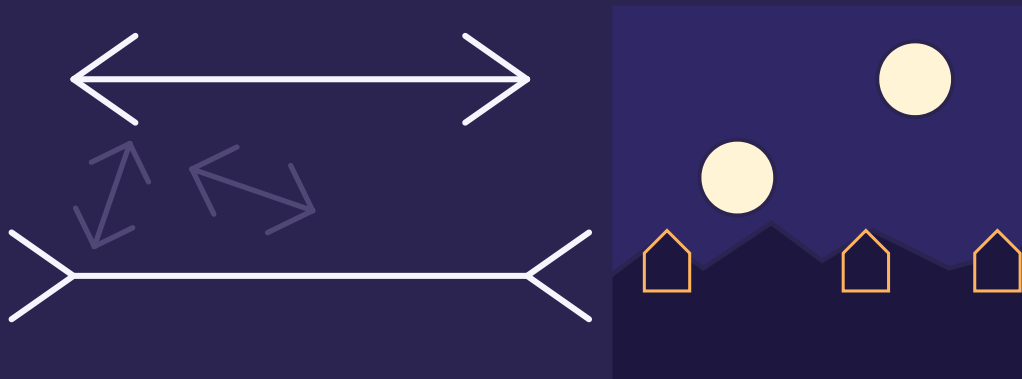


Size Illusions Free Sample

A taste of the printable packs from size.illusions.im



FREE

8 PAGES

A4 + US LETTER

A drawing sheet · a puzzle · two experiment cards · a lab log page · a worksheet · a poster

Printable PDF · A4 · info@reallybyte.com

SHEET 1 OF 10

The Müller-Lyer arrows

Two equal lines, one with arrowheads, one with tails

THE FINISHED ILLUSION



Drawn to exact size: print at 100% ("actual size") and you can check it with a ruler.

