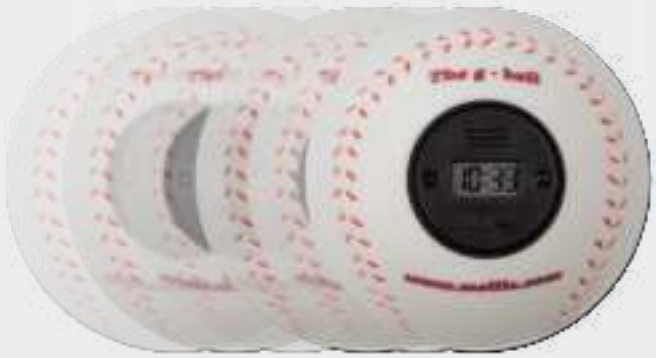
Additional Info

Battery Replacement

1. Remove phillips head screws on each side of the display.
2. Remove clock module, flip it over and remove battery cover.
3. Replace batteries with new ones. The "+" side should be facing upward.
4. Insert display back into ball, and screw back in.

Max Verticle Drop Height: 12 meters (depending on landing surface)

TEACHERS GUIDE



GRAVITY BALL
ITEM # 3497-03

The Gravity Ball is a fantastic tool to demonstrate a variety of different concepts. The Gravity Ball contains a digital stopwatch timer. The timer can count up to 29.99 seconds, and accurately displays hundredths of seconds. The timer will begin when you release the button and your grip from the Gravity Ball device. The Gravity Ball features a mechanism that will stop the timer when it makes contact with the ground.

Instructions

1. After you unbox the Gravity Ball remove the plastic tab from its display.

101:1

2. Press the button marked “PUSH”. This resets the data on the screen.

101:2

3. Press and hold the PUSH button. Drop the ball, and the timer will begin.

101:3

4. When the Gravity Ball makes contact with the ground, the timer will stop.

101:4

6. Use your data with the formulae to figure how far the ball dropped, acceleration, and more!

101:5

ACTIVITIES

1. Use the Gravity Ball to find the missing variable and determine the height of the ball’s drop. The Gravity Ball will accurately measure the height of it’s fall, so you can drop it from distances farther than your arm’s reach. Ever wonder how tall your house or school is? You can find out, as long as you ensure your Gravity Ball has a modestly cushioned landing point.

2. Ask your students to throw the Gravity Ball up in the air. After that, your students collect the data from the screen. Using the provided formulae and charts, have them determine the height of the ball, or it’s maximum speed.

3. Show the time displayed on your Gravity Ball after you drop it from a specific height. After that, show the difference in data that occurs when you throw the ball *sideways* from the same height. Ask the class what happens to their results when they throw them sideways at varying forces. Again, there is plenty you can experiment with when you utilize the provided formulae and tables.

Formulas and Tables

$d = ut + at^2/2$

$a = g \approx 9.8 ms^{-2}$

$d = gt^2/2$

$t = \sqrt{(2d/g)}$

$u = 0 ms^{-1}$

Variables

d distance

t time

g gravitational force (9.8)

u initial velocity

ms meters per second

Distance (m*)	Time (s*)
2	.64
3	.78
4	.90
5	1.01
6	1.11
7	1.20
8	1.28
10	1.43

Time (s)	Distance (m)
.5	1.23
.64	2.01
1	4.90
1.1	5.93
1.2	7.06
1.3	8.28
1.4	9.60
1.5	11.03

*distance measured in meters, time is in seconds

Note

It is always best to DO an experiment ahead of time to be able to best present it to the class.