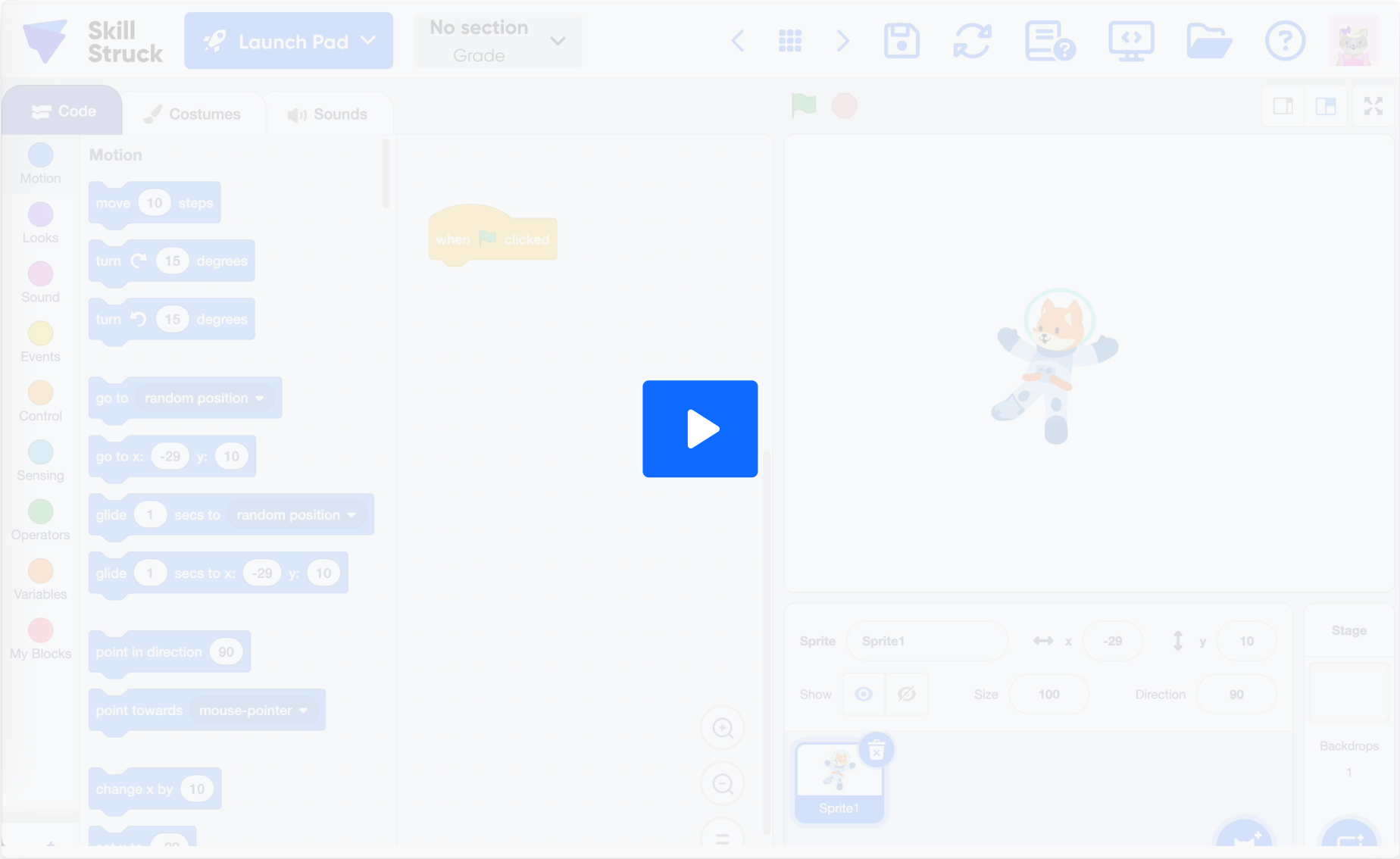