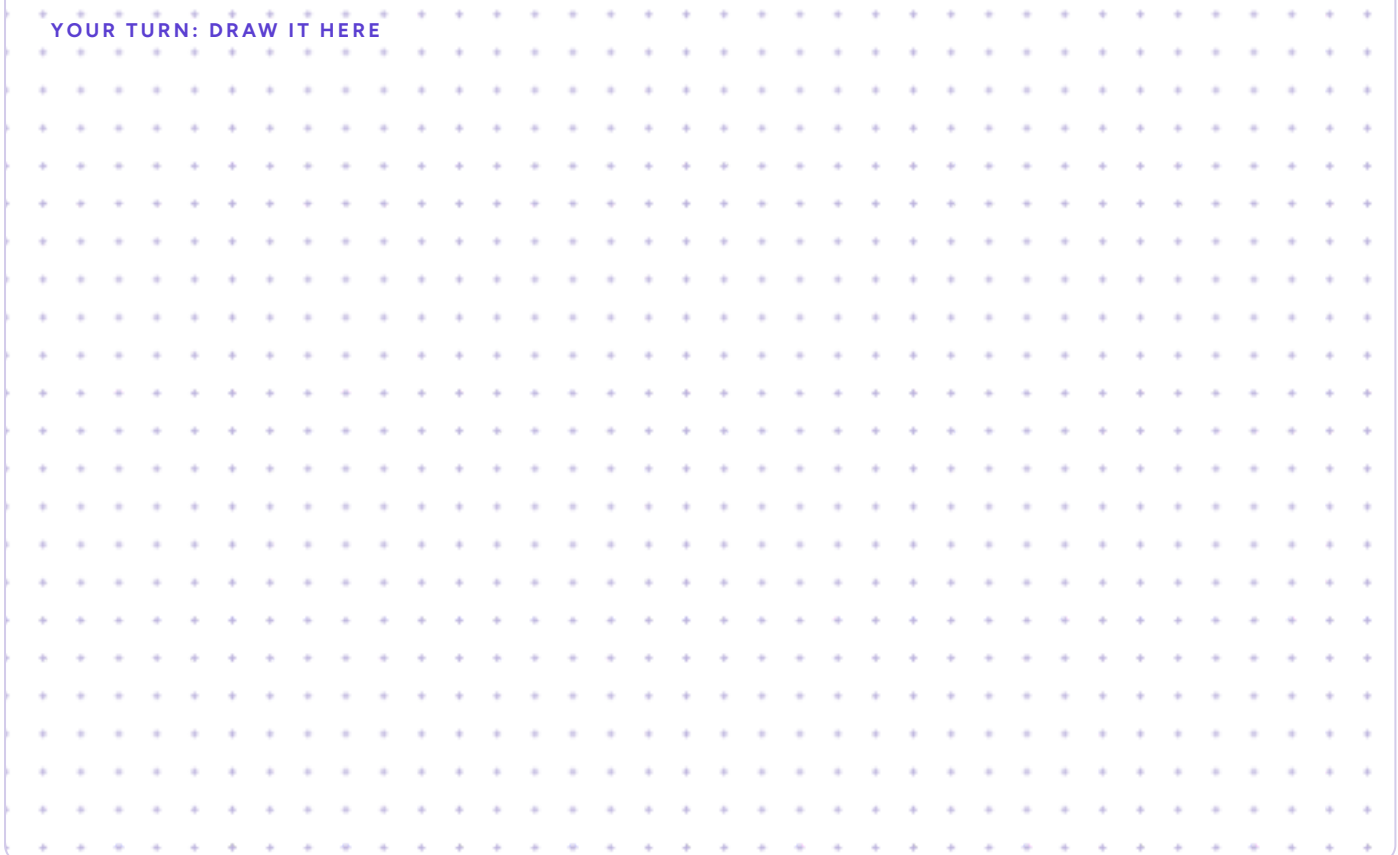
YOU NEED

A ruler, a sharp pencil and a fine black pen.

STEPS

1. Rule two lines, each exactly 60 mm long, one 22 mm above the other. Line up their left ends.
2. On the top line, draw two 10 mm fins at each end that point back over the line, like arrowheads: $< \text{---} >$.
3. On the bottom line, draw the fins pointing away from the line, like the tail of an arrow: $> \text{---} <$.
4. Go over everything in pen and rub out the pencil.
5. Ask someone which line is longer. Then hand them the ruler.

YOUR TURN: DRAW IT HERE



WHAT'S GOING ON

The Müller-Lyer illusion dates from 1889. With no other clues, the brain takes the "angles in" line to be nearer and, because both lines throw the same-sized image, decides the nearer one must be shorter.

GUESS, THEN MEASURE

From the puzzle pack

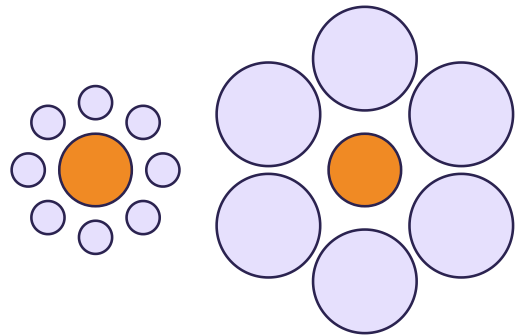
Write your guess first. Then measure.

1. Which line is longer, top or bottom?



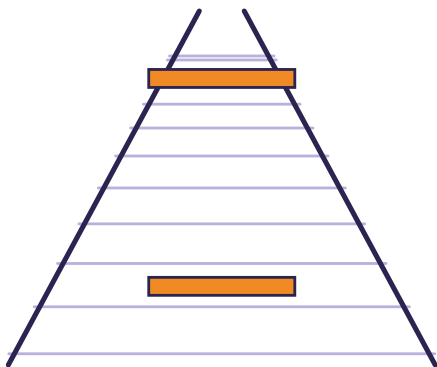
My guess: _____ Measured: _____

2. Which orange circle is bigger?



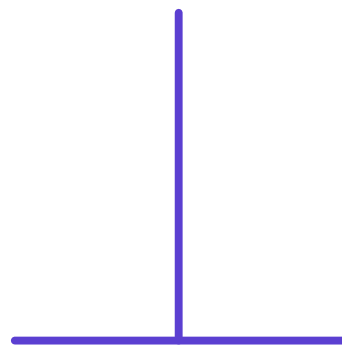
My guess: _____ Measured: _____

3. Which bar is longer?



My guess: _____ Measured: _____

4. Which is longer, the upright or the crossbar?



My guess: _____ Measured: _____

Drawn to exact size: print at 100% ("actual size") and you can check it with a ruler.

EXPERIMENT 1 OF 12

size.illusions.im

The coin test*Make a small coin look as big as a large one***YOU NEED**

Two coins (one small, one large), a bright window or a plain wall

WHAT TO DO

1. Close one eye.
2. Hold the small coin close to your face and the large coin at arm's length.
3. Slide the small coin back and forth until it exactly covers the large one.
4. Now open both eyes. What changes?

WHAT'S GOING ON

Close one eye and hold a small coin and a large coin at different distances: you can make them look exactly the same size. With one eye closed, your depth perception is much weaker, so you can't tell how far away each coin is. With both eyes open you get more points of view and judge size and distance much better.

