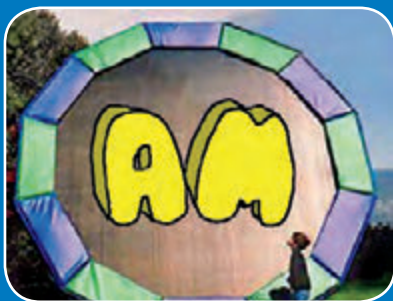# Animate a Name Cards

Animate the letters of your name, initials, or favorite word.
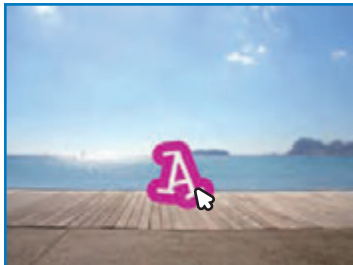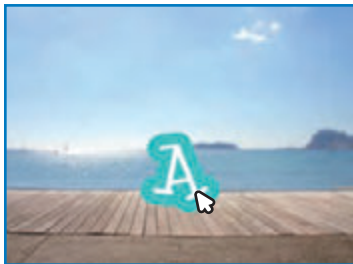
Animate a Name Cards

Try these cards in any order:

- **Color Clicker**
- **Spin**
- **Play a Sound**
- **Dancing Letter**
- **Change Size**
- **Press a Key**
- **Glide Around**

Color Clicker

**Make a letter change color
when you click it.**

SCRATCH

Color Clicker
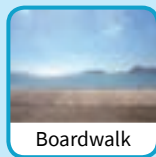
GET READY

Choose a letter from the Sprite Library.

Choose a backdrop.

Boardwalk

Food   Fashion   Letters

To see just the letter sprites, click the **Letters** category at the top of the Sprite Library.

ADD THIS CODE

when this sprite clicked

change color ▾ effect by 25

Try different numbers.

TRY IT

Click your letter.

Spin

Make a letter turn when you click it.
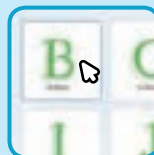
SCRATCH

Spin

scratch.mit.edu

GET READY

Go to the Sprite Library.

Click the Letters category.

Choose a letter sprite.

ADD THIS CODE

```
when this sprite clicked
repeat 10
    turn ↻ 18 degrees
```

Try different numbers.

TRY IT

Click your letter.

TIP

Click this block to reset the sprite's direction.

```
point in direction 90
```
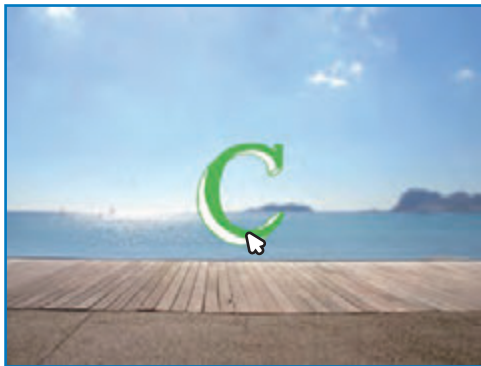
Play a Sound

3

SCRATCH

Play a Sound

scratch.mit.edu

GET READY

Go to the Sprite Library.

Click the Letters category.

Choose a letter sprite.

Choose a backdrop.

Boardwalk
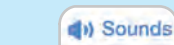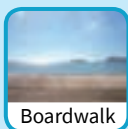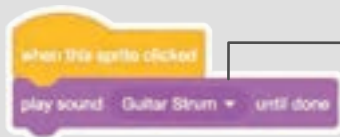
Click the Sounds tab.

Choose a sound.

ADD THIS CODE

Click the **Code** tab.

Choose a sound from the menu.

```
when this sprite clicked
play sound  Guitar Strum ▾  until done
```

TRY IT

Click your letter.

Dancing Letter

Make a letter move to the beat.

SCRATCH

Dancing Letter

scratch.mit.edu

GET READY

Choose a backdrop.

Stage

Choose a letter from the Sprite Library.

Click the **Extensions** button (at the bottom left).

Then click **Music** to add the music blocks.

ADD THIS CODE

Type a minus sign to move backward.

Choose a different drum from the menu.

TRY IT

Click your letter.

Change Size

Make a letter get bigger and then smaller.

scRATcH

Change Size

GET READY

Go to the
Sprite Library.

Click the **Letters** category.

Choose a letter sprite.

ADD THIS CODE

when this sprite clicked

repeat 15
  change size by 10

repeat 15
  change size by -10

Type a minus sign
to get smaller.

TRY IT

Click your letter.

TIP

Click this block to reset the size.

set size to 100 %

Press a Key

Press a key to make your letter change.

Press a Key

scratch.mit.edu

GET READY

Choose a backdrop.

Wall 1

Choose a letter from the Sprite Library.

ADD THIS CODE

when space key pressed
turn 90 degrees
change color effect by 25

— Try different numbers.

TRY IT

C V B N M

— Press the **space** key.

TIP

when space key pressed

— You can choose a different key from the menu. Then press that key!

Glide Around

Make a letter glide smoothly
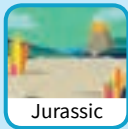from place to place.
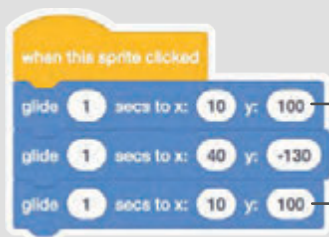
SCRATCH

Glide Around

GET READY

Choose a backdrop.

Jurassic

Choose a letter from
the Sprite Library.

ADD THIS CODE

```
when this sprite clicked
glide 1 secs to x: 10 y: 100
glide 1 secs to x: 40 y: -130
glide 1 secs to x: 10 y: 100
```

Try different numbers.

TRY IT

Click your letter to start.

TIP

When you move a sprite, you can see the numbers for
x and **y** update.

x is the position from left to right.
y is the position up and down.

Imagine a World

Imagine a world where anything is possible!

Imagine a World Cards

Try these cards in any order:

- **Say Something**

- **Fly Around**

- **Go Right and Left**

- **Go Up and Down**

- **Change Costumes**

- **Glide from Here to There**

- **Grow and Shrink**

- **Change Backdrops**

- **Add a Sound**

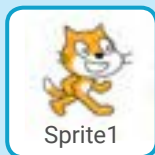# Say Something

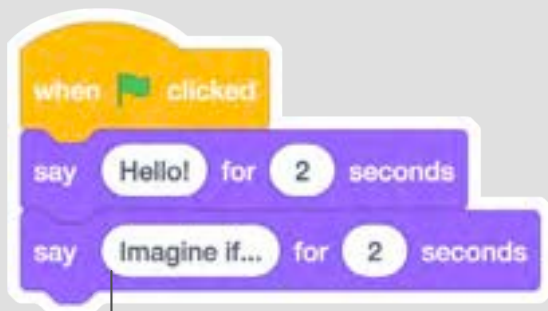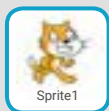## Type what you want your sprite to say.

Say Something

GET READY

Sprite1

Select the sprite you want to talk.

ADD THIS CODE

Sprite1

```
when [green flag] clicked
say [Hello!] for [2] seconds
say [Imagine if...] for [2] seconds
```
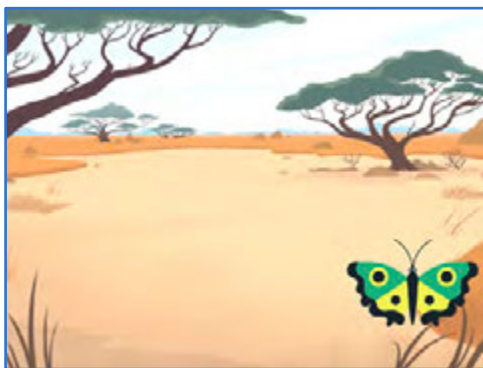
Type what you want to say.
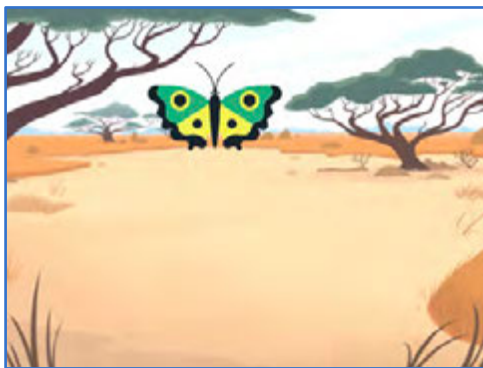
TRY IT

Click the green flag to start.
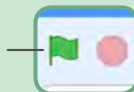
Fly Around

Press the space key to glide.

SCRATCH

Fly Around

GET READY
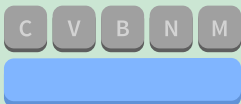
Choose a sprite.

Butterfly 2

Choose a backdrop.
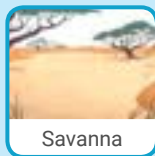
Savanna

ADD THIS CODE

Butterfly 2

```
when space ▾ key pressed
start sound pop ▾
glide 1 secs to random position ▾
```

TRY IT

C V B N M

Press the **space** key to glide.

Go Right and Left

Press arrow keys to move right and left.

SCRATCH

Go Right and Left

GET READY

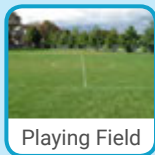**Choose a sprite.**

Ben

Choose a backdrop.

Playing Field

ADD THIS CODE

Change x to move your character *side to side*.

Ben

```
when right arrow ▾ key pressed
change x by 10
```

➡️

```
when left arrow ▾ key pressed
change x by -10
```

⬅️

Type a minus sign to move *left*.

TRY IT

Press the right and left arrow keys on your keyboard.

Go Up and Down

Press arrow keys to move up and down.

Go Up and Down

scratch.mit.edu
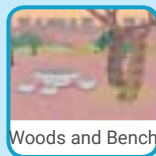
GET READY

Choose a sprite.

Hedgehog

Choose a backdrop.

Woods and Bench

ADD THIS CODE

Change y to move your character *up and down*.

Hedgehog

```
when up arrow ▾ key pressed
change y by 10
```
⬆️

```
when down arrow ▾ key pressed
change y by -10
```
⬇️

Type a minus sign to move *down*.

TRY IT

Press the up and down arrow keys on your keyboard.

Change Costumes

Animate a sprite when you click it.

Change Costumes

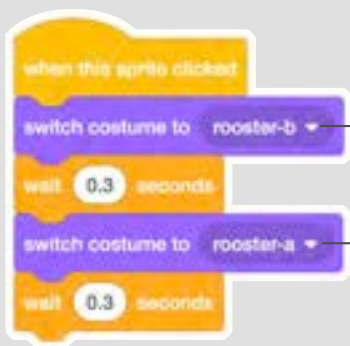## GET READY

Choose a sprite.

Rooster

Choose a backdrop.

Blue Sky

ADD THIS CODE

Rooster

```
when this sprite clicked
switch costume to rooster-b
wait 0.3 seconds
switch costume to rooster-a
wait 0.3 seconds
```

Choose one costume.

Choose another.

TRY IT

Click your sprite.

Glide From Here to There

**Make a sprite glide from
one point to another.**

SCRATCH

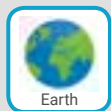# Glide From Here to There

GET READY

Choose a sprite.

Earth

Choose a backdrop.
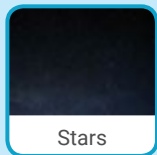
Stars

ADD THIS CODE

Earth

```
when 🏳 clicked
go to x: 0 y: 0
glide 1 secs to x: -180 y: -100
```

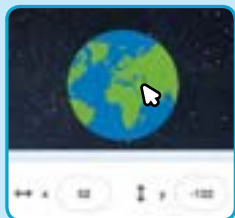Set the starting point.

Set the end point.

TRY IT

Click the green flag to start.

TIP

When you move a sprite, you can see the numbers for
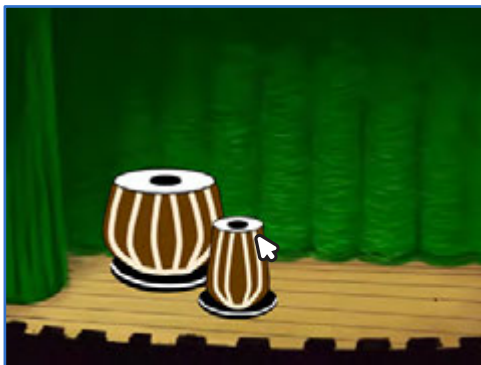x and y update.
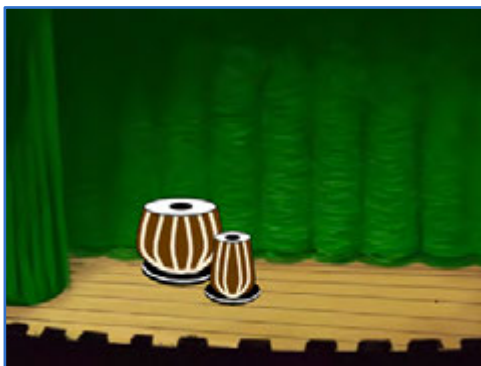
x is the position from left to right.
y is the position up and down.

Grow and Shrink

Make a sprite change size when you click it.

SCRATCH

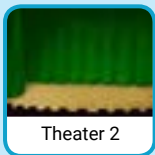# Grow and Shrink

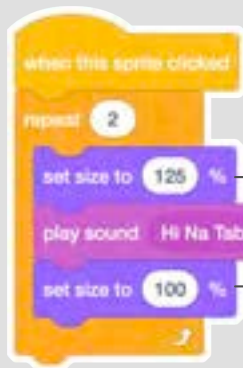## GET READY

Choose a backdrop.

Theater 2

Choose a sprite.

Drums Tabla

ADD THIS CODE

Drums Tabla

```
when this sprite clicked
repeat  2
    set size to  125  %
    play sound  Hi Na Tabla ▼  until done
    set size to  100  %
```

Type a larger number to make it bigger.
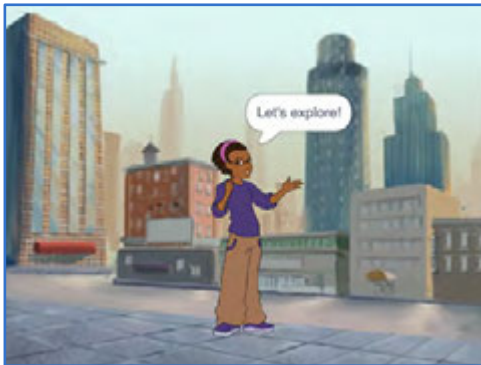
Type 100 to return to original size.

TRY IT

Click your sprite.

Change Backdrops

Change scenes by switching backdrops.

SCRATCH

Change Backdrops

GET READY
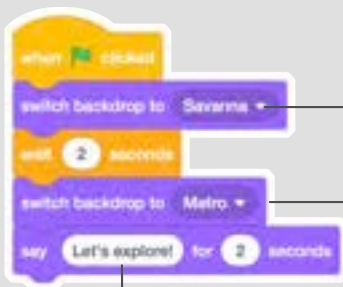
Choose two backdrops.

Savanna

Metro

Choose a sprite.

Avery

ADD THIS CODE

Avery

```
when 🏳 clicked
switch backdrop to  Savanna ▾
wait 2 seconds
switch backdrop to  Metro ▾
say  Let's explore!  for 2 seconds
```

Choose the backdrop you want to start with.

Choose the second backdrop.

Type what you want to say.

TRY IT

Click the green flag to start.

Add a Sound

**Add your voice or other sounds
to your project.**

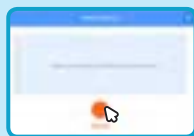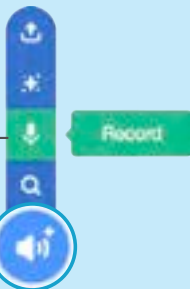# Add a Sound

GET READY

Choose a sprite.