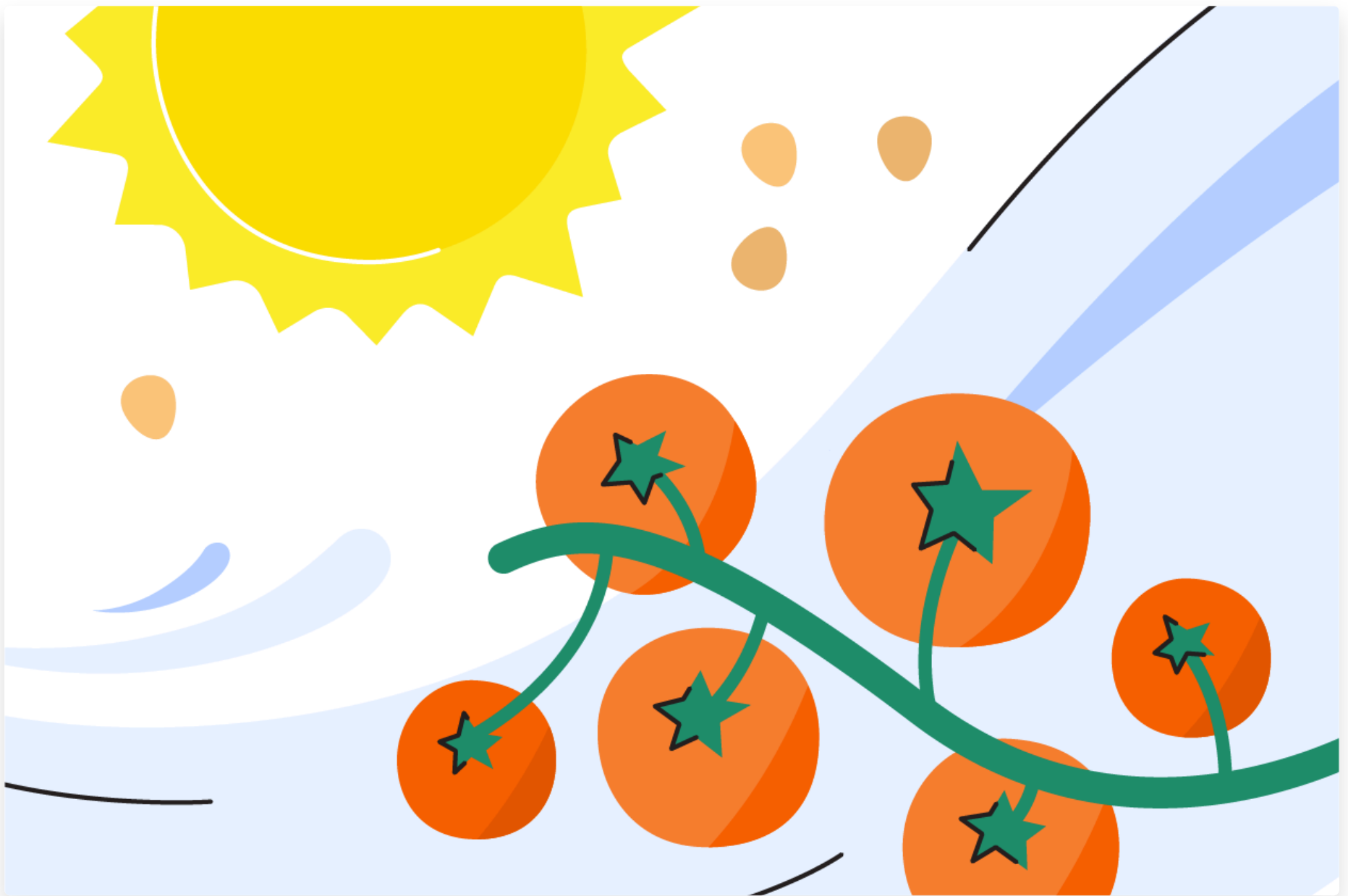


