Grade 12 College Physics

ENERGY TRANSFORMATIONS SIMULATOR
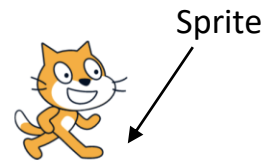
Blank link for students
https://scratch.mit.edu/

Ready solution

https://scratch.mit.edu/projects/882781717

Getting to know Scratch!

Sprite
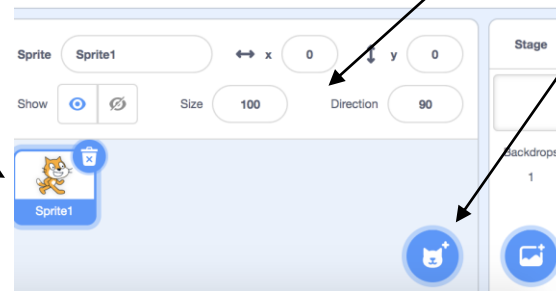
Controls for your Sprite –
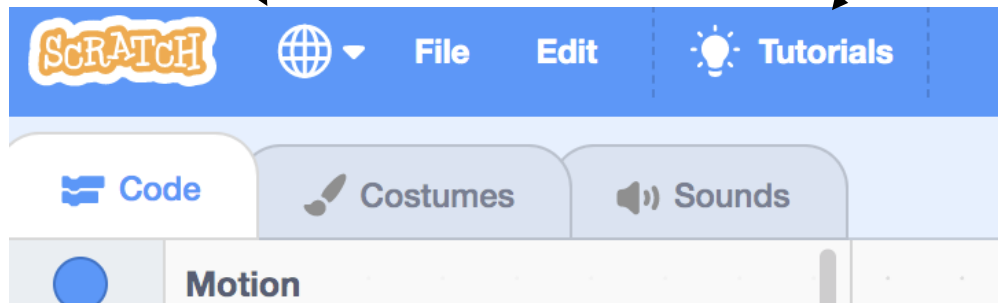Change direction/Size

Change your Sprite.