Champ99

Click the Sounds tab.

Then click Record from the pop-up menu.

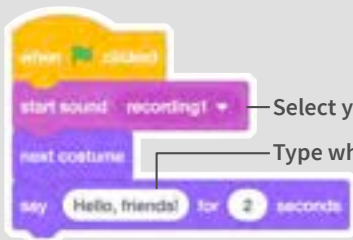**Or, click here to choose a sound from the library.**

To record your voice or other sound, click the red button.

If your device is unable to record, you can choose a sound instead.

ADD THIS CODE

Click the Code tab.

```
when [flag] clicked
start sound recording1 ▼
next costume
say Hello, friends! for 2 seconds
```
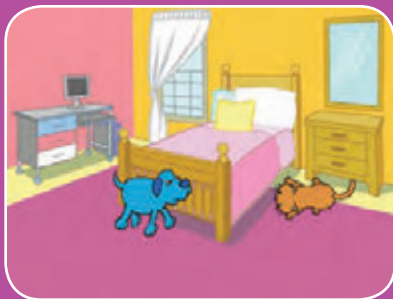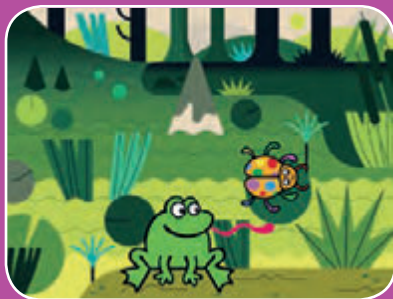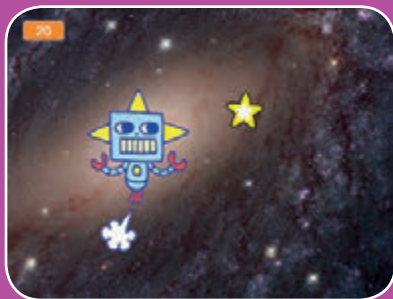
Select your sound.

Type what you want to say.

TRY IT

Click the green flag to start.

Chase Game Cards

Make a game where you chase a character to score points.

SCRATCH

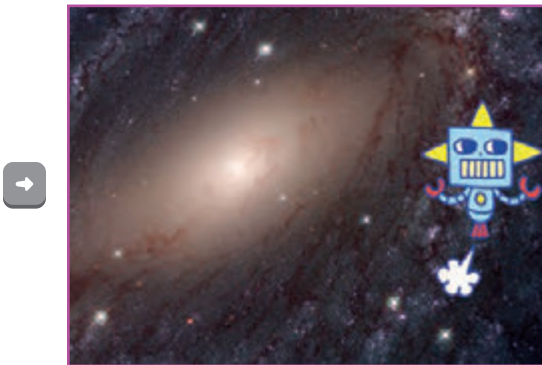# Chase Game Cards

Use these cards in this order:

1. Move Left and Right

2. Move Up and Down

3. Chase a Star

4. Play a Sound

5. Add a Score

6. Level Up!

7. Victory Message

Move Left and Right

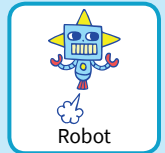**Press arrow keys to move left and right.**

Move Left and Right

GET READY

Choose a backdrop.

Galaxy

Choose a character.

Robot

ADD THIS CODE

Robot

Choose **right arrow**.

```
when right arrow ▾ key pressed
change x by 10
```

Choose **left arrow**.

```
when left arrow ▾ key pressed
change x by -10
```

Type a minus sign to move left.

TRY IT

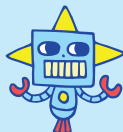Press the arrow keys. ← →

TIP

x is the position on the Stage from left to right.

Type a negative number to move to the left.

```
change x by -10
```

←   →

Type a positive number to move to the right.

```
change x by 10
```

Move Up and Down

Press arrow keys to move up and down.

SCRATCH

Move Up and Down

GET READY

Click your character
to select it.

ADD THIS CODE

Robot

Choose **up arrow**.

when up arrow key pressed
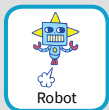
change y by 10 — Use the **change y by** block to move up.

Choose **down arrow**.

when down arrow key pressed

change y by -10 — Type a minus sign to move down.

TRY IT

Press the arrow keys.

TIP

y is the position on the Stage from top to bottom.
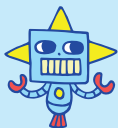
change y by 10 — Type a positive number to move up.

change y by -10 — Type a negative number to move down.

Chase a Star

Add a sprite to chase.
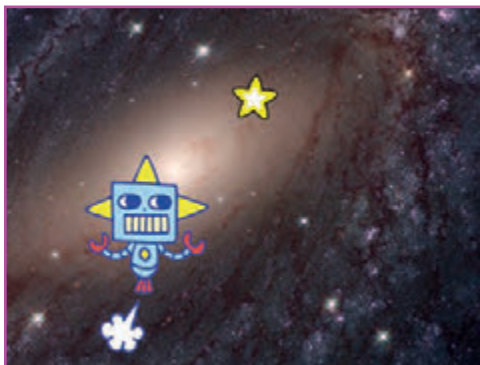
SCRATCH

Chase a Star

GET READY

Choose a sprite to chase, like Star.

Star

ADD THIS CODE

Star

```
when [flag] clicked
forever
    glide (1) secs to [random position ▾]
```
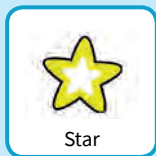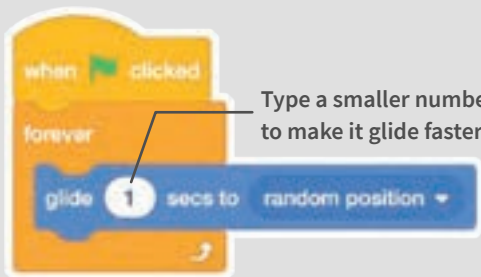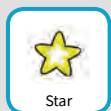
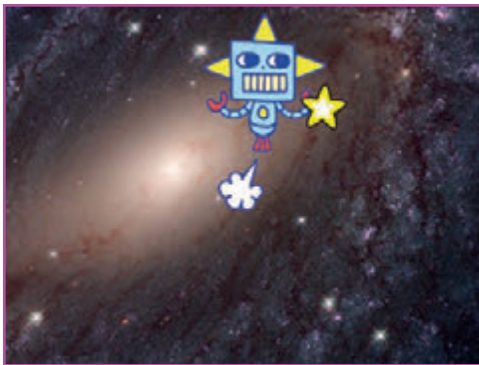Type a smaller number (like 0.5) to make it glide faster.

TRY IT

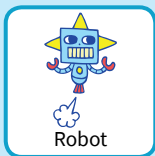Click the green flag to start. ———— Click the stop sign to stop.

Play a Sound
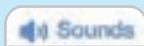
Play a sound when your character touches the star.

SCRATCH

Play a Sound

scratch.mit.edu

GET READY

Robot

**Click to select
the Robot sprite.**

🔊 Sounds

Click the Sounds tab.

**Choose a sound from the
Sounds Library, like Collect.**

ADD THIS CODE

Code   **Click the Code tab and add this code.**

Robot

when 🏳 clicked

forever

if   touching Star ▾ ?   then

play sound Collect ▾ until done
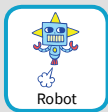
**Choose your sound
from the menu.**
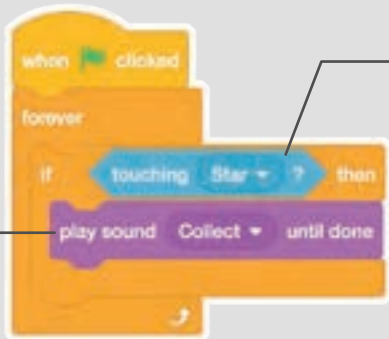
**Insert the touching
block into the
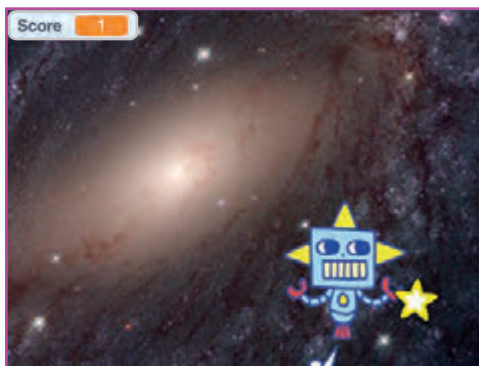if then block.**

touching Star ▾ ?

if   then

TRY IT

Click the green flag to start. 🏳 🔴

Add a Score

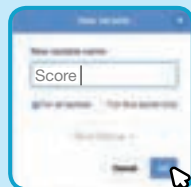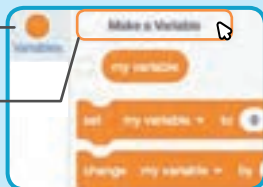Score points when you touch the star.
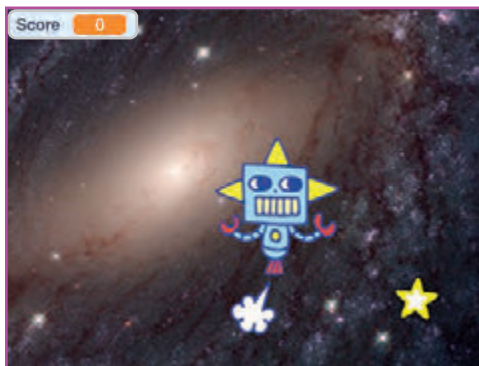
Chase Game

5

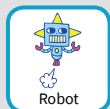SCRATCH

Add a Score

GET READY

Choose **Variables**.
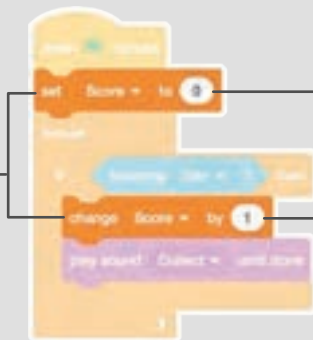
Click the **Make a Variable** button.

Name this variable **Score** and then click **OK**.

ADD THIS CODE

Robot

Select **Score** from the menu.

Add this block to reset the score.

Add this block to increase the score.

TIP
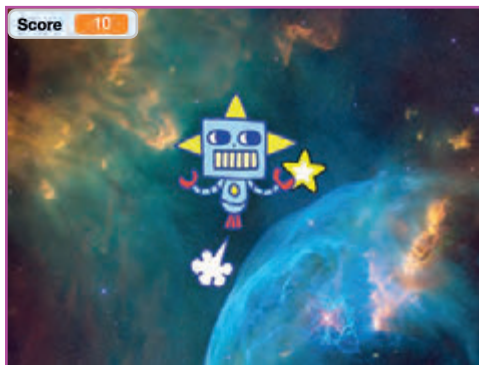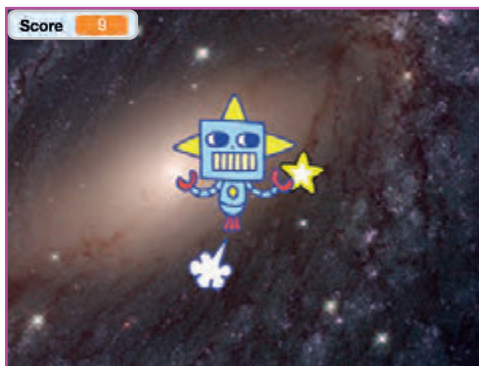
Use the **set variable** block to reset the score to zero.

Use the **change variable** block to increase the score.

Level Up!

Go to the next level.

Level Up!

GET READY

Choose a second backdrop, like Nebula.
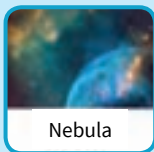
Nebula
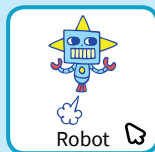
Select the Robot sprite.

Robot

ADD THIS CODE

Robot

```
when [flag] clicked
switch backdrop to Galaxy
wait until < Score = 10 >
switch backdrop to Nebula
```

Choose your first backdrop.

Choose the backdrop to switch to.

Insert the **Score** block into the **equals** block from the Operators category.

```
Score = 10
```

```
when backdrop switches to Nebula
play sound Win until done
```
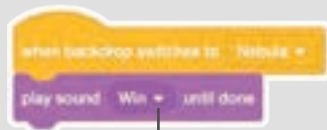
Choose a sound.

TRY IT

Click the green flag to start the game!

Victory Message

Show a message when you go to the next level.
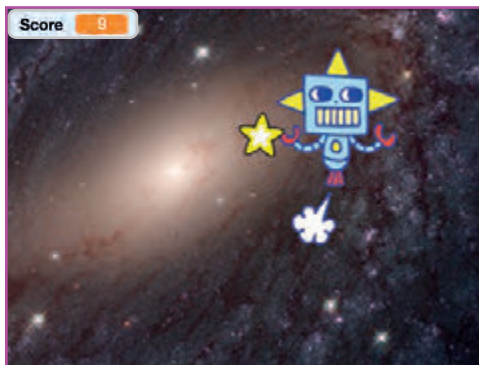
SCRATCH

Victory Message

GET READY

Use the **Text** tool to write
a message, like "Level Up!"
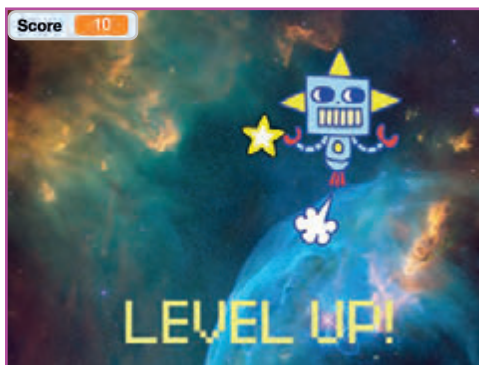
**Click the Paint icon
to make a new sprite.**

**You can change the font
color, size, and style.**

ADD THIS CODE

LEVEL UP!
Level Up!

```
when [flag] clicked
hide
```
Hide the message at the beginning.

```
when backdrop switches to  Nebula
show
wait (2) seconds
hide
```
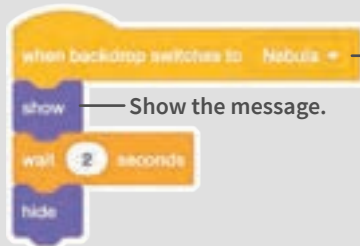
Choose the backdrop
for the next level.

Show the message.

TRY IT

Click the green flag to play your game.

Make Music Cards
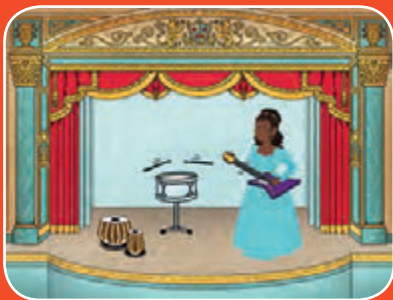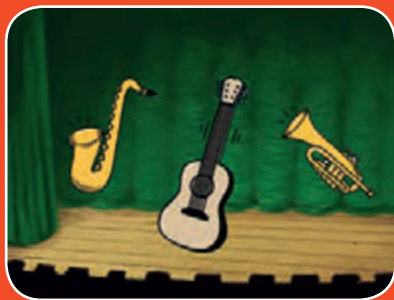
Choose instruments, add sounds, and press keys to play music.

