Gravity

The pull toward the very center of the Earth — and the two directions it gives us

The Big Idea

***Gravity** pulls everything toward the CENTER of the Earth, constantly, with no off switch. Anything unsupported falls — and "down" in Australia and "down" here point to the same middle, which is why nobody falls off anywhere.*

Weight is gravity's pull on a thing, read in pounds. Gravity also hands builders their two directions: **vertical** is lined up with the pull (the plumb line finds it), **horizontal** lies level across (still water and the rolling marble find it). Heavy and light things fall **together**; balloons rise only because the heavier air sinks past and shoves them up; and the moon is forever **falling around** the Earth — an orbit is gravity's pull bending a straight flight into a circle.

Why does gravity exist at all? Honest answer: nobody knows yet. Science keeps that question open, out loud.

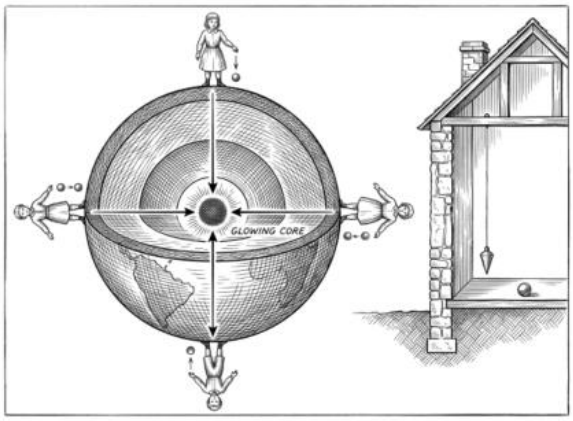


Fig. 1 — four children, four drops, one destination: every "down" runs straight to the Earth's middle — and the plumb line and level floor agree

Words to Know

gravity
the Earth's constant pull toward its center

weight
how hard the pull is on a thing, in pounds

vertical
lined up with gravity — the plumb line finds it

horizontal
lying level across — still water and a resting marble find it

level
the builder's bubble tool that certifies horizontal

orbit
falling around and around without ever landing

Watch For This in Everyday Life

- Hold a weight on a string — *"watch it find vertical, every time."*
- Check any shelf with a marble — *"horizontal, or a reject?"*
- Watch a helium balloon rise — *"what is really shoving it up?"*



gravity

gravity

vertical

vertical

horizontal

horizontal

BFSU D-1

Down Means Toward the Middle

The plumb line, the level floor, and the globe with no edge

WORKSHEET

1 · Draw a line from each tool to the part of the house it checks



the plumb bob, hanging ○



the WALL — standing straight up ○



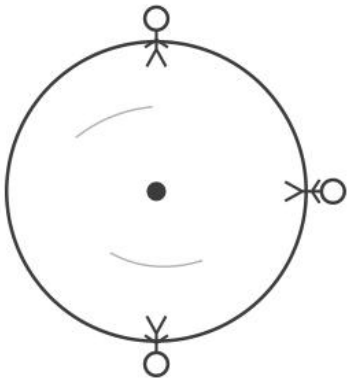
the bubble level, resting ○



the FLOOR — lying flat across ○

2 · Draw every child's "down" arrow on the globe

Three children stand around the Earth. Draw each one's falling-ball arrow — where do all the arrows meet?



3 · Guess first, then circle what really happened

The oil drop under water

The little oil drop will…

(sink to the bottom) (float up)

The drop race

The heavy ball and the light ball will land…

(heavy one first) (at the same time)

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The Inspector's Report

Weigh it, certify it, and draw the house gravity would wreck

WORKSHEET

1 · The weighing chart — colour the bar to the scale's reading

Say it the scientist's way each time: "Gravity's pull on ___ is ___ pounds." Then circle: would the moon pull harder or softer?

WHAT WE WEIGHED	COLOUR THE BAR TO THE POUNDS	ON THE MOON?
a stack of books		harder · softer
the watering can, full		harder · softer
ME		harder · softer

2 · The inspector's tally

One tally mark for every wall and surface you certified on the inspection round.

VERTICAL — certified	HORIZONTAL — certified	LEANING — reject!

3 · Draw the silly house

Walls leaning, floors tilting — draw what gravity does to the soup, the marbles, and the whole house. Now you know why builders carry a plumb bob.

the house no inspector would certify

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Down Means Toward the Middle

the lesson's song — sing it, then say what it means

SONG

Verse 1

Let go of a stone and it doesn't just stay,
Everything unsupported falls away.
Not sometimes, not mostly — every single time,
Anywhere on Earth, and that's the rhyme.

Chorus

Gravity! Gravity! Pulling toward the middle!
Down isn't under, down is IN.
Vertical, horizontal, plumb line and level —
There's no edge to fall off. Let's sing it again!

Verse 2

A child in Australia stands upside down to me,
But she feels right side up, as right as can be.
Her down and my down both point the same way:
Straight to the middle, night and day.

(Chorus)

Verse 3

Hang a weight on a string and let it be still,
That's vertical, that's plumb, that's the builder's will.
Lay the bubble flat till it sits in the middle,
That's horizontal, that's level. Solve the riddle!

Verse 4

Step on the scale and read what it said:
Gravity's pull on me is that many pounds instead.
On the moon you'd weigh less, you'd bounce and you'd hover —
Less pull up there, but it's pulling however.

(Chorus ×2)

Tag (spoken, kids): "Gravity... vertical... horizontal... LEVEL!"

How to use it. Play the recording once while everyone just listens. Play it again and join in on the chorus only — that is the part carrying the lesson. By the third time most children have the chorus. Then close the binder and ask what the words actually mean; a child who can sing it and explain it has the idea for good.