Select your sprite that you want to use before Coding. Click on Trash X to delete your Sprite.
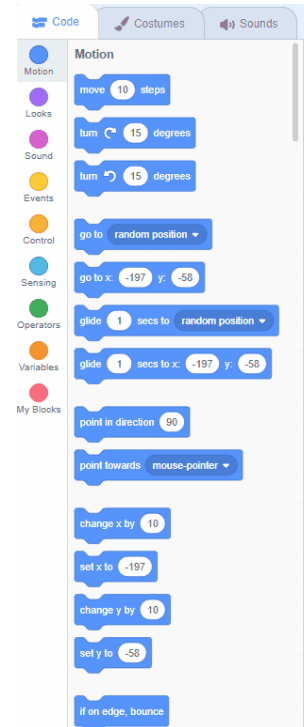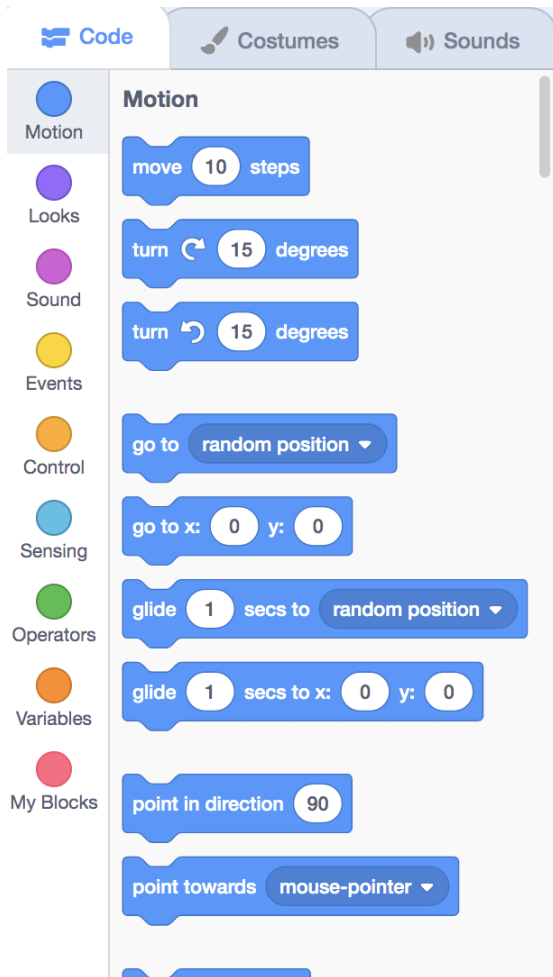
Change your Backdrop
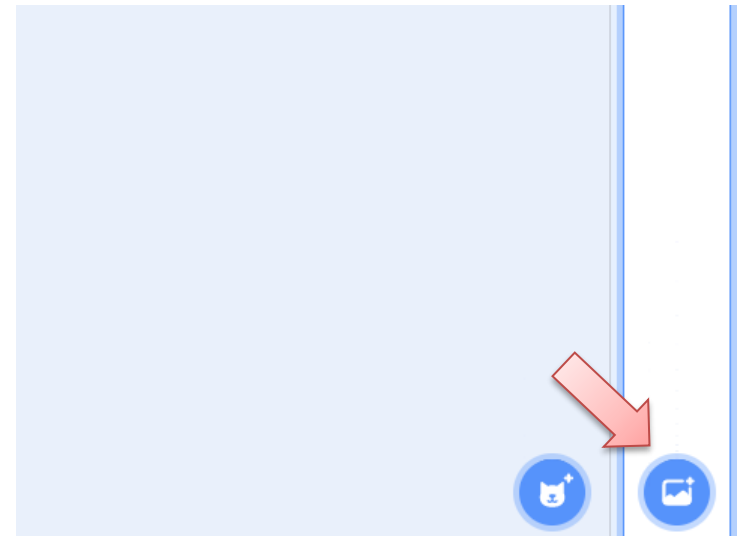
Getting to know Scratch!
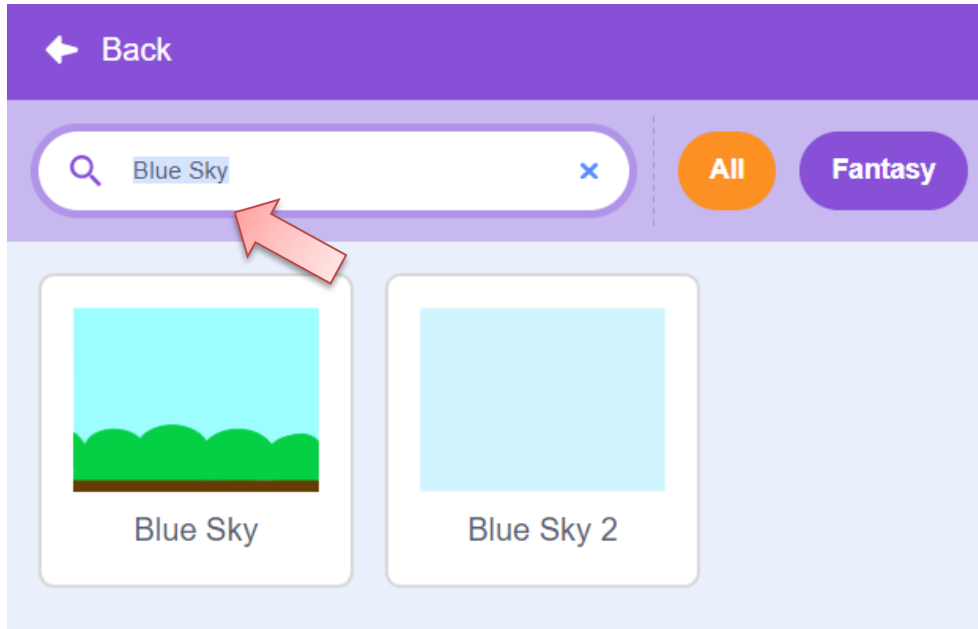
