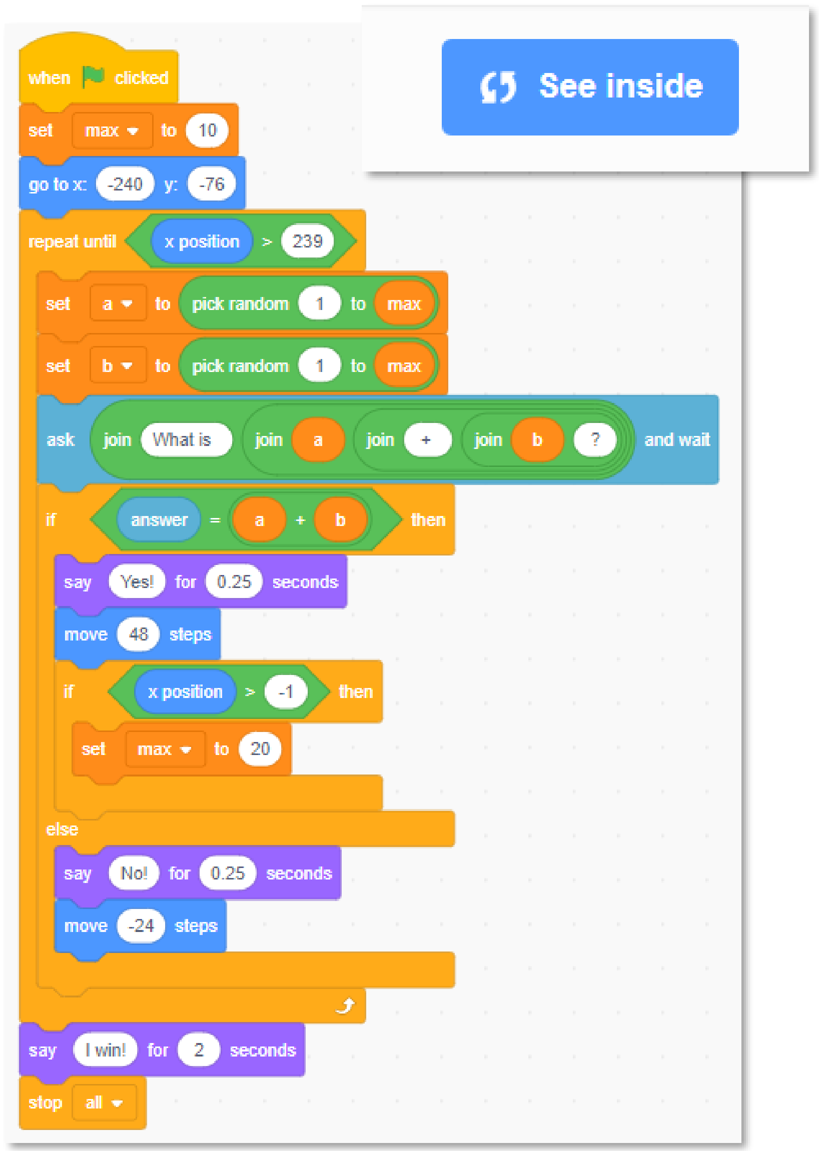
1. What do you notice about the code?
2. Were you right about the algorithm/rules for the game?
3. Can you see the connection between the program for the yellow rabbit and what happened in the game?

Answers on the next slide!

Do you know what **source code** means?

Click on this box to see the definition.

Click on the image to see the source code!



```
when ⚑ clicked
set max to 10
go to x: -240 y: -76
repeat until <(x position) > 239>
    set a to (pick random 1 to max)
    set b to (pick random 1 to max)
    ask (join What is (join a (join + (join b ?)))) and wait
    if <(answer) = (a + b)> then
        say Yes! for 0.25 seconds
        move 48 steps
        if <(x position) > -1> then
            set max to 20
    else
        say No! for 0.25 seconds
        move -24 steps
say I win! for 2 seconds
stop all
```

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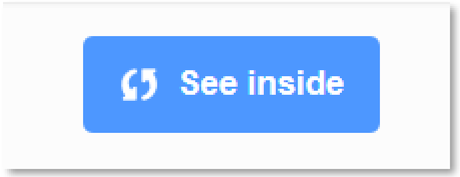

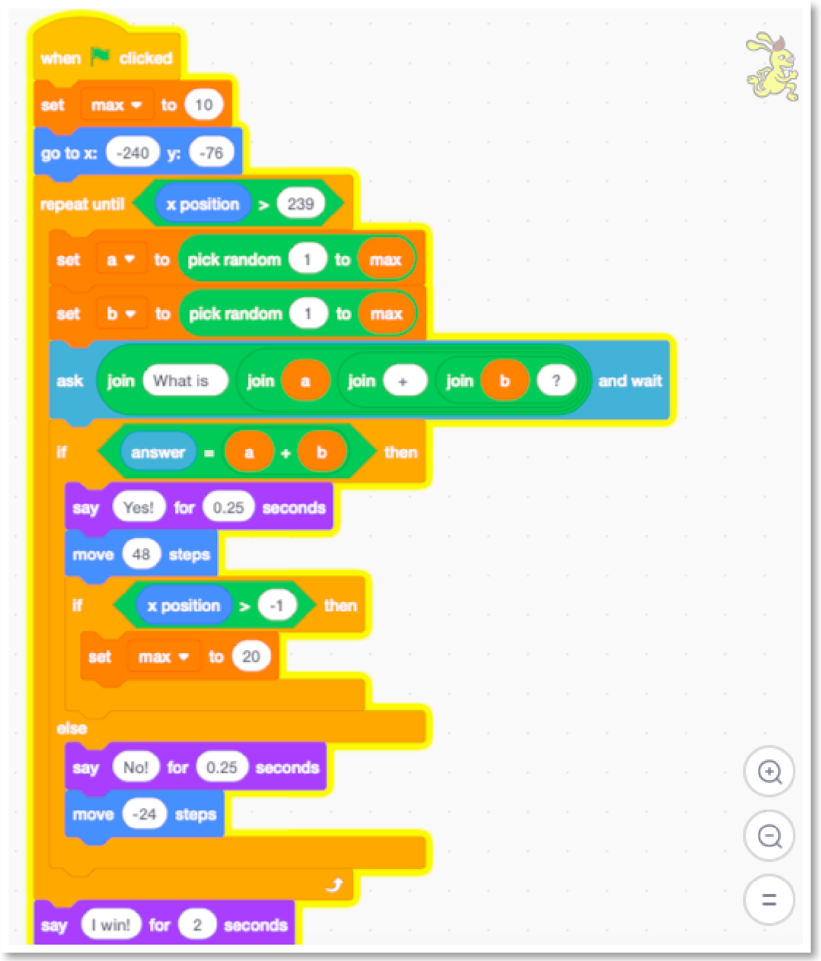

```
when 🏳 clicked
set max ▾ to 10
go to x: -240 y: -76
repeat until < (x position) > 239 >
    set a ▾ to (pick random 1 to (max))
    set b ▾ to (pick random 1 to (max))
    ask (join What is (join (a) (join + (join (b) ?)))) and wait
    if < (answer) = ((a) + (b)) > then
        say Yes! for 0.25 seconds
        move 48 steps
        if < (x position) > -1 > then
            set max ▾ to 20
    else
        say No! for 0.25 seconds
        move -24 steps
say I win! for 2 seconds
```

Let's review

1. When a sprite reaches the end, the game ends.
2. The program adds together two amounts less than 20.
3. If the answer is correct the player sprite move ahead.