Make Music Cards

Try these cards in any order:

- **Play a Drum**
- **Make a Rhythm**
- **Animate a Drum**
- **Make a Melody**
- **Play a Chord**
- **Surprise Song**
- **Beatbox Sounds**
- **Record Sounds**
- **Play a Song**

Play a Drum

Press a key to make a drum sound.
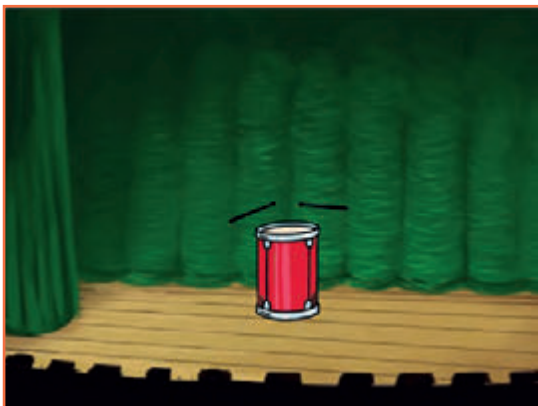
SCRATCH

Play a Drum

scratch.mit.edu

GET READY
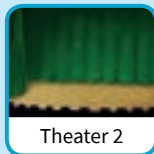
Choose a backdrop.

Theater 2

Choose a drum.

Drum

ADD THIS CODE

when space key pressed

start sound Low Tom ———— Select the sound you
want from the menu.

TRY IT

C V B N M

———— Press the **space** key on your keyboard.

Make a Rhythm

Play a loop of repeating drum sounds.
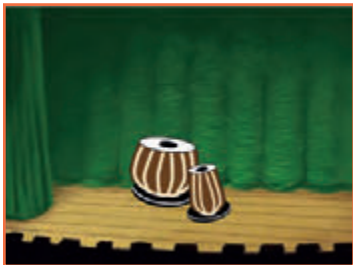
SCRATCH

Make a Rhythm

scratch.mit.edu

GET READY

Choose a backdrop.
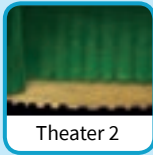
Theater 2

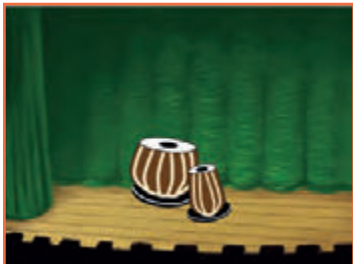Choose a drum from the Music category.

Drum Tabla

Dance Music Sports

To see just the music sprites, click the **Music** category at the top of the Sprite Library.

ADD THIS CODE

```
when space key pressed
repeat 3
  start sound Hi Na Tabla
  wait 0.25 seconds
  start sound Hi Tun Tabla
  wait 0.25 seconds
```

Type how many times you want to repeat.

Try different numbers to change the rhythm.

TRY IT

C V B N M

Press the **space** key on your keyboard.

Animate a Drum

Switch between costumes to animate.
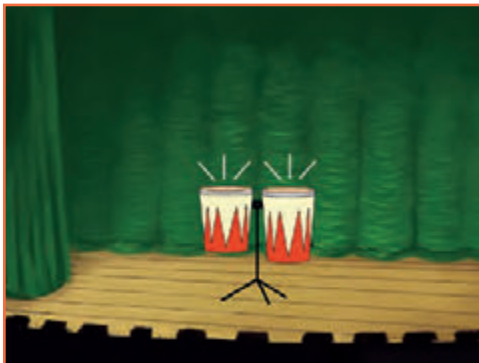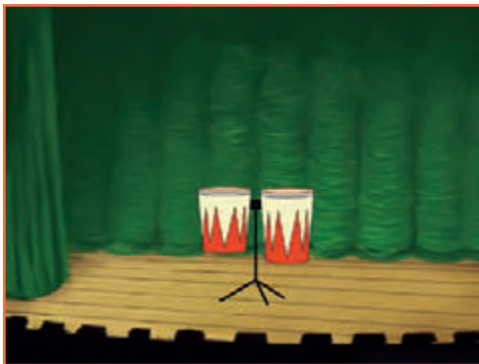
Animate a Drum

GET READY

Choose a drum.

Drum Conga

Costumes

Click the **Costumes** tab to see the costumes.

You can use the paint tools to change colors.

ADD THIS CODE

Code Click the **Code** tab.

when left arrow ▼ key pressed

repeat 4

play sound High Conga ▼ until done

next costume

wait 0.25 seconds

play sound Low Conga ▼ until done

next costume

wait 0.25 seconds

Choose a sound from the menu.

TRY IT

Press the **left arrow** key.

Make a Melody

Play a series of notes.

🔊

Make a Melody

GET READY

Choose an instrument, like Saxophone.

Saxophone

Dance | Music | Sports
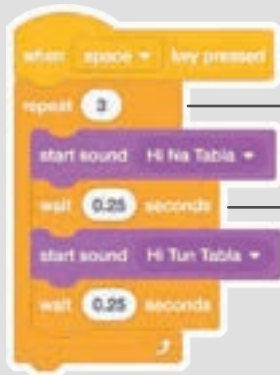
To see just the music sprites, click the **Music** category at the top of the Sprite Library.

ADD THIS CODE

when up arrow ▾ key pressed ——— Choose **up arrow** (or another key).

start sound C2 Sax ▾

wait 0.25 seconds ——— Choose different sounds.

start sound G Sax ▾

wait 0.25 seconds

start sound E Sax ▾

TRY IT

Press the **up arrow** key.

Play a Chord

Play more than one sound
at a time to make a chord.

🔊

SCRATCH

Play a Chord

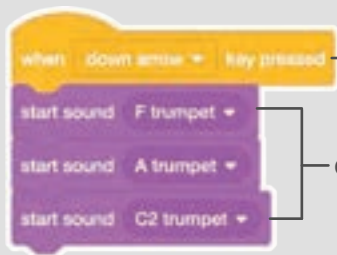## GET READY

Choose an instrument, like Trumpet.

Trumpet

To see just the music sprites, click the **Music** category at the top of the Sprite Library.

ADD THIS CODE
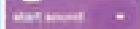
Choose **down arrow** (or another key).

Choose different sounds.

TRY IT

Press the **down arrow** key.

TIP

Use [start sound ▾] to make sounds play at the same time.

Use [play sound ▾ until done] to play sounds one after another.

Surprise Song

Play a random sound from a list of sounds.
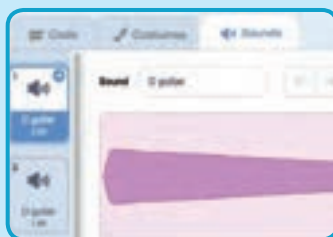
SCRATCH

Surprise Song

GET READY

Choose an instrument, like Guitar.

Guitar

🔊 Sounds

Click the **Sounds** tab to see how many sounds are in your instrument.

ADD THIS CODE

Code — Click the **Code** tab.

```
when right arrow key pressed
start sound pick random 1 to 8
change color effect by 25
```

Choose **right arrow**.

Insert a **pick random** block.

Type the number of sounds in your instrument.

TRY IT

➡ Press the **right arrow** key.

Beatbox Sounds

Play a series of vocal sounds.

Beatbox Sounds

GET READY

Choose the Microphone sprite.

Microphone

Click the **Sounds** tab to see how many sounds are in your instrument.

ADD THIS CODE

Click the **Code** tab.

Choose **b** (or another key).

Insert a **pick random** block.

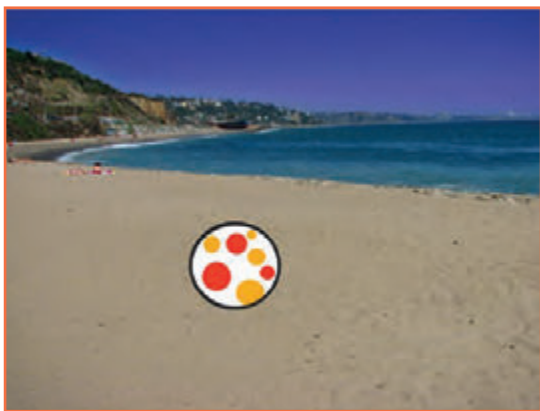Type the number of sounds in this sprite.

TRY IT

B Press the **B** key to start.

Record Sounds
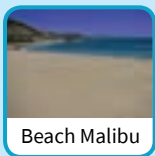
Make your own sounds to play.

Record Sounds

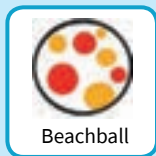scratch.mit.edu

GET READY

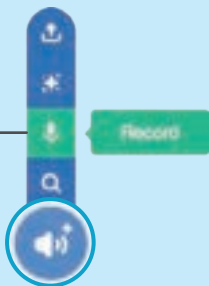Choose a backdrop.

Beach Malibu

Choose any sprite.

Beachball

Click the **Sounds** tab.

Then choose **Record** from the pop-up menu.

Click the **Record** button to record a short sound.

ADD THIS CODE

Click the **Code** tab.

when c ▾ key pressed

start sound recording1 ▾

Choose **c**
(or another key).

TRY IT

C

Press the **C** key to start.

Play a Song

Add a music loop as background music.

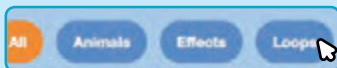SCRATCH

Play a Song

scratch.mit.edu

GET READY

Choose a sprite, like Speaker.

Speaker

Sounds Click the **Sounds** tab.

Choose a sound from the Loops category, like Drum Jam.
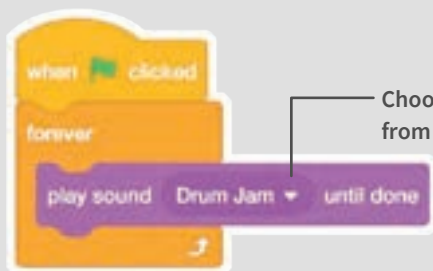
All Animals Effects Loops

To see just the music loops, click the **Loops** category at the top of the Sounds Library.

ADD THIS CODE

Code Click the **Code** tab.

when 🏳 clicked

forever

play sound Drum Jam ▾ until done

Choose your sound from the menu.

TRY IT

Click the green flag to start. — 🏳 🔴

Animate a Character Cards
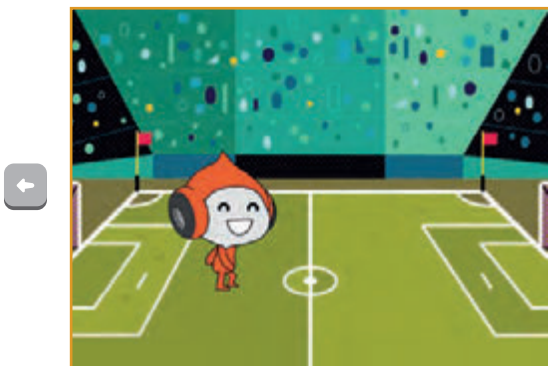
Bring characters to life with animation.

Animate a Character Cards

Try these cards in any order:

- **Move with Arrow Keys**
- **Make a Character Jump**
- **Switch Poses**
- **Glide from Point to Point**
- **Walking Animation**
- **Flying Animation**
- **Talking Animation**
- **Draw an Animation**

scratch

Move with Arrow Keys

Use the arrow keys to move your character around.

SCRATCH

Move with Arrow Keys

GET READY

Choose a backdrop.   Soccer 2

Choose a character.   Pico Walking

ADD THIS CODE

Change x
Move your character *side to side*.

```
when right arrow ▼ key pressed
change x by 10
```

→

```
when left arrow ▼ key pressed
change x by -10
```

←

Type a minus sign to move *left*.

Change y
Move your character *up and down*.

```
when up arrow ▼ key pressed
change y by 10
```

↑

```
when down arrow ▼ key pressed
change y by -10
```
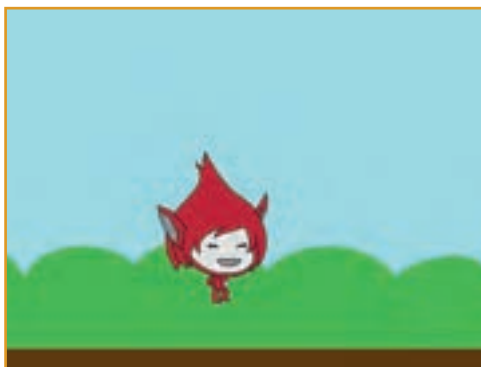
↓

Type a minus sign to move *down*.

TRY IT

Press the arrow keys on your keyboard to move your character around.

Make a Character Jump

SCRATCH

Make a Character Jump

GET READY

Choose a backdrop.

Blue Sky

Choose a character.

Giga Walking

ADD THIS CODE

Giga Walking

```
when space ▾ key pressed
change y by 60
wait 0.3 seconds
change y by -60
```
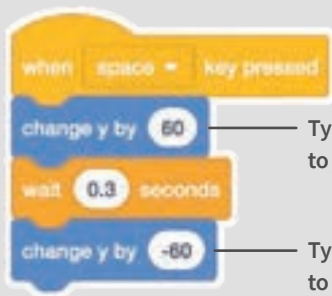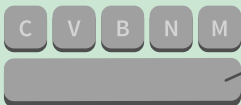
Type how high to jump.

Type a minus sign to go back down.

TRY IT

C V B N M

Press the **space** key on your keyboard.

Switch Poses

**Animate a character
when you press a key.**

scRATcH

Switch Poses

scratch.mit.edu

GET READY

Choose a character with multiple costumes, like Max.

Max

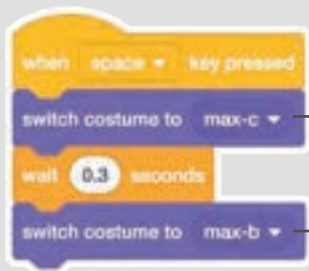Scroll over sprites in the Sprite Library to see if they have different costumes.

Costumes

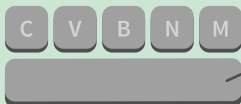Click the **Costumes** tab to view all of your sprite's costumes.

ADD THIS CODE

Code Click the **Code** tab.

Max

```
when space key pressed
switch costume to max-c
wait 0.3 seconds
switch costume to max-b
```

Choose a costume.

Choose a different costume.

TRY IT

C V B N M

Press the **space** key on your keyboard.

Glide from Point to Point

Make a sprite glide from
point to point.

scratch

Glide from Point to Point

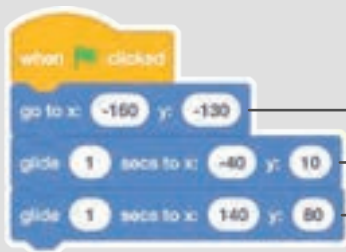## GET READY

Choose a backdrop.

Nebula

Choose a character.

Rocketship

ADD THIS CODE

Rocketship

```
when [flag] clicked
go to x: -160 y: -130
glide 1 secs to x: -40 y: 10
glide 1 secs to x: 140 y: 80
```

Set the starting point.

Set another point to glide to.

Set the end point.

TRY IT

Click the green flag to start.

TIP

When you drag a sprite, its **x** and **y** positions will update in the blocks palette.

Walking Animation

Make a character walk or run.

Scratch

Walking Animation

GET READY

Choose a backdrop.

Jungle

Choose a walking or running sprite.

Unicorn Running

ADD THIS CODE

Unicorn Running

```
when 🏳 clicked
go to x: -140 y: -60
repeat 50
    move 10 steps
    next costume
```

TRY IT

Click the green flag to start.

TIP

wait 0.01 seconds

If you want to slow down the animation, try adding a **wait** block inside the **repeat** block.

Flying Animation

Have a character flap its wings as it moves across the stage.

SCRATCH

Flying Animation

GET READY

Choose a backdrop.

Canyon

Choose Parrot (or another flying sprite).

Parrot

ADD THIS CODE

Glide across the screen

Set the starting point.

```
when [green flag] clicked
go to x: -170 y: 120
glide 1 secs to x: 150 y: 50
```

Set the end point.