Click here to change the language
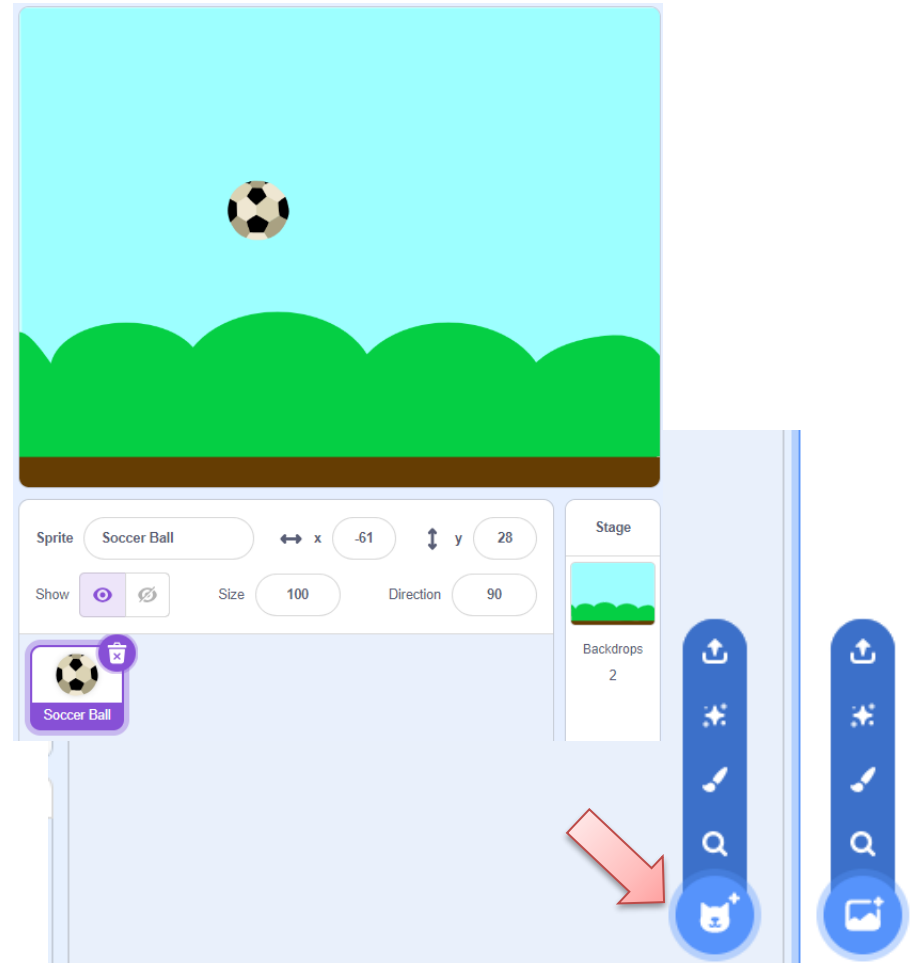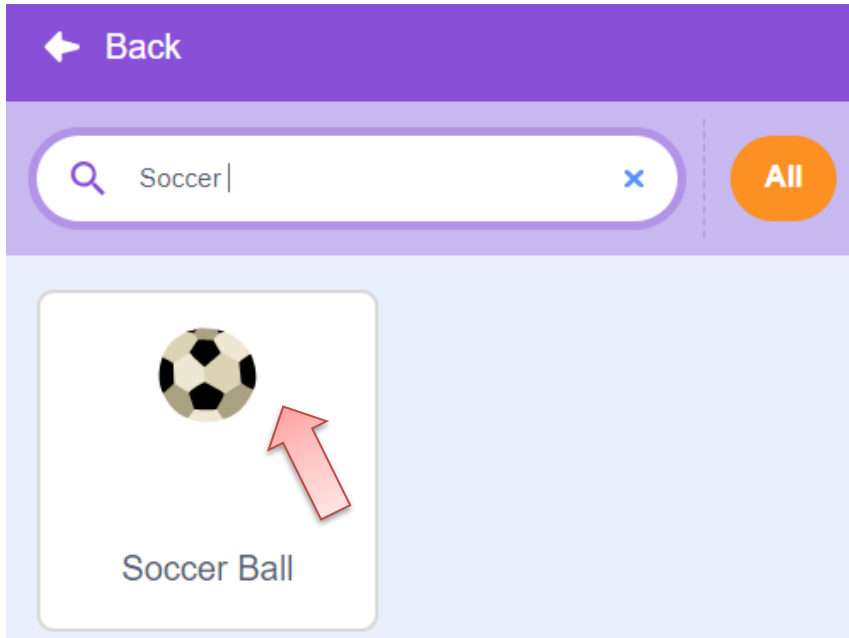
Take advantage of their Tutorials