Conditionals

Textbook

Conditionals





You can also create code that is smart! You can create a program that only sends you a reminder to grab an umbrella *if* the weather forecast says rain. If it's sunny, no reminder. That's the magic of conditionals—programming your code to make decisions based on real-world conditions.

Conditional

A conditional is code that will run only **IF** something else happens. For example, if you plant a garden in the spring, then you will have fresh veggies in the fall. Having fresh veggies in the fall is **conditional** upon you planting veggies in the spring.

[Conditionals](#) are very useful in [programming](#). Sometimes, you don't want your code to run unless a certain condition is in place first. For example, you don't want your homework assignment to submit until it is finished first. So the conditional would be: IF your homework is finished, THEN you can submit it. Putting a conditional on your code makes it so that you can time your code to run exactly when you want it to.

Your Program, Your Choices!

Did you know you can make programs that listen to you? You can create code that changes what it does based on **choices that YOU make!** This is super powerful because it makes your program more interactive and helpful.

Think about your daily routine for getting ready in the morning. Does it change if it's raining outside?

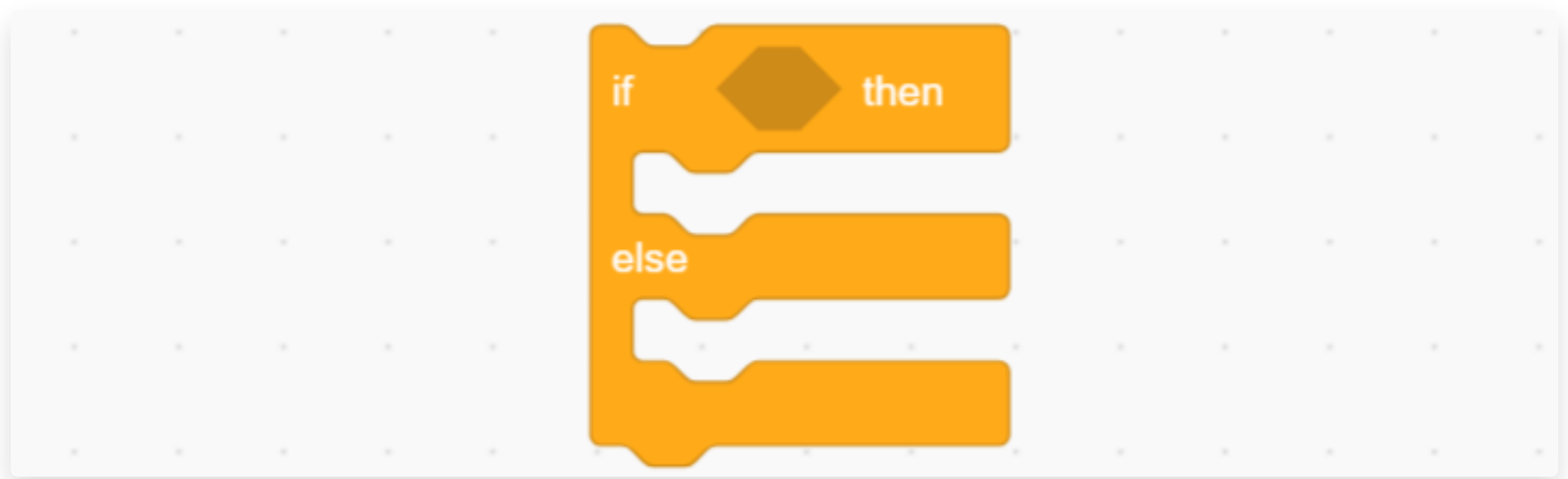
- **IF** it's raining, **THEN** you might grab an umbrella and wear rain boots.
- **ELSE** (if it's not raining), **THEN** you might wear sneakers and skip the umbrella.

Your program can do the same! It can ask you a question or look for certain information, and then do different things based on your answer or what it finds. This is how your program uses **user choices** and **defined conditions** to make decisions.

Coding Conditionals

1. Add 3 people sprites to your scene (i.e. Abby, Avery, Devin).

2. Select one sprite and begin with the green flag event block.
3. Connect a `forever` loop to the event block.
4. In your forever loop drag the following code:
 - `move 10 steps`
 - `wait .3 seconds`
5. Then drag an `if else` control block and connect it inside a `forever` loop.



6. Drag the `touching mouse pointer` sensing block and connect it within the IF line of your control block.
7. Change 'mouse pointer' to be one of the other people in your scene.
8. Add the `say [Hello]` block inside the If section so it reads "If touching [Avery] say Hello"
9. Now in the else section add the `think [Hmm...]` block.
10. Press the green flag to watch your code!