Flap the wings

```
when [green flag] clicked
repeat 5
  switch costume to parrot-a
  wait 0.1 seconds
  switch costume to parrot-b
  wait 0.1 seconds
```

Choose one costume.

Choose another.
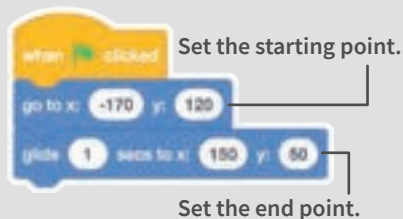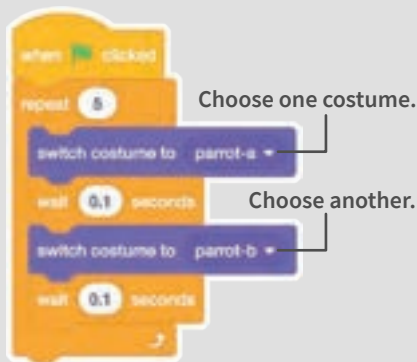
TRY IT

Click the green flag to start.

Talking Animation

Make a character talk.

SCRATCH

Talking Animation

scratch.mit.edu

GET READY

Choose Penguin 2.
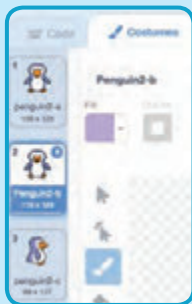
Penguin 2

Costumes

Click the **Costumes** tab to view the penguin's other costumes.

ADD THIS CODE
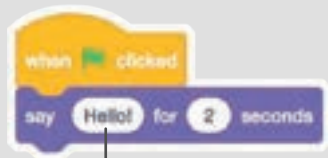
Code

Click the **Code** tab.

```
when [flag] clicked
say Hello! for 2 seconds
```

Type what you want your character to say.

```
when [flag] clicked
start sound Chirp
switch costume to penguin2-b
wait 0.3 seconds
switch costume to penguin2-a
```
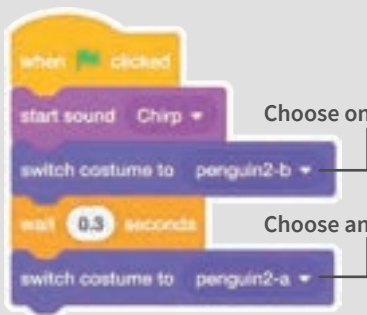
Choose one costume.

Choose another.

TRY IT

Click the green flag to start.

Draw an Animation

Edit a sprite's costumes to create your own animation.

Draw an Animation

GET READY

Choose a character.

Frog

Click the **Costumes** tab.

Right-click (on a Mac, control-click) a costume to duplicate it.

Now you should have two identical costumes.

Click a costume to select and edit it.

Click the **Select** tool.

Select a part of the costume to squeeze or stretch it.

Drag the handle to rotate an object you've selected.

ADD THIS CODE

Click the **Code** tab.

Use the **next costume** block to animate your character.

```
when this sprite clicked
next costume
wait 0.5 seconds
next costume
```

TRY IT

Click the green flag to start.

Create a Story Cards

Choose characters, add conversation, and bring your story to life.

scratch

Create a Story Cards

Start with the first card, and then try the other cards in any order:

- **Start a Story**

- **Start a Conversation**

- **Switch Backdrops**

- **Click a Character**

- **Add Your Voice**

- **Glide to a Spot**

- **Walk onto the Stage**

- **Respond to a Character**

- **Add a Scene**

scratch

Start a Story

Start a Story

scratch.mit.edu

GET READY

Choose a backdrop.

Witch House

Choose a character.

Wizard

ADD THIS CODE

Wizard

```
when [flag] clicked
say [Welcome to Magic School!] for [2] seconds
```
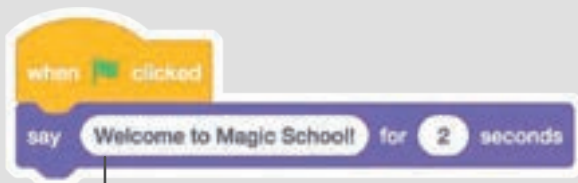
Type what you want your character to say.

TRY IT

Click the green flag to start.

Start a Conversation

Make two characters talk to each other.

Start a Conversation

GET READY

Choose two characters, like Witch and Elf.

Witch

Elf

ADD THIS CODE

Click the thumbnail for each character, and then add its code.

Witch

```
when [green flag] clicked
say [I have a pet owl!] for (2) seconds
wait (2) seconds
```

Elf

```
when [green flag] clicked
wait (2) seconds
say [What's its name?] for (2) seconds
```

Type what you want each character to say.

TIP
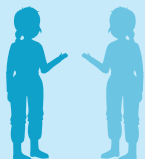
✏ Costumes

To change the direction a character is facing, click the **Costumes** tab, then click **Flip Horizontal**.

Fill   Outline   4   Copy   Paste   Delete   Flip Horizontal   Flip Vertical

Switch Backdrops

Change from one backdrop to another.
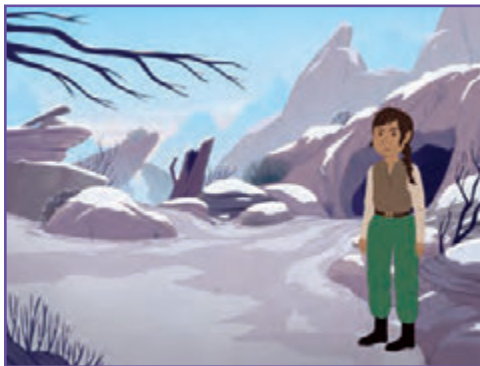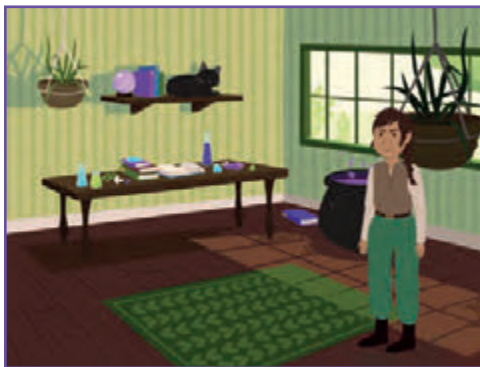
SCRATCH

Switch Backdrops

GET READY

Choose a character.

Elf

Choose two backdrops.

Witch House

Mountain

ADD THIS CODE

Elf

```
when [flag] clicked
switch backdrop to Witch House
wait 4 seconds
switch backdrop to Mountain
```
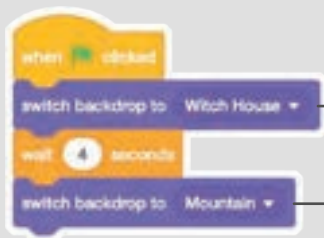
Choose the backdrop you want to start with.

Choose the second backdrop.

TRY IT

Click the green flag to start.

Click a Character

Make your story interactive.

SCRATCH

Click a Character

GET READY

Choose a backdrop.

Mountain

Choose a character.

Unicorn

ADD THIS CODE

Unicorn

```
when this sprite clicked
change color ▾ effect by 25
start sound Magic Spell ▾
```

You can choose different effects.

Select a sound from the menu.

TRY IT

Click your character.

Add Your Voice

Record your voice to make a character talk.
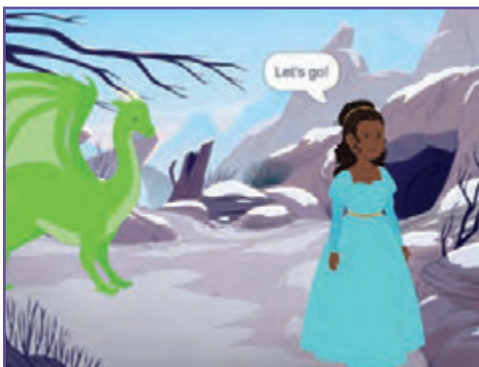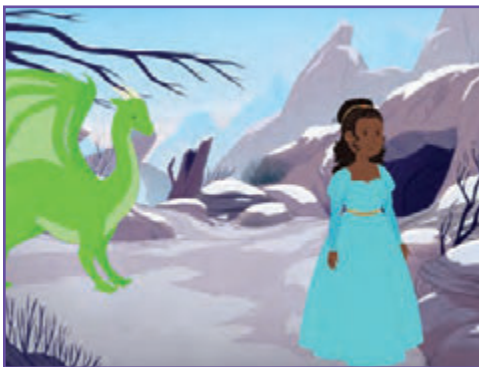
SCRATCH

Add Your Voice

GET READY

Choose a sprite.

Princess

Sounds Click the **Sounds** tab.
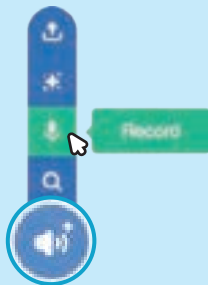
Record

Choose **Record** from the pop-up menu.

Click **Record**.

When you're done, click **Save**.

ADD THIS CODE

Code Click the **Code** tab.

Princess

when 🚩 clicked

start sound recording1 ▾

say Let's go! for 2 seconds

Select your recording from the menu.

TRY IT

Click the green flag to start. ━━━ 🚩 🔴

Glide to a Spot

Make a character move across the Stage.

SCRATCH

Glide to a Spot

GET READY

Choose a backdrop.

Mountain

Choose a character.

Owl

ADD THIS CODE

Owl

```
when 🏳 clicked
go to x: -180 y: 140
glide 1 secs to x: -30 y: 50
```

TRY IT

Click the green flag to start. ——

TIP

When you drag a sprite, the numbers for **x** and **y** will update in the blocks palette.

Walk onto the Stage

Have a character enter the scene.
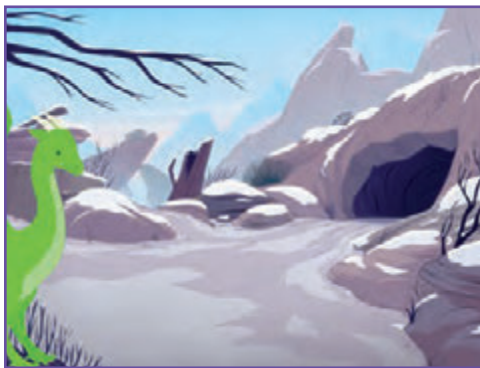
SCRATCH

Walk onto the Stage

GET READY

Choose a backdrop.

Mountain

Choose a character.

Dragon

ADD THIS CODE

Dragon

```
when [flag] clicked
hide
go to x: -240 y: -60
show
glide 2 secs to x: 0 y: -60
```
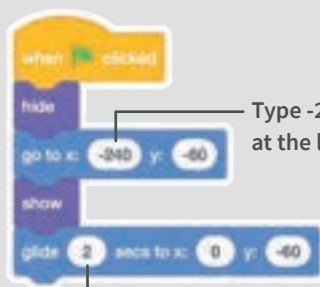
Type -240 to place your sprite at the left edge of the Stage.

Change this number to glide faster or slower.

TIP

Change the size of a sprite by typing a smaller or larger number.

Sprite   Dragon

Show   Size   100

Size   50

Size   100

Size   150
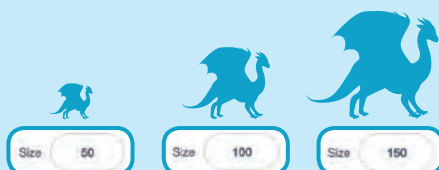
Respond to a Character

Coordinate a conversation so that one character talks after another.
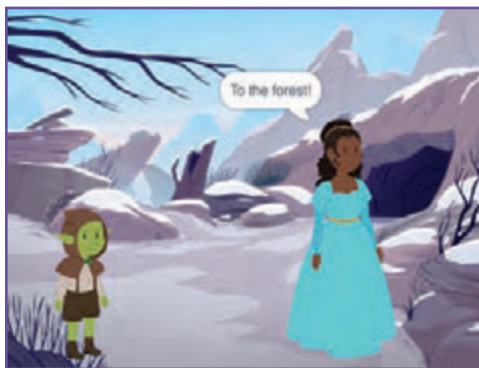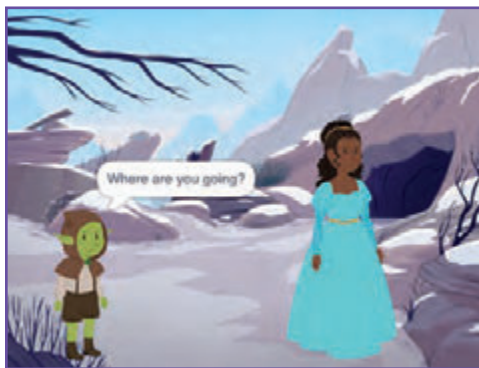
SCRATCH

Respond to a Character

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GET READY
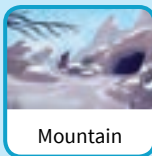
Choose a
backdrop.

Mountain

Choose two
characters.

Goblin

Princess

ADD THIS CODE

Click the thumbnail for each character, and then add its code.

Goblin

```
when [flag] clicked
say Where are you going? for 2 seconds
broadcast message1 ▾
```

Broadcast a message.

Princess

```
when I receive message1 ▾
say To the forest for 2 seconds
```

Tell this character what
to do when it receives
the broadcast.

TIP

```
broadcast message1 ▾ and wait
    New message
    message1
```

You can click the drop-down
menu to add a new message.

Add a Scene

Create multiple scenes with different backdrops and characters.
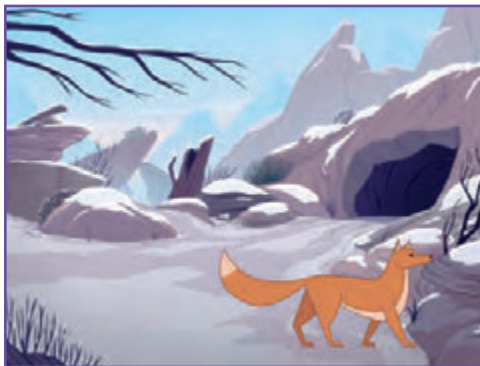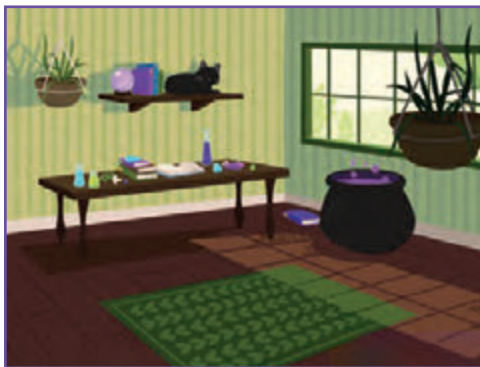
Add a Scene

GET READY

Choose two backdrops.
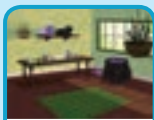
Witch House

Mountain

Choose a character.

Fox

ADD THIS CODE

Fox

```
when [flag] clicked
switch backdrop to Witch House ▾
hide
wait 4 seconds
switch backdrop to Mountain ▾
```

```
when backdrop switches to Mountain ▾
go to x: 80 y: -100
show
```
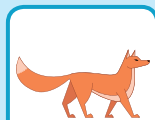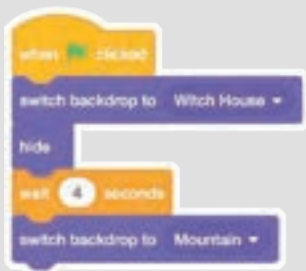
Choose the backdrop name
from the menu.

TRY IT

Click the green flag to start.