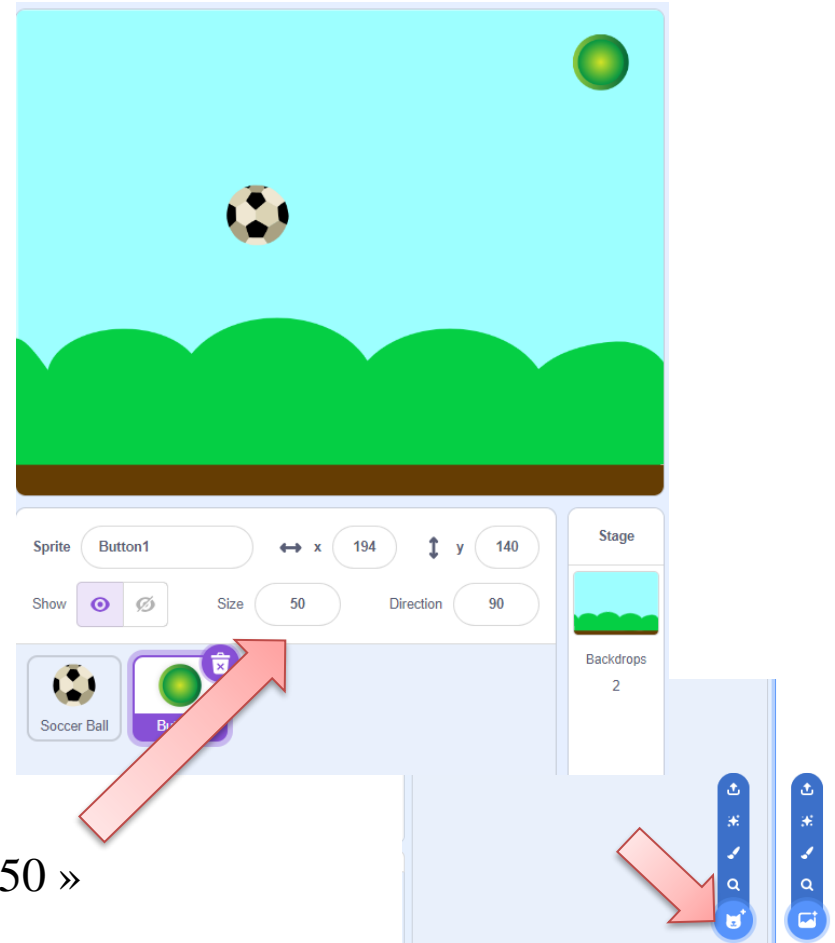Simply click and pull coding blocks from the right into the open area on the left to make your code!
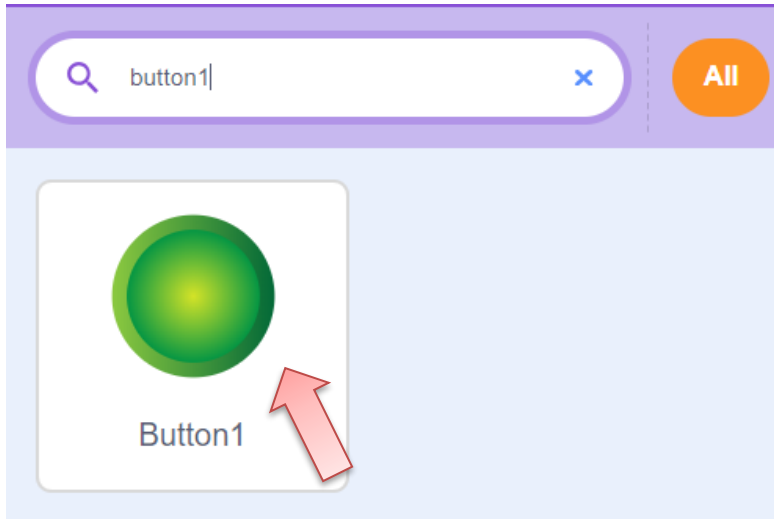
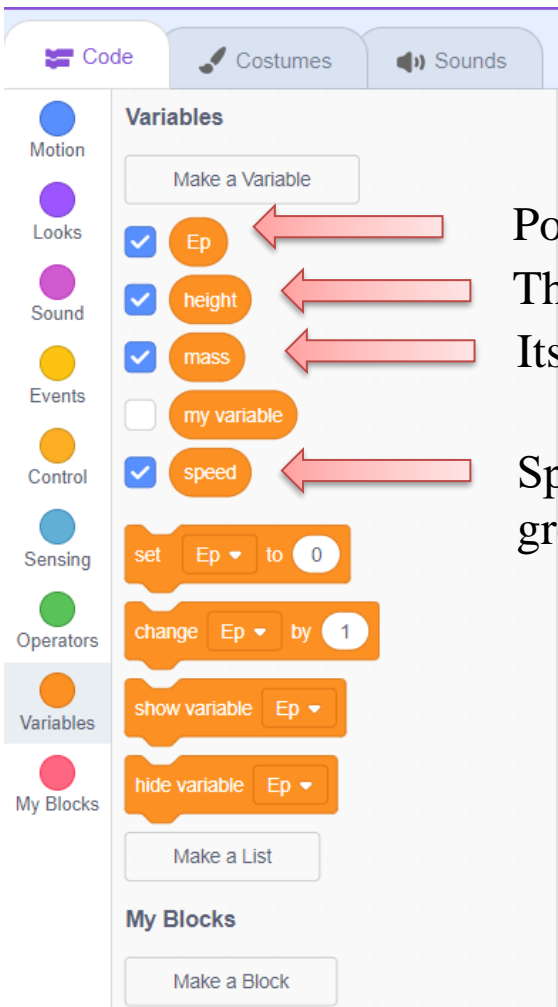# Choose a Backdrop "Blue Sky"