Critical Thinking Questions

1. Can you think of another situation in your life where you use "if-then" rules, like in the homework example? What's something you do every day that depends on a condition being met first?
2. What might happen if you didn't have a conditional in your code, like if you sent the umbrella reminder even when it was sunny? How would that change the usefulness of the program?

Questions (5)

1. What is a conditional?

MULTIPLE CHOICE

Choose the correct answer:

- A. Something that makes a title on a website.
- B. Something that holds code and can be replaced.
- C. Something that holds code and cannot be replaced.
- D. Something that only happens if something else happens.

2. What is the big keyword needed in a conditional?

MULTIPLE CHOICE

Choose the correct answer:

- A. IF
- B. BECAUSE
- C. CAUSE
- D. THAT

3. True or False: Conditionals can be very useful because they can help you time when things happen in the code.

MULTIPLE CHOICE

Choose the correct answer:

- A. True
- B. False

4. What does an 'if else' block do?

MULTIPLE CHOICE

Choose the correct answer:

- A. It moves the sprite in a loop
- B. It changes the backdrop image
- C. It plays a sound
- D. It allows for different actions based on a condition

5. Why are conditionals useful in programming?

MULTIPLE CHOICE

Choose the correct answer:

- A. To change the sprite's costume
- B. To repeat code indefinitely
- C. To run code only under certain circumstances
- D. To select a backdrop from the library

1. Conditionals Typing Game


Full Screen

Audio

Instructions

Restart

Pause



0s100%

Conditionals are very usef

2. Conditionals Memory Game

Full Screen


Audio


Instructions


Answer Key


Pause


Flips: 0


1


2

3

4

5

6



3. Conditionals Matching Game

Full Screen

Audio

Instructions

Answer Key

Pause

Clear All

Check Matches

Attempts: 0

touching mouse-pointer +

touching color




if...then

else

This code will run if the sprite is touching the color green.

This code will run if the sprite is touching the mouse.

The if....then block



Blocks Pro Challenges (4)

1. Hide and Seek

Challenge

Textbook

Hide and Seek

Select 2 sprites that will play hide and seek. Program Sprite 1 to walk around and IF they run into Sprite 2, then they will say, "I found you!" or else Sprite 1 will be thinking, "Where are you?"

Hint: Use the **forever** loop block and a **move #** block to show your sprite walking.

Requirements

0/4

1 Motion

2 Looks

1 Event

2 Control

Blocks must be connected to an Event block in order to pass the requirements

Submit

Code

Costumes

Sounds

Motion

move 10 steps

turn 15 degrees

turn 15 degrees

go to random position

go to x: 0 y: 0

glide 1 secs to random position

glide 1 secs to x: 0 y: 0

point in direction 90

point towards mouse-pointer

change x by 10

set x to 0

change y by 10

set y to 0

if on edge, bounce

set rotation style left-right

x position

Sprite1

x 0 y 0

Size 100 Direction 90

Sprite1

Backdrops 1

2. Racing Game

Challenge

Textbook

Racing Game

Create a race track with a start and finish line using the drawing tool. Choose 1 car sprite and position it at the starting position.

Program the car to respond to all arrow controls, so it moves left when the left arrow key is pressed, and so on.

Then, program a conditional so if the car touches the finish line, it will play an exciting sound.

Requirements

0/5

4

Motion

1

Sound

4

Event

1

Control

1

Sensing

Code

Costumes

Sounds

Motion

move 10 steps

turn 15 degrees

turn 15 degrees

go to random position

go to x: 0 y: 0

glide 1 secs to random position

glide 1 secs to x: 0 y: 0

point in direction 90

point towards mouse-pointer

change x by 10

set x to 0

change y by 10

set y to 0

if on edge, bounce

set rotation style left-right

x position

Sprite1

x 0 y 0

Size 100 Direction 90

Sprite1

Backdrops 1

3. Treasure Hunt Adventure

Challenge

Textbook

Treasure Hunt Adventure

Create a treasure hunt game to search for hidden treasure.

Place at least 3 different treasures around the scene and code them all so when the green flag is clicked, they hide.

Then, select a sprite to be your treasure hunter. Program them to respond to all arrow controls, so when the up arrow is pressed, they move up and so on.