Pong Game Cards
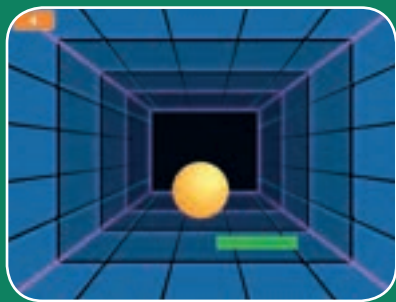
Make a bouncing ball game and score points to win!

scratch

Pong Game Cards

Use these cards in this order:

1. Bounce Around
2. Move the Paddle
3. Bounce off the Paddle
4. Game Over
5. Score Points
6. Win the Game

SCRATCH

Bounce Around

Make a ball move around the Stage.
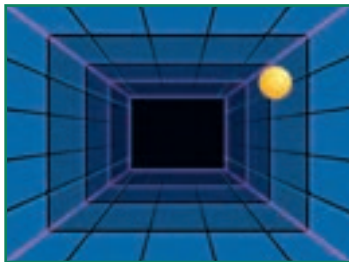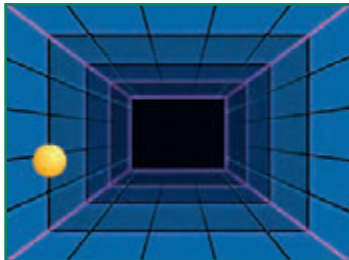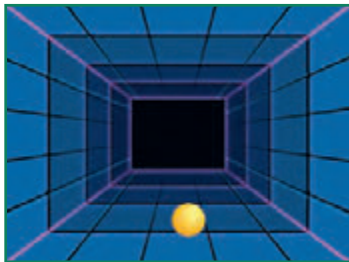
SCRATCH

Bounce Around

GET READY

Choose a backdrop.
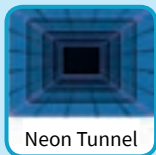
Neon Tunnel

Choose a ball.

Ball

ADD THIS CODE

Ball

```
when [flag] clicked
turn ↻ (15) degrees
forever
    move (15) steps
    if on edge, bounce
```

Type a larger number to move faster.

TRY IT

Click the green flag to start.

Move the Paddle

Control a paddle by moving your mouse pointer.
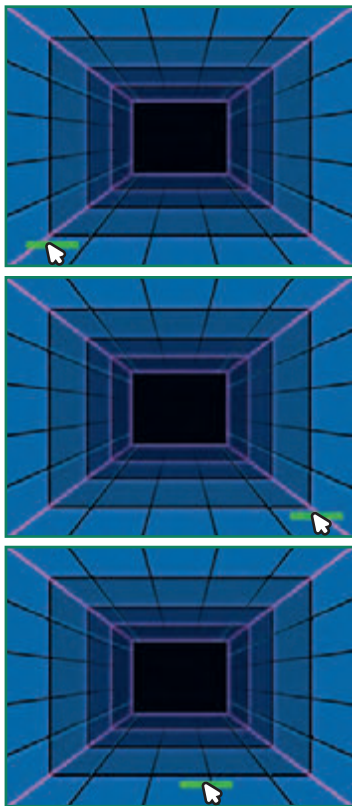
Move the Paddle

GET READY

Choose a sprite for hitting the ball, like Paddle.

Then, drag your paddle to the bottom of the Stage.

ADD THIS CODE
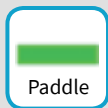
Paddle

Insert the mouse x block into the set x to block.

```
when [green flag] clicked
forever
    set x to (mouse x)
```

TRY IT

Click the green flag to start.

Move your mouse pointer to move the paddle.

TIP

You can see the x position of the paddle change as you move the mouse pointer across the Stage.
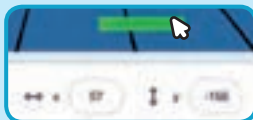
Bounce off the Paddle

Make the ball bounce off the paddle.
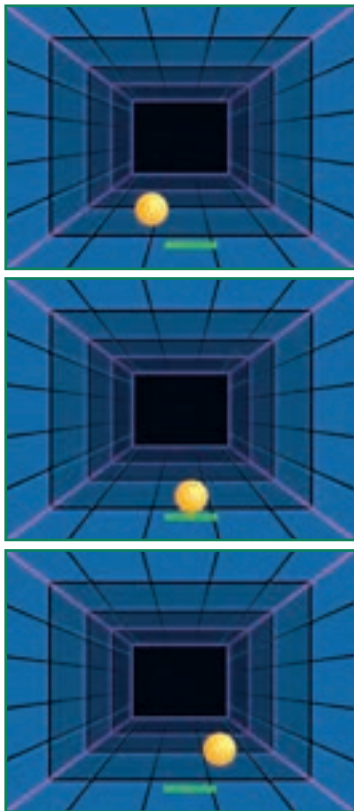
SCRATCH

Bounce off the Paddle

GET READY

Click to select the Ball sprite.
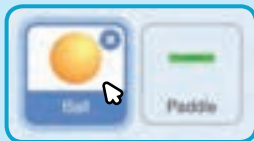
ADD THIS CODE

Add this new stack of blocks to your Ball sprite.

Ball

Choose **Paddle** from the menu.

```
when 🏳 clicked
forever
    if  touching Paddle ? then
        turn ↻ pick random 170 to 190 degrees
        move 15 steps
        wait 0.5 seconds
```

Insert the **pick random** block and type in 170 to 190.

```
turn ↻     degrees
    pick random 170 to 190
```

TRY IT

Click the green flag to start.

Game Over

Stop the game if the ball hits the red line.
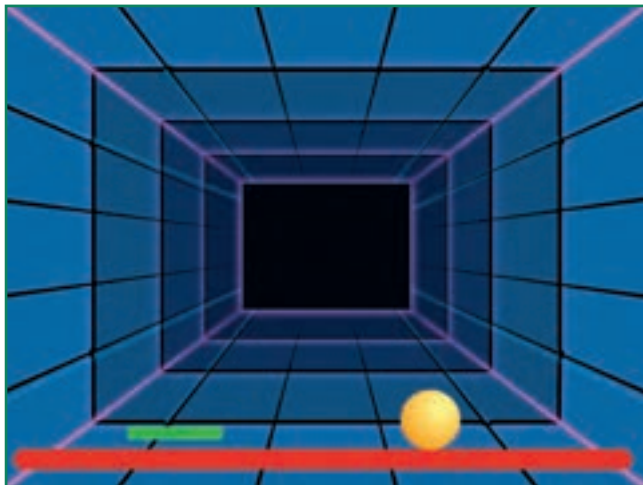
SCRATCH

Game Over

GET READY

Choose the sprite called Line.
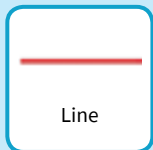
Drag the Line sprite to the bottom of the Stage.

ADD THIS CODE

Line

```
when [flag] clicked
go to x: 0 y: -170
forever
  if < touching Ball ? > then
    stop all
```

Choose **Ball** from the menu.

TRY IT

Click the green flag to start.

Score Points

Add a point each time you hit
the ball with the paddle.
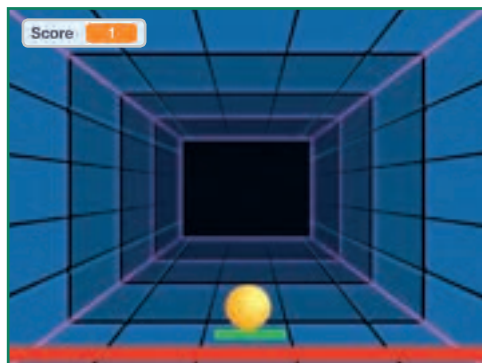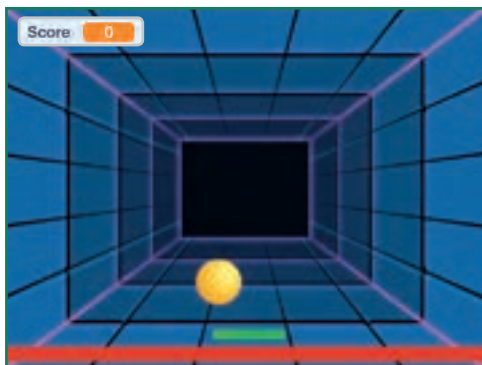
SCRATCH

Score Points

GET READY

Choose **Variables**.

Click the **Make a Variable** button.
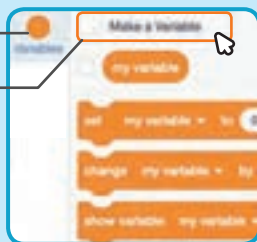
Name this variable **Score** and then click **OK**.

ADD THIS CODE

Click to select the Ball sprite.
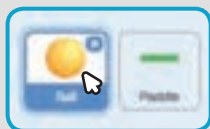
Add this block and choose **Score** from the menu.

Use this block to reset the score. Choose **Score** from the menu.

Win the Game

When you score enough points,
display a winning message!

Win the Game

GET READY

Use the **Text** tool to write a message, like "You Won!"

Click the Paint icon to make a new sprite.

You can change the font color, size, and style.

ADD THIS CODE

Click the **Code** tab.

Type the number of points needed to win the game.
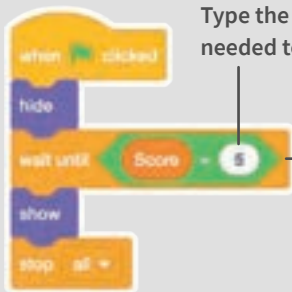
Insert the **Score** block into the **equals** block from the Operators category.

TRY IT

Click the green flag to start.

Play until you score enough points to win!

Let's Dance Cards

**Design an animated dance scene
with music and dance moves.**

Let's Dance Cards

Try these cards in any order:

- **Dance Sequence**
- **Dance Loop**
- **Play Music**
- **Take Turns**
- **Starting Position**
- **Shadow Effect**
- **Interactive Dance**
- **Color Effect**
- **Leave a Trail**

SCRATCH

Dance Sequence

Make an animated dance.
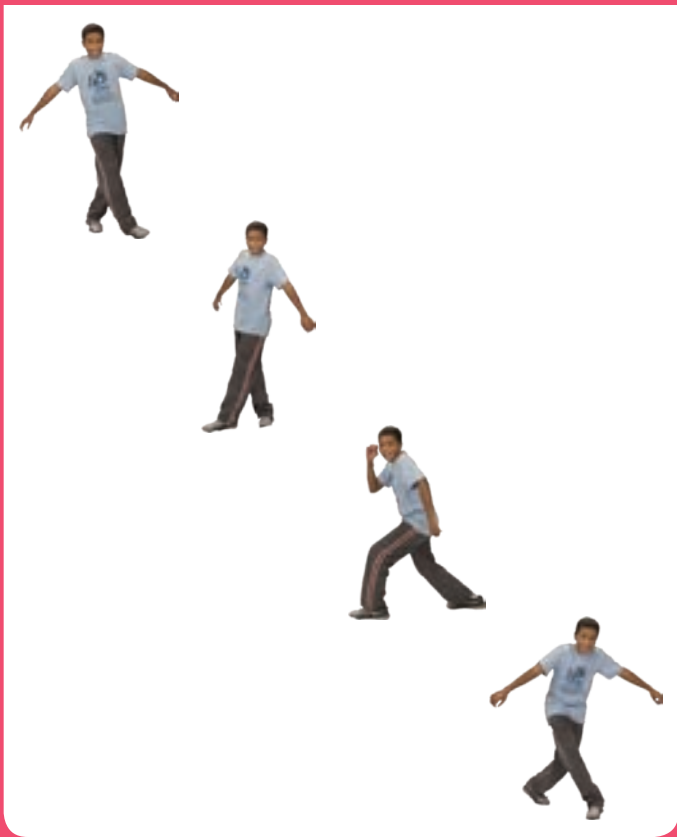
Dance Sequence

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GET READY

Choose a dancer.

Ten80 Dance

Click the **Costumes** tab to see the different dance moves.

Fantasy   Dance   Music

To see just the dance sprites, click the **Dance** category at the top of the Sprite Library.

ADD THIS CODE

Code   Click the **Code** tab.

Ten80 Dance
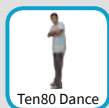
Type how long to wait between dance moves.

Pick different dance moves.

TRY IT

Click the green flag to start.

Dance Loop

Repeat a series of dance steps.

SCRATCH

Dance Loop

GET READY

Go to the Sprite Library.

Click the Dance category.

Ten80 Dance

Choose a dancer.

ADD THIS CODE

Ten80 Dance
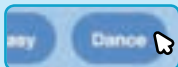
Choose a dance pose.
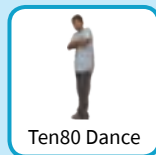
Type how many times you want to repeat the dance.
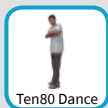
Add a **repeat** loop around your dance sequence.

TRY IT

Click the green flag to start.

Play Music

Play and loop a song.

SCRATCH

Play Music

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GET READY

Click the **Sounds** tab.

Choose a backdrop.

Concert
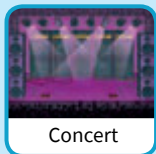
Choose a song from the **Loops** category.

ADD THIS CODE

Click the **Code** tab.

Concert

when 🏳 clicked

repeat 10

play sound Dance Celebrate ▾ until done
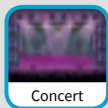
Type how many times you want the song to repeat.

TIP

Make sure to use   play sound Dance Celebrate ▾ until done   (not   start sound Dance Celebrate ▾   )

or else the music won't finish playing before it begins again.

Take Turns

Coordinate dancers so that one begins after the other finishes.

SCRATCH

Take Turns

GET READY

Choose two dancers
from the Dance category.

Anina Dance
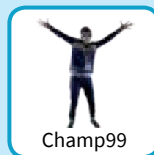
Champ99

ADD THIS CODE

Anina Dance

Broadcast a message.
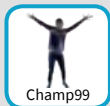
Champ99

Tell this dancer sprite
what to do when it
receives the message.

TRY IT

Click the green flag to start.

Starting Position

Tell your dancers where to start.

SCRATCH

Starting Position

GET READY

Go to the
Sprite Library.

Click the **Dance** category.

LB Dance

Choose a dancer.

ADD THIS CODE

LB Dance

```
when [flag] clicked
go to x: -10 y: 20
set size to 90 %
switch costume to lb stance ▼
show
```

Tell your sprite where to start.

Set the sprite's size.

Choose a starting costume.

Make sure the sprite is showing.
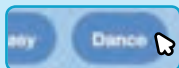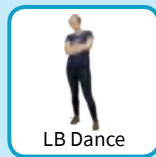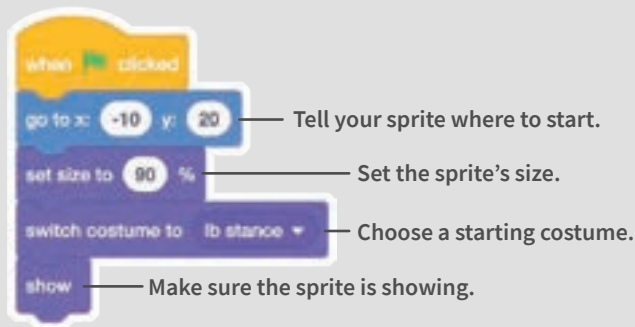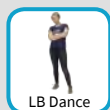
TIP
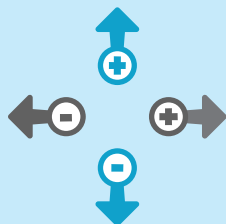
Use `go to x: ( ) y: ( )` to set a sprite's position on the Stage.

x is the position on the Stage from left to right.

y is the position on the Stage from top to bottom.

Shadow Effect

Make a dancing silhouette.

SCRATCH

Shadow Effect

GET READY

Go to the Sprite Library.

Click the Dance category.

Jouvi Dance

Choose a dancer.