Choose a Sprite "Soccer Ball"

Choose a Sprite "Button1"

Size « 50 »

Make a Variables for sprite "Soccer Ball"

Potential energy of the ball

The height from which it falls

Its mass

Speed at the moment of hitting the ground

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Make a program for sprite "Soccer Ball"

Note: order of operations
-150 + (height * 10)

Explanation of the program for sprite "Soccer Ball"

coordinate plane

We set all the variables to zero at the start of the simulation and move the ball to its initial position.

We ask for the height from which the ball will fall and type it in the field.

We move the ball according to the coordinate plane, where the center is 0.0

We ask for the mass and record it in a variable

We will receive a click message from the button, and we simulate the fall of the ball according to the physical law:

$$t = \sqrt{\frac{2h}{g}}$$

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Make a program for sprite "Button1"

Run and test the program

Extension 1. We add a display of potential energy
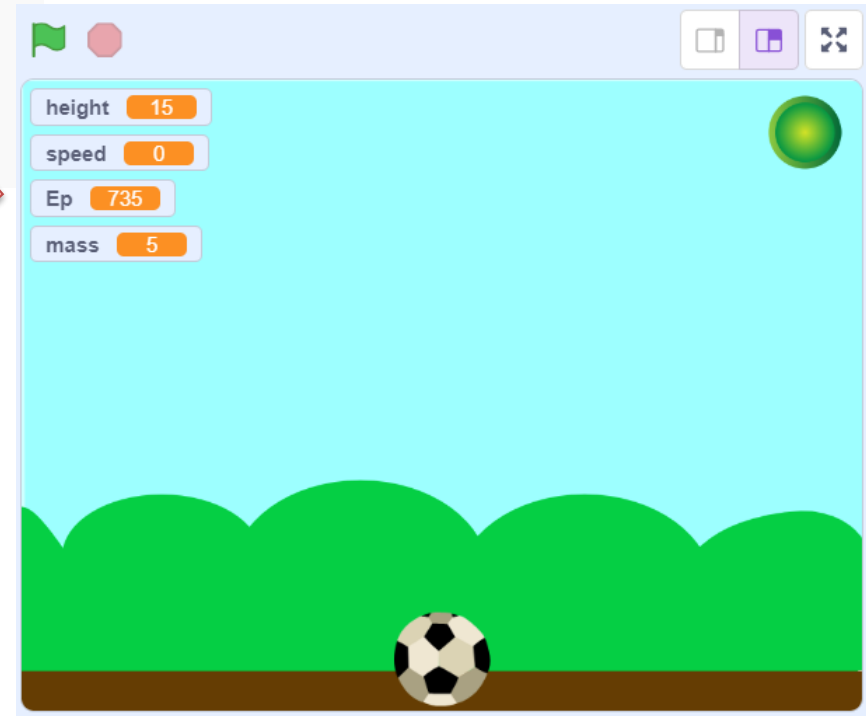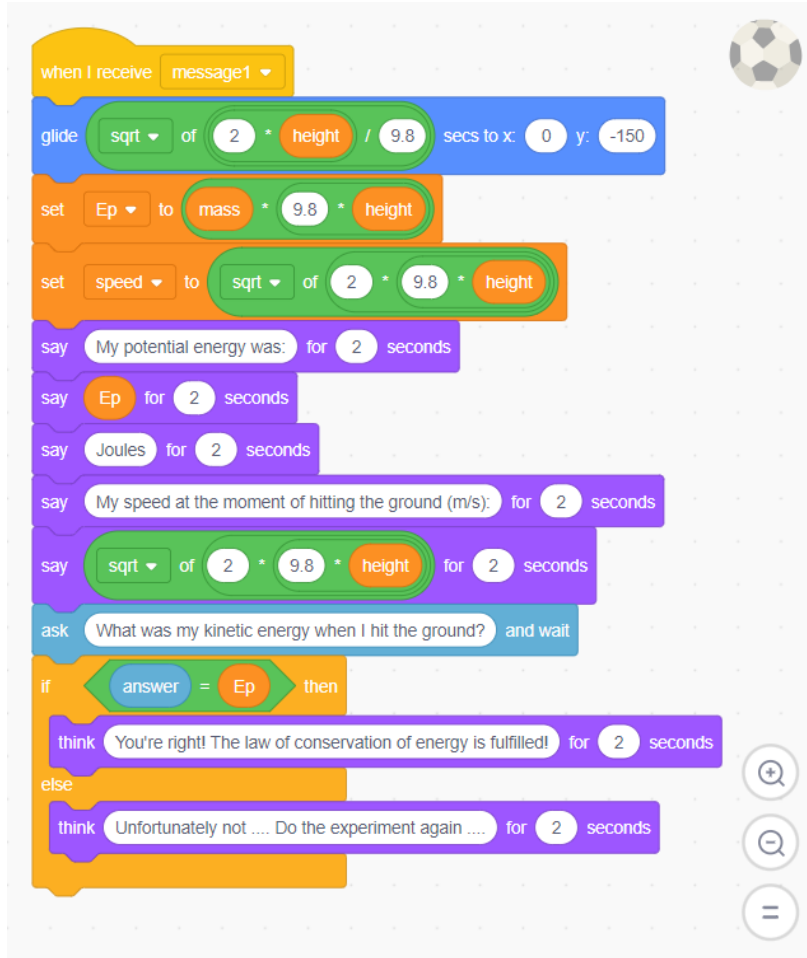
Extension 2. We add a display of speed

Extension 3.

We add interactivity and demonstrate the time the ball falls

Full program