Code a conditional so if the treasure hunter is touching [treasure] then they will say, "I found treasure!" Your conditional must be inside a forever loop.

Requirements

0/5

4

Motion

4

Looks

7

Event

2

Control

Code

Costumes

Sounds

Motion

move 10 steps

turn 15 degrees

turn 15 degrees

go to random position

go to x: 0 y: 0

glide 1 secs to random position

glide 1 secs to x: 0 y: 0

point in direction 90

point towards mouse-pointer

change x by 10

set x to 0

change y by 10

set y to 0

if on edge, bounce

set rotation style left-right

x position

Sprite1

x 0 y 0

Size 100 Direction 90

Sprite1

Backdrops 1

4. Dodgeball Video Game

Challenge Textbook

Dodgeball Video Game

Create a game where you move your character to dodge the balls.

Program 5 balls to fall from the top using **forever** loops. In your loop, use the **change y by [#]** block for each ball. Then, create a condition so IF that sprite is touching the edge, then it will go to its beginning XY coordinates. The **touching edge** block is in the Sensing category.

Choose a character. Code all 4 arrow controls so you can move your character to the top of your screen.

Hint: Use a negative y value. Change y by different numbers to make the game more interesting.

Hint: Add a **wait 1 second** block to allow the character a chance to make it through.

Requirements

0/3

8 Motion

8 Event

Code Costumes Sounds

Motion Looks Sound Events Control Sensing Operators Variables My Blocks

Motion

move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 0 y: 0
glide 1 secs to random position
glide 1 secs to x: 0 y: 0
point in direction 90
point towards mouse-pointer
change x by 10
set x to 0
change y by 10
set y to 0
if on edge, bounce
set rotation style left-right
x position

Sprite1



Sprite Sprite1 x 0 y 0
Size 100 Direction 90
Sprite1
Backdrops 1

Answer Keys & Solutions

Questions

1. What is a conditional?

MULTIPLE CHOICE

Correct Answer:

- A. Something that makes a title on a website. ✗ Incorrect
- B. Something that holds code and can be replaced. ✗ Incorrect
- C. Something that holds code and cannot be replaced. ✗ Incorrect
- D. Something that only happens if something else happens. ✓ Correct

Explanation:

If this happens, then this will happen

2. What is the big keyword needed in a conditional?

MULTIPLE CHOICE

Correct Answer:

- A. IF ✓ Correct
- B. BECAUSE ✗ Incorrect
- C. CAUSE ✗ Incorrect
- D. THAT ✗ Incorrect

Explanation:

__ this, THEN this

3. True or False: Conditionals can be very useful because they can help you time when things happen in the code.

MULTIPLE CHOICE

Correct Answer:

- A. True ✓ Correct

B. False

✗ Incorrect

Explanation:

Conditionals let you decide when things take place.

4. What does an 'if else' block do?

MULTIPLE CHOICE

Correct Answer:

A. It moves the sprite in a loop

✗ Incorrect

B. It changes the backdrop image

✗ Incorrect

C. It plays a sound

✗ Incorrect

D. It allows for different actions based on a condition

✓ Correct

Explanation:

This block provides alternative actions based on a condition.

5. Why are conditionals useful in programming?

MULTIPLE CHOICE

Correct Answer:

A. To change the sprite's costume

✗ Incorrect

B. To repeat code indefinitely

✗ Incorrect

C. To run code only under certain circumstances

✓ Correct

D. To select a backdrop from the library

✗ Incorrect

Explanation:

They control when specific actions occur in a program.







Games

1. Conditionals Typing Game

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

2. Conditionals Memory Game




Memory Game Pairs:

1.  A blue code block that says "Touching mouse pointer." ↔  A blue code block that says "Touching mouse pointer."
2.  A blue code block that says "Touching color green" ↔  A blue code block that says "Touching color green"
3.  A yellow code block that says If...then. ↔  A yellow code block that says If...then.

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

3. Conditionals Matching Game

Matching Game Solutions:

1.  A blue code block that says "Touching mouse pointer." →
2.  A blue code block that says "Touching color green" →
3.  A yellow code block that says If...then. →

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