Materials:

- Arduino Uno (or other)
- LCD
- Tilt Ball Switch (or another button/switch)
- 10kΩ Resistor
- Potentiometer for LCD set-up

Background & Set-Up:

https://en.wikipedia.org/wiki/Random_number_generation

In computing, there is no such thing as truly random. Everything is predictable given enough information. Read through some of the potential methods for writing algorithms that will provide you with some pseudo-random numbers. Try to write your own random number generator!

If you would like, you can use the already existing Arduino random() function. However, before you use it, be sure to read up on the function and try to seed the random function generator so that it produces a different order every time!

https://www.arduino.cc/reference/en/language/functions/random-numbers/random/

You will need to set-up a tilt ball switch a pull-up or pull-down resistor as a digital input in your circuit.

Goal:

We want to create a new version of our Magic 8-Ball program with an LCD and a tilt ball switch. Instead of using the serial port, we can use it more like an actual Magic 8-Ball. When you flip over the device (screen facing away from you), the tilt ball switch should trigger the Arduino to update the LCD screen with a new Magic 8-Ball style response. When you turn the screen back towards you, there should now be a new response.

Additional Info:

The LCD screen uses a special form of parallel communications. You will need to use the LiquidCrystal library. For more info and a tutorial:
https://learn.adafruit.com/adafruit-arduino-lesson-11-lcd-displays-1
https://learn.adafruit.com/adafruit-arduino-lesson-12-lcd-displays-part-2

I would first get your LCD set up properly and display, "Hello, world!" Once you have done that, you know the screen works properly and you can move on to implementing the Magic 8-Ball functionality.

Be sure you appropriately handle cases where your Magic 8-Ball response may be more characters than you can fit on your screen!