ADD THIS CODE

Choose brightness from the menu.

```
set  color ▾  effect to  0

color
fisheye
whirl
pixelate
mosaic
brightness
ghost
```
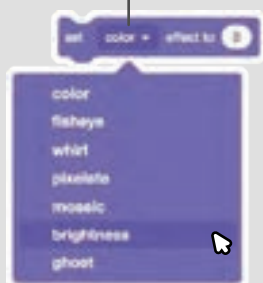
Set the brightness to -100 to make the sprite completely dark.

```
when 🚩 clicked
set  brightness ▾  effect to  -100
forever
    next costume
    wait  0.3  seconds
```

TRY IT

Click the green flag to start. — 🚩 🔴 — **Click the stop sign to stop.**

Interactive Dance

Press keys to switch dance moves.

Interactive Dance

GET READY

Go to the
Sprite Library.

Click the **Dance** category.

Jouvi Dance

Choose a dancer.

ADD THIS CODE

Choose a different key to press
for each dance move.

Pick a dance move from the menu.

when left arrow key pressed
switch costume to jo pop left

when right arrow key pressed
switch costume to jo pop right

when up arrow key pressed
switch costume to jo top stand

when down arrow key pressed
switch costume to jo pop down

TRY IT

Press the arrow keys on your keyboard.

Color Effect

Make the backdrop change colors.

Color Effect

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GET READY

Choose a backdrop.

Spotlight

ADD THIS CODE

Spotlight

```
when 🏳 clicked
forever
    change color ▾ effect by 25
    wait 0.3 seconds
```
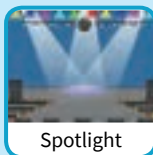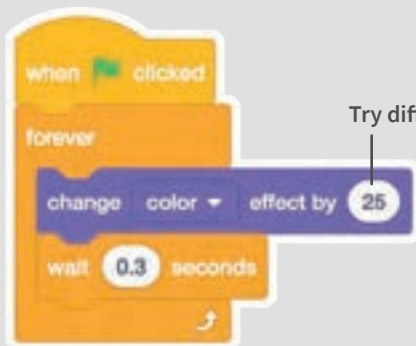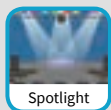
Try different numbers.

TRY IT

Click the green flag to start.

Leave a Trail

Stamp a trail as your dancer moves.
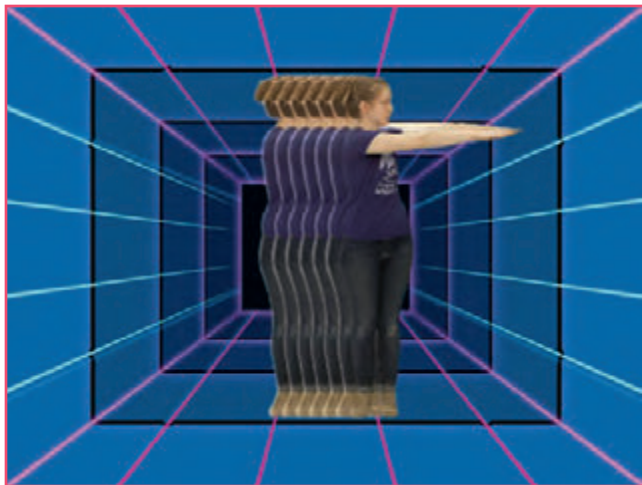
SCRATCH

Leave a Trail

GET READY

Choose a dancer from
the Dance category.
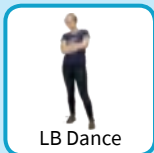
LB Dance

Click the **Extensions** button, and
then click **Pen** to add the blocks.

ADD THIS CODE

LB Dance
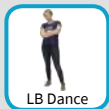
Type how many times to repeat.

Stamp an image of the
sprite on the Stage.

Clear all the stamps.

TRY IT

Click the green flag to start.

Jumping Game Cards

Make a character jump over moving obstacles.

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Jumping Game Cards

Use these cards in this order:

1. Jump

2. Go to Start

3. Moving Obstacle

4. Add a Sound

5. Stop the Game

6. Add More Obstacles

7. Score

SCRATCH

Jump

Make a character jump.

Jump
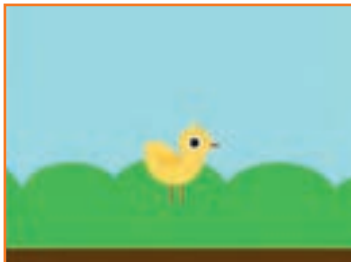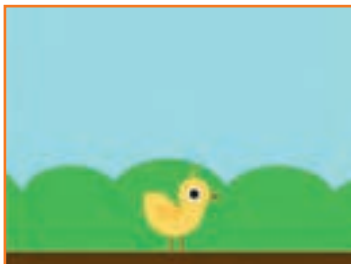
GET READY

Choose a backdrop.

Blue Sky

Choose a character, like Chick.
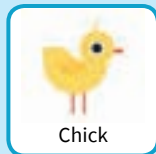
Chick

ADD THIS CODE

Chick

```
when space ▾ key pressed
repeat 10
    change y by 10
repeat 10
    change y by -10
```

Type a minus sign to go back down.

TRY IT

C V B N M
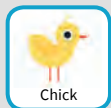
Press the space key on your keyboard.

Go to Start

Set the starting point for your sprite.
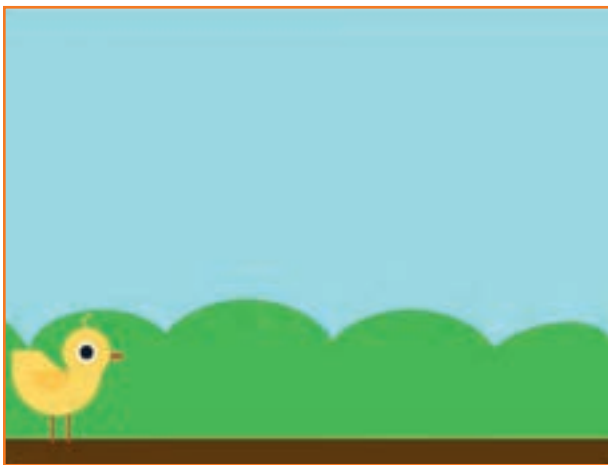
SCRATCH

Go to Start

GET READY

Drag your character to where you want it.

When you move your character, its **x** and **y** position will update in the blocks palette.

Now when you drag out a **go to** block, it will set to your character's new position.

ADD THIS CODE

Chick

Set the starting position. (Your numbers may be different.)

TIP

Change the size of a sprite by typing a smaller or larger number.
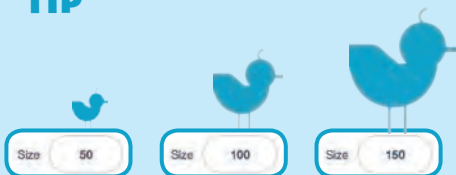
Moving Obstacle

Make an obstacle move
across the Stage.
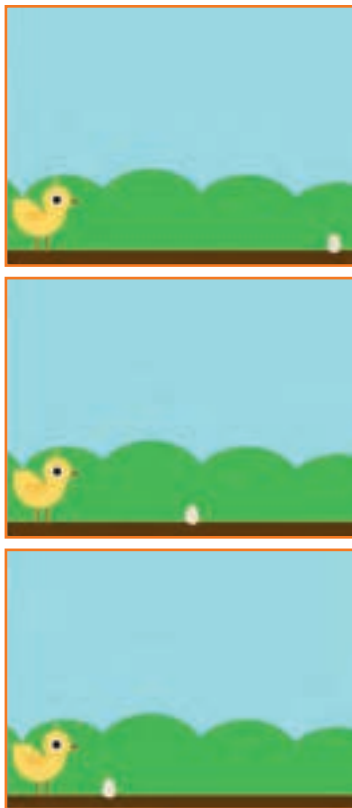
SCRATCH

Moving Obstacle

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GET READY

Choose a sprite to be an obstacle, such as Egg.

Egg

ADD THIS CODE

Egg

```
when 🏳 clicked
forever
  go to x: 240 y: -145
  glide 3 secs to x: -240 y: -145
```
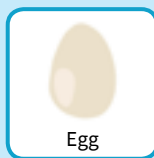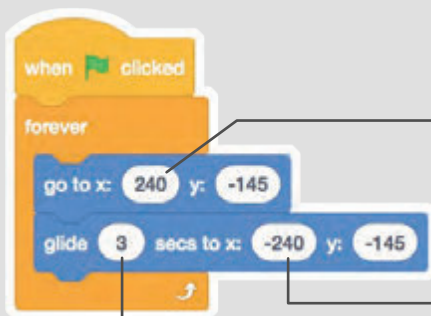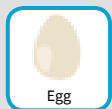
Start at the right edge of the Stage.

Type a smaller number to go faster.

Glide to the left edge of the Stage.

TRY IT

Click the green flag to start.

C V B N M

Press the **space** key on your keyboard.

Add a Sound

Play a sound when your sprite jumps.
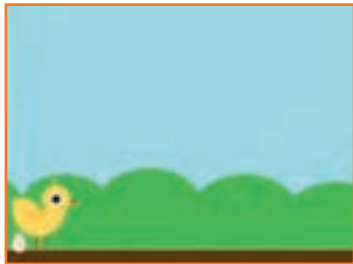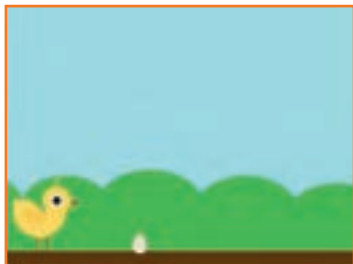
Add a Sound

scratch.mit.edu

GET READY

Click to select the Chick sprite.

ADD THIS CODE

Chick
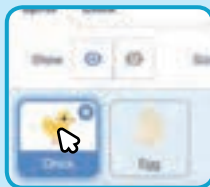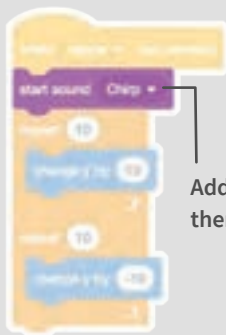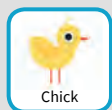
Add the **start sound** block,
then select a sound.

TRY IT

Click the green
flag to start.

C V B N M
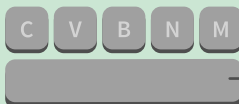
Press the **space** key
on your keyboard.

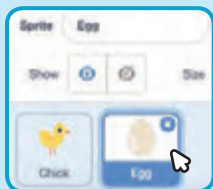# Stop the Game

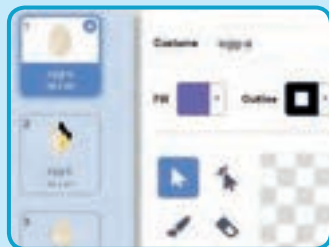Stop the game if your sprite touches the egg.
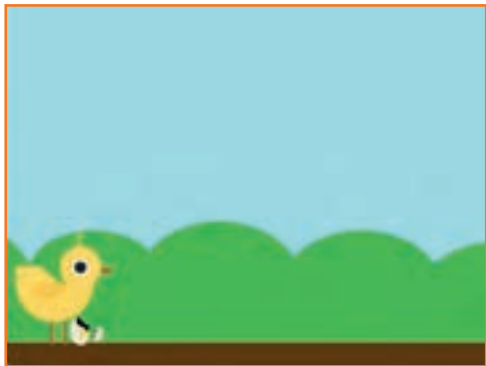
SCRATCH

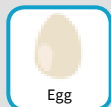# Stop the Game

GET READY

Click to select the Egg sprite.

Costumes

Click the **Costumes** tab to see the Egg sprite's costumes.

ADD THIS CODE

Code Click the **Code** tab and add this code.

Egg

Insert the touching block and choose Chick from the menu.

Choose a second costume for the Egg sprite to change to.

TRY IT

Click the green flag to start.

C V B N M

Press the space key on your keyboard.

Add More Obstacles
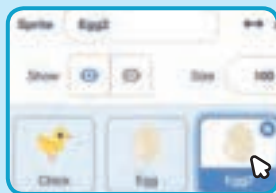
Make the game harder by adding more obstacles.
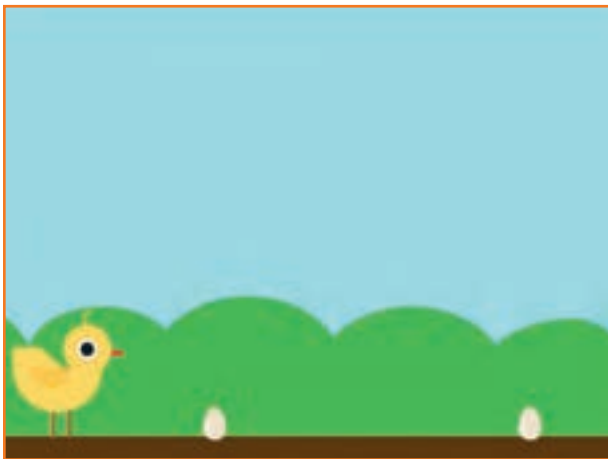
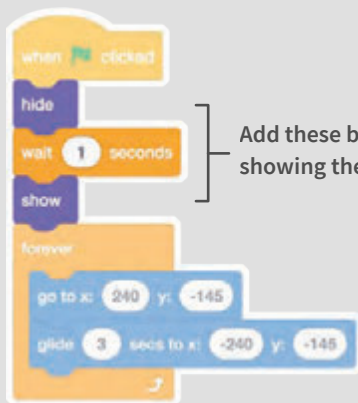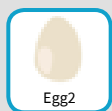SCRATCH

Add More Obstacles

GET READY
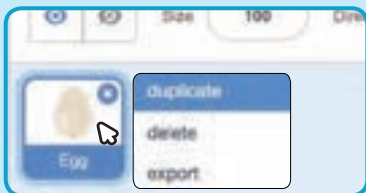
To duplicate the Egg sprite, right-click (Mac: control-click) on the thumbnail, and then choose **duplicate**.

Click to select Egg2.

ADD THIS CODE

Egg2

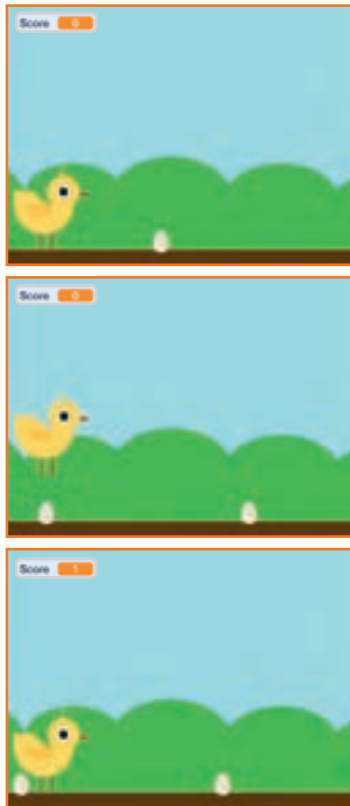Add these blocks to wait before showing the second egg.

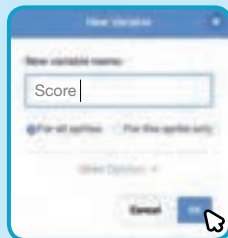## TRY IT

Click the green flag to start. ──

Score

Add a point each time your sprite jumps over an egg.

Score

GET READY

Choose **Variables**.

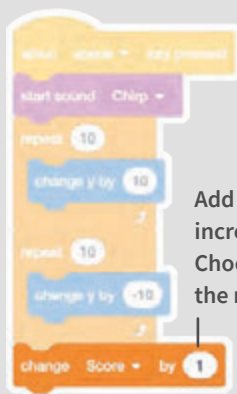Click the **Make a Variable** button.

Name this variable **Score** and then click **OK**.

ADD THIS CODE

Click the Chick sprite and add two blocks to your code:

Chick

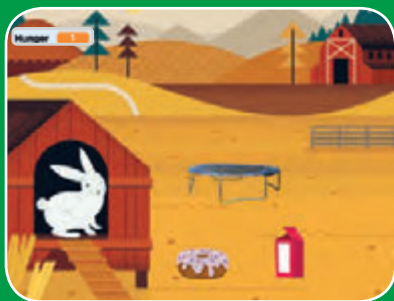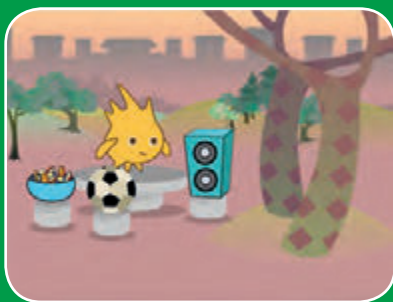Add this block and then choose **Score** from the menu.

Add this block to increase the score. Choose **Score** from the menu.

TRY IT

Jump over the eggs to score points!

Virtual Pet Cards

Create an interactive pet that
can eat, drink, and play.

Virtual Pet Cards

Use these cards in this order:

1. **Introduce Your Pet**

2. **Animate Your Pet**

3. **Feed Your Pet**

4. **Give Your Pet a Drink**

5. **What Will Your Pet Say?**

6. **Time to Play**

7. **How Hungry?**

Introduce Your Pet

Choose a pet and have it say hello.

scratch

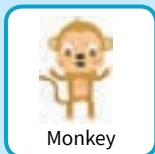# Introduce Your Pet

GET READY

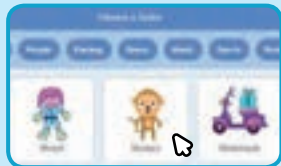Choose a backdrop, like Garden Rock.

Garden Rock

Choose a sprite to be your pet, like Monkey.
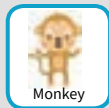
Monkey

Pick a sprite with more than one costume.

Scroll over sprites in the Sprite Library to see their different costumes.

ADD THIS CODE

Drag your pet to where you want it on the Stage.

Monkey

```
when [green flag] clicked
go to x: -50 y: 60
say My name is Kiki! for 2 seconds
```

Set its position. (Your numbers may be different.)

Type what you want your pet to say.

TRY IT

Click the green flag to start.

Animate Your Pet

Bring your pet to life.

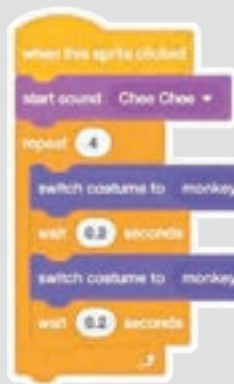# Animate Your Pet

GET READY

Click the **Costumes** tab to see your pet's costumes.

ADD THIS CODE

Click the **Code** tab and add this code.

Monkey

Choose a costume.

Choose a different costume.
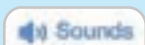
TRY IT

Click your pet.
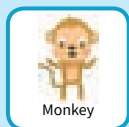
Feed Your Pet

Click the food to feed your pet.

SCRATCH

Feed Your Pet

GET READY

Sounds

Click the **Sounds** tab.

Monkey

Choose a sound from the
Sounds Library, like Chomp.

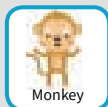Choose a food sprite,
like Bananas.

Bananas

ADD THIS CODE

Code Click the **Code** tab.

Bananas

broadcast message1 ▾

New message

Select **New message**
and name it **food**.

when this sprite clicked

go to front ▾ layer

broadcast food ▾

Broadcast the **food** message.

Select your pet.

Monkey

when I receive food ▾

glide 1 secs to Bananas ▾

start sound Chomp ▾

wait 0.5 seconds

glide 1 secs to x -40 y 80

Choose **food** from the menu.

Choose **Bananas** from
the menu.

Glide to the starting position.

TRY IT

Click the food.

Give Your Pet a Drink

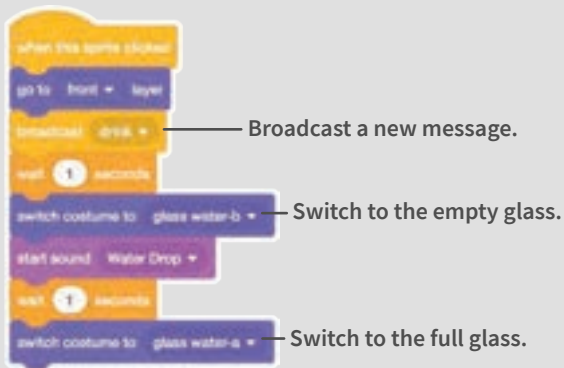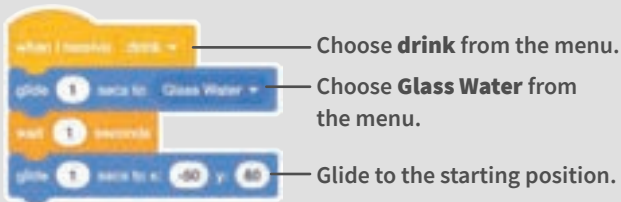**Give your pet some water to drink.**

Give Your Pet a Drink

GET READY

Choose a drink sprite, like Glass Water.

Glass Water

ADD THIS CODE

Glass Water

```
when this sprite clicked
go to   front ▾   layer
broadcast   drink ▾
wait   1   seconds
switch costume to   glass water-b ▾
start sound   Water Drop ▾
wait   1   seconds
switch costume to   glass water-a ▾
```

Broadcast a new message.

Switch to the empty glass.

Switch to the full glass.

Tell your pet what to do when it receives the message.

Monkey

```
when I receive   drink ▾
glide   1   secs to   Glass Water ▾
wait   1   seconds
glide   1   secs to x:   -50   y:   60
```

Choose **drink** from the menu.

Choose **Glass Water** from the menu.

Glide to the starting position.

TRY IT

Click the drink to start.

What Will Your Pet Say?

Let your pet choose what it will say.

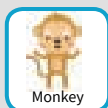# What Will Your Pet Say?

GET READY

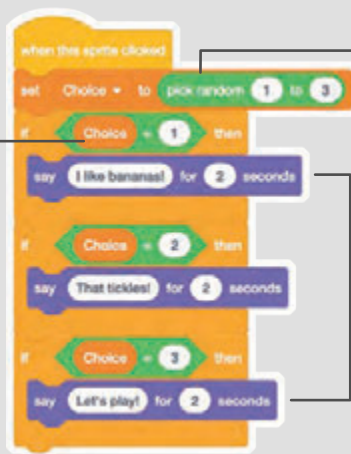Choose **Variables**.

Click the **Make a Variable** button.

Name this variable **Choice** and then click **OK**.

ADD THIS CODE

Monkey

Insert the **pick random** block.

Insert the **Choice** block into the **equals** block from the Operators category.

Type things for your pet to say.

TRY IT

Click your pet to see what it says.

Time to Play

Have your pet play with a ball.

Time to Play

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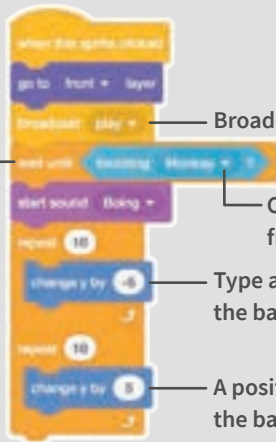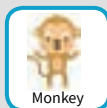## GET READY

Choose a sprite, like Ball.

Ball

ADD THIS CODE

Ball

Broadcast a new message.

Choose **Monkey** from the menu.
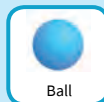
Type a minus sign to make the ball move down.
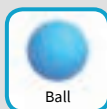
Insert the touching block into the **wait until** block.

A positive number makes the ball move up.

Monkey

Choose **play** from the menu.

Pick **Ball** from the menu.

TRY IT

Click the ball.
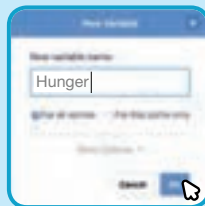
How Hungry?

Keep track of how hungry your pet is.

SCRATCH
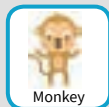
How Hungry?

scratch.mit.edu

GET READY

Choose **Variables**.

Click the **Make a Variable** button.

Hunger

Name this variable **Hunger** and then click **OK**.

ADD THIS CODE

Monkey

Reset hunger level.

Increase hunger level every 5 seconds.

Choose **food** from the menu.

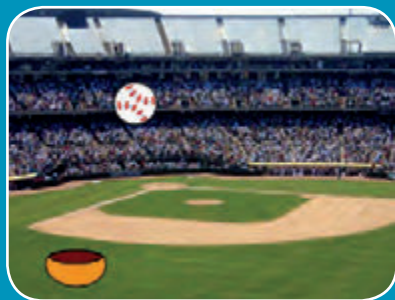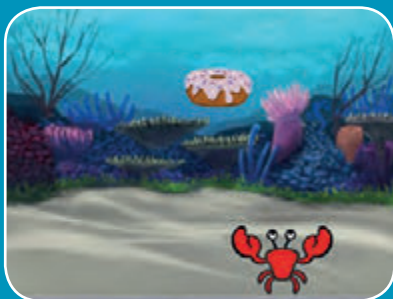Type a minus sign to make your pet less hungry when it gets food.

TRY IT

Click the green flag to start.

Then click the food.

Catch Game Cards

**Make a game where you catch
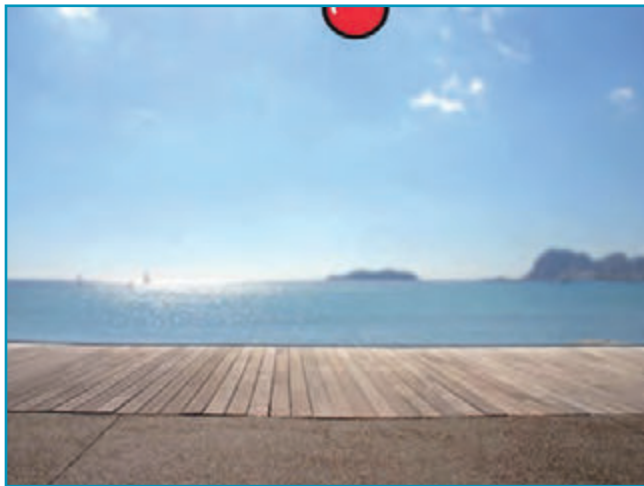things falling from the sky.**

Catch Game Cards

Use these cards in this order:

1. Go to the Top
2. Fall Down
3. Move the Catcher
4. Catch It!
5. Keep Score
6. Bonus Points
7. You Win!

Go to the Top

Start from a random spot
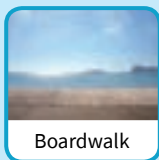at the top of the Stage.

SCRATCH

Go to the Top

GET READY
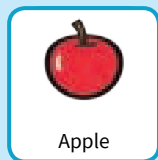
Choose a backdrop, like Boardwalk.

Boardwalk

Choose a sprite, like Apple.

Apple

ADD THIS CODE

Apple

```
when 🏳 clicked
go to   random position ▾
set y to  180
```

Type **180** to go to the top of the Stage.

TRY IT

Click the green flag to start.

TIP

y is the position on the Stage from top to bottom.

y = 180

x = −240   x = 240

y = −180
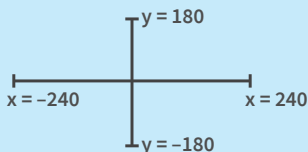
Fall Down

Make your sprite fall down.
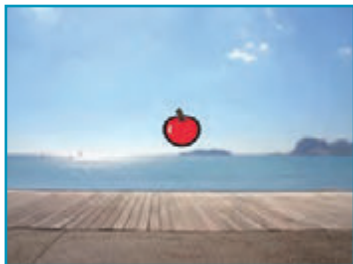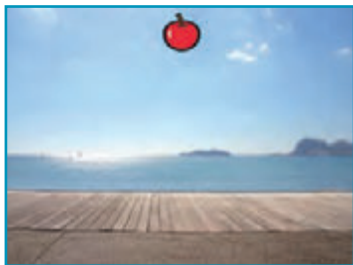
Fall Down

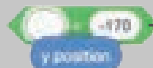## GET READY

Click to select
the Apple sprite.

ADD THIS CODE

Keep the previous code as is, and add this second stack of blocks:

Apple

Type a minus
sign to fall down.

Check if near the
bottom of the Stage.

Go back to the top
of the Stage.

Insert the **y position** block
into this block from the
Operators category.

TRY IT

Click the green flag to start. ——— Click the stop sign to stop.
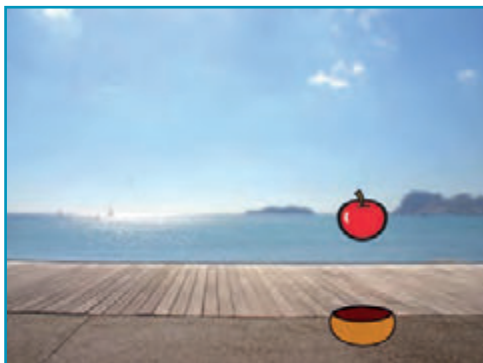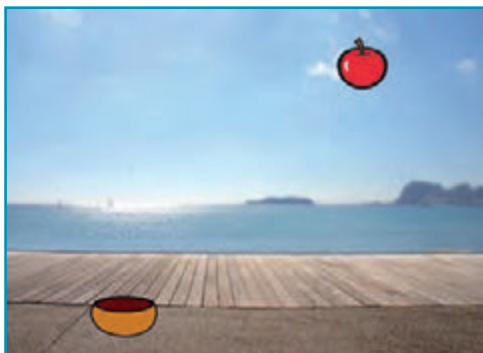
TIP

Use change y by ⬤ to move up or down.

Move the Catcher

Press the arrow keys so that the catcher moves left and right.

SCRATCH

Move the Catcher

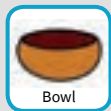## GET READY

Choose a catcher, like Bowl.

Bowl

Drag the bowl to the bottom of the Stage.

ADD THIS CODE

Bowl

Choose the **right arrow** from the menu.

Choose the **left arrow** from the menu.
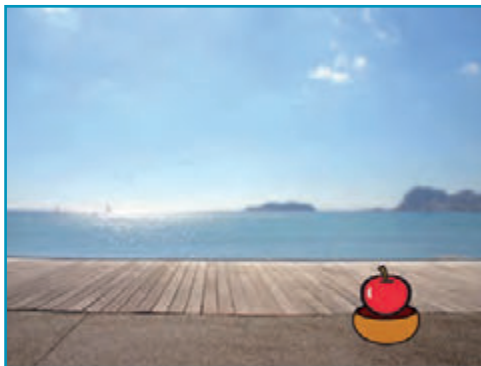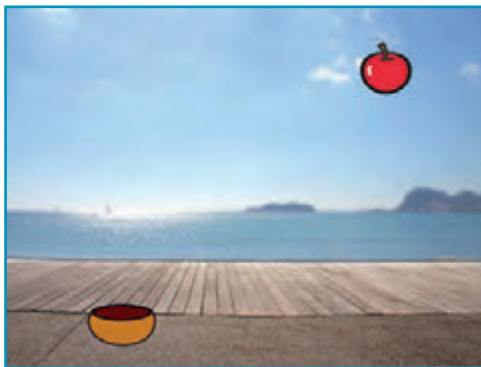
TRY IT

Click the green flag to start.

Press the arrow keys to move the catcher.
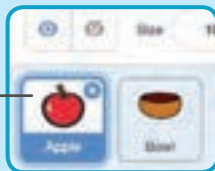
Catch It!

Catch the falling sprite.

SCRATCH

Catch It!
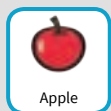
GET READY

Click to select the Apple sprite.

ADD THIS CODE

Apple

Choose **Bowl** from the menu.

Choose a sound.

```
when  clicked
forever
    if  touching  Bowl ▼  ?  then
        play sound  pop ▼  until done
        go to  random position ▼
        set y to  180
```

TIP

Sounds

Click the **Sounds** tab if you want to add a different sound.
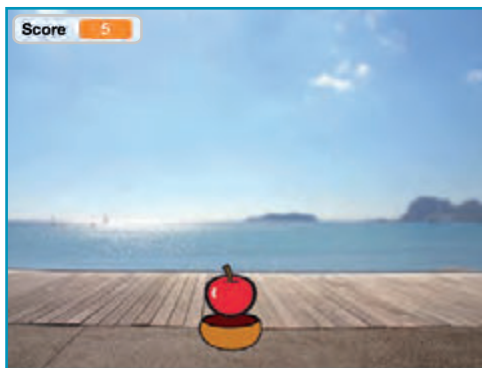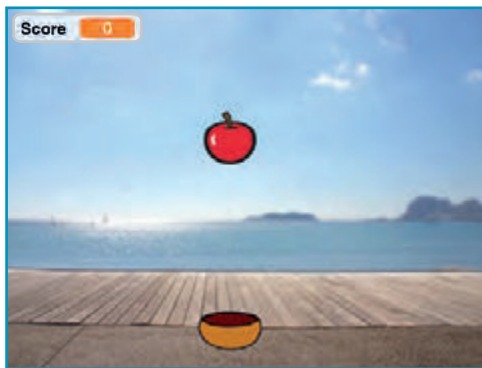
Then choose a sound from the Sounds Library.

Code

Click the **Code** tab when you want to add more blocks.

Keep Score

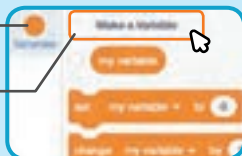**Add a point each time you catch the falling sprite.**

Keep Score

GET READY

Choose **Variables**.

Click the **Make a Variable** button.

Name this variable **Score** and then click **OK**.

ADD THIS CODE

Add two new blocks to your code:

Apple

Choose **Score** from the drop-down menu.

Add this block to reset the score.

Add this block to increase the score.

TRY IT

Click the green flag to start.

Then, catch apples to score points!

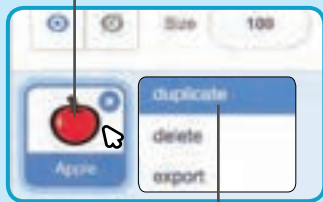# Bonus Points

Get extra points when
you catch a golden sprite.

SCRATCH

Bonus Points

GET READY

To duplicate your sprite,
right-click (Mac: control-click).

Choose **duplicate**.

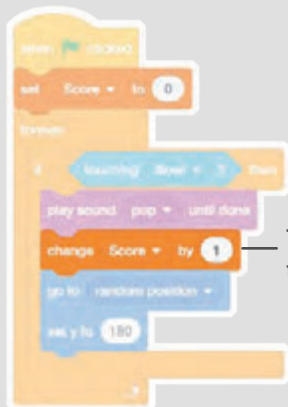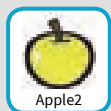Click the **Costumes** tab.

You can use the paint tools to make
your bonus sprite look different.

ADD THIS CODE

Click the **Code** tab.

Apple2
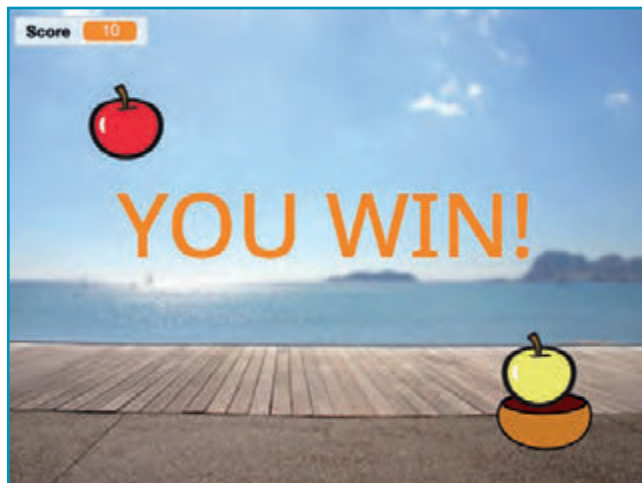
Type how many points you get
for catching a bonus sprite.

TRY IT

Catch the bonus sprite to increase your score!

You Win!

When you score enough points,
display a winning message!

You Win!

GET READY

Use the **Text** tool to write a
message, like "You Win!"

YOU WIN!

Click the Paint icon
to make a new sprite.

You can change the font color,
size, and style.

ADD THIS CODE

Code Click the **Code** tab.

YOU WIN!
You Win!
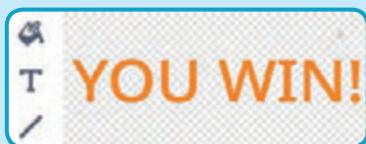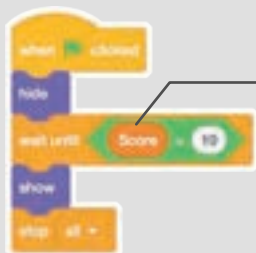
Insert the **Score** block from
the Variables category.

TRY IT

Click the green flag to start.

Play until you score
enough points to win!

Video Sensing Cards
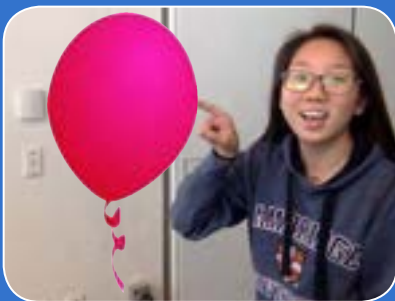
Interact with projects using Video Sensing.

SCRATCH

Video Sensing Cards
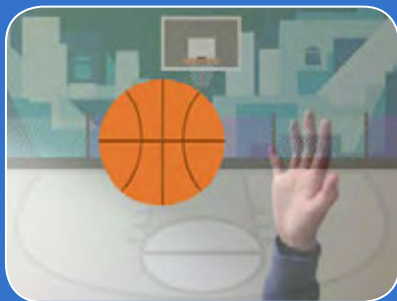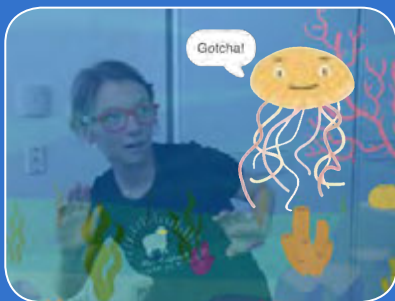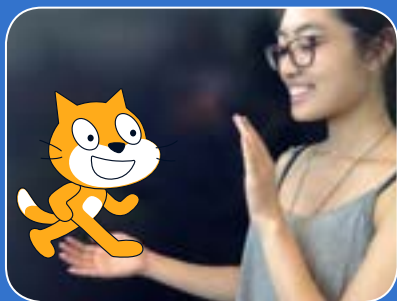
Try these cards in any order:

- **Pet the Cat**
- **Animate**
- **Pop a Balloon**
- **Play the Drums**
- **Keep Away Game**
- **Play Ball**
- **Start an Adventure**

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Pet the Cat

Make the cat meow when you touch it.
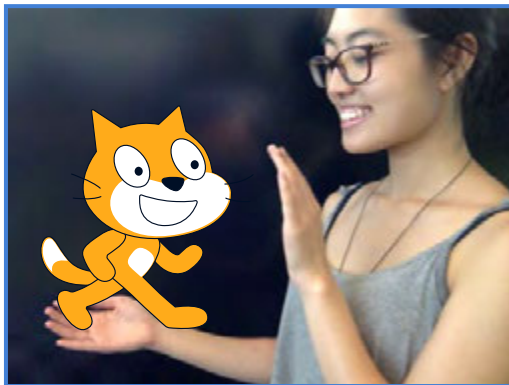
Pet the Cat

GET READY

Click the **Extensions** button
(at the bottom left of the screen).

Choose **Video Sensing**
to add the video blocks.

ADD THIS CODE

This will start when it
senses video motion on
a sprite.

Cat

when video motion > 20

play sound   Meow ▼   until done

Type a number between
1 and 100 to change the
sensitivity.

1 will start with very little
movement, 100 requires
a lot of movement.

TRY IT

Move your hand to pet the cat.

Animate

Move around to bring a sprite to life.

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Animate

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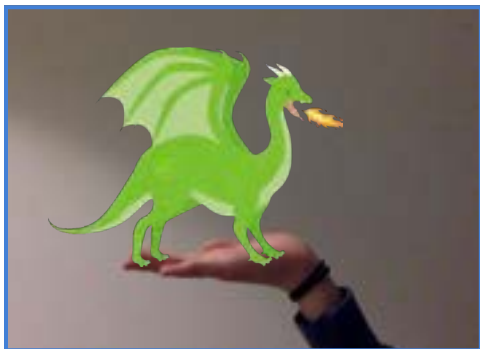
GET READY

Click the **Extensions** button, then choose **Video Sensing**.

Choose a sprite to animate.

Pick a sprite with more than one costume.

Scroll over sprites in the Sprite Library to see their different costumes.

Dragon

ADD THIS CODE

Dragon

when video motion > 20

switch costume to dragon-c ▼ — Choose one costume.

wait 0.5 seconds

switch costume to dragon-a ▼ — Choose a different costume.

TRY IT

Move around to animate the dragon.

Pop a Balloon

Use your finger to pop a balloon.

Pop a Balloon

GET READY

Click the Extensions button, then choose Video Sensing.

Choose a sprite, like Balloon1.

ADD THIS CODE

when video motion > 10

play sound Pop ▾ until done

change color ▾ effect by 25

go to random position ▾

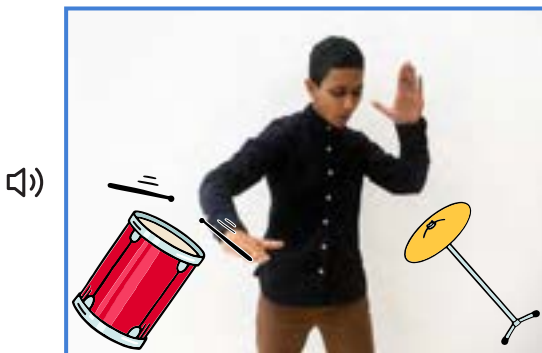**Type a larger number to make it harder to pop.**

TRY IT

Use your finger to pop the balloon.

Play the Drums

Interact with sprites that play sounds.

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Play the Drums

GET READY

Click the **Extensions** button,
then choose **Video Sensing**.

Choose two sprites,
like Drum and Drum-cymbal.

Drum

Drum-cymbal

ADD THIS CODE

Click on a drum to select it, then add its code.

Drum

Drum-cymbal

```
when video motion > 10
set size to 100 %
change size by 20
start sound High Tom
wait 0.1 seconds
change size by -20
```

```
when video motion > 10
switch costume to drum-cymbal-a
start sound Crash Cymbal
wait 0.1 seconds
switch costume to drum-cymbal-b
```

Type a minus sign to get smaller.
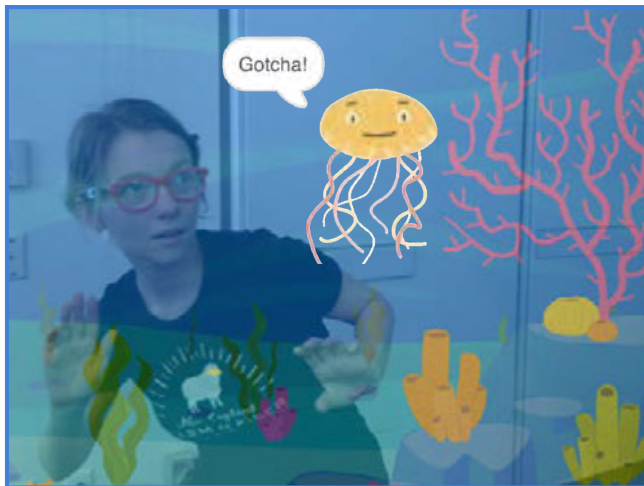
Choose a costume.

TRY IT

Use your hands to play the drums!

Keep Away Game

Move around to avoid a sprite.

Keep Away Game

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GET READY

Click the **Extensions** button, then choose **Video Sensing**.
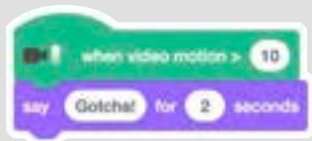
Choose a backdrop, like Ocean.

Choose a sprite, like Jellyfish.

ADD THIS CODE

Type a number between 0 and 100. (0 to show the video, 100 to make the video transparent.)

TRY IT

Move around to avoid the jellyfish.

Play Ball

Use your body to move a
sprite across the screen.
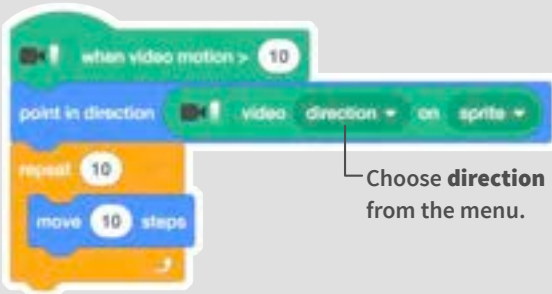
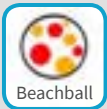SCRATCH

Play Ball
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GET READY

Click the Extensions button, then choose Video Sensing.

Beachball

Choose a sprite, like Beachball.

ADD THIS CODE

Beachball

```
when [flag] clicked
go to x: 0 y: 0
```

```
when video motion > 10
point in direction  video direction ▼ on sprite ▼
repeat 10
    move 10 steps
```

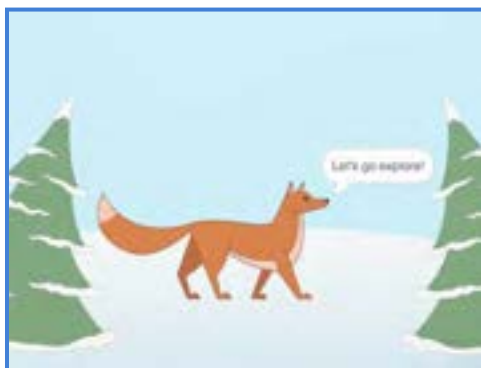Choose **direction** from the menu.

TRY IT

Use your hands to push the beach ball around the screen. Try it with a friend!

Start an Adventure!

Interact with a story by
moving your hands.
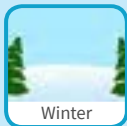
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Start an Adventure!

GET READY

Click the **Extensions** button.

Choose a backdrop.

Choose a sprite.

Click the **Costumes** tab to see your sprite's other costumes.
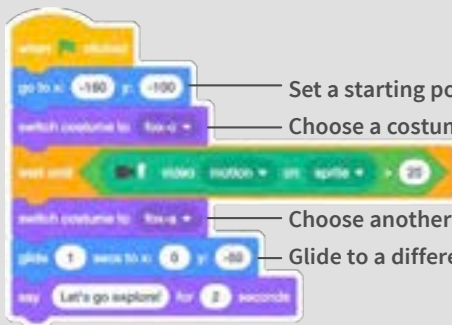
Choose **Video Sensing**.

Winter

Fox
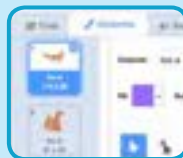
ADD THIS CODE

Click the Code tab.

Insert the **video motion on sprite** block into the **greater than** block from the Operators category.

Set a starting point.

Choose a costume.

Choose another costume.

Glide to a different point.

TRY IT

Click the green flag. Then wave to wake up the fox.