WHAT I SAW

EXPERIMENT 4 OF 12

size.illusions.im

The little-finger moon*How big is the moon, really?***YOU NEED**

A clear night with the moon in view (with an adult), and your arm

WHAT TO DO

1. Stretch your arm out straight.
2. Hold up your little finger next to the moon.
3. How much of your fingertip does it take to cover it?
4. Try again when the moon is high. Same?

WHAT'S GOING ON

Test it: at arm's length, about two-thirds of the width of your little finger covers the moon, wherever it is in the sky. The moon illusion has two parts: the moon looks bigger than it really is, and much bigger near the horizon than high in the sky.

WHAT I SAW

GUESS V MEASURE

From the Illusion Lab Log

$$\text{error \%} = (\text{guess} - \text{measured}) \div \text{measured} \times 100$$

DATE	ILLUSION	MY GUESS	MEASURED	DIFFERENCE	ERROR %

SIZE ILLUSIONS POSTER

The moon illusion



Moonrise from Yavapai Point, Grand Canyon, 7 December 2022 (Grand Canyon NPS, public domain).

Big on the horizon

The moon illusion has two parts: the moon looks bigger than it really is, and much bigger near the horizon than high in the sky.

The moon's image on a photograph is the same size whether it is low or high: the change happens in your brain.

Birds, clouds and planes are closer when overhead and further away on the horizon, so we expect things on the horizon to look small. The moon doesn't shrink there, so it seems huge.

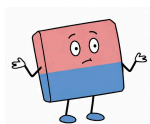
WANT MORE?

Six full size illusion packs

All checked against Michael Bach's illusion pages, Britannica and the Exploratorium

PACK	WHAT'S INSIDE
Draw Your Own Size Illusions: Step-by-Step Sheets	Ten classic size illusions to draw with a ruler and compass, from the Müller-Lyer arrows to the Ponzo railway, each with measured steps, a practice grid and the trick explained
Size Illusion Puzzle Pack: Measure, Spot & Solve	Guess-then-measure challenges, "which is bigger?" puzzles, a maze, a word search and a crossword, all with answer keys
Make-and-Test Size Illusion Experiment Cards	Twelve experiment cards for the kitchen table or the classroom: the coin test, the moon trace, a shoebox peep-show and more, each with what to look for and why
Illusion Lab Log: Measure-It Record Book	Record your guesses and your measurements, work out your error, test friends and family, and keep a moon diary
Don't Trust Your Eyes! Kids' Size Illusion Worksheets	For ages 6 to 11: guess and measure, spot the trick, draw an illusion, illusion maths, a maze and colouring, with answer keys
Classic Size Illusions Poster Set	Six fact-checked posters: Müller-Lyer, Ebbinghaus, Ponzo, the moon illusion, the Ames room and the T illusion

Each pack comes in A4 and US Letter, and all six come together in The Complete Size Illusions Printables Bundle. See size.illusions.im/shop/ for links. Free illusions and games: size.illusions.im



Free! Like me. Nobody paid for me either.

Credits, licence & help

The small print, kept short

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PICTURES

IMAGE	CREDIT	LICENCE	SOURCE PAGE
Moonrise from Yavapai Point - December 7, 2022 -1712 (52889111041).jpg	Grand Canyon National Park Service	Public domain	commons.wikimedia.org/wiki/File:Moonrise_from_Yavapai_Point_-_December_7,_2022_-1712_(52889111041).jpg

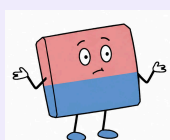
Pictures are public domain or CC0 images (credits above), from Wikimedia Commons, cropped. Using them does not mean NASA, the US National Park Service or any other organisation endorses this pack. All illusion drawings, puzzles and layouts are REALLYBYTE's own work.

WHERE THE FACTS COME FROM

Every fact in this pack was checked against the pages below (Michael Bach's Optical Illusions & Visual Phenomena, Encyclopaedia Britannica and the Exploratorium) on 31 Oct 2026. The illusion drawings are our own, drawn to exact sizes so you can check them with a ruler. Not endorsed by Michael Bach, Britannica or the Exploratorium.

Michael Bach: Müller-Lyer illusion: michaelbach.de/ot/sze-muelue/
Exploratorium: Size and Distance (Science Snack): www.exploratorium.edu/snacks/size-distance

Michael Bach: Moon illusion: michaelbach.de/ot/sze-moon/
Exploratorium: Looking at the moon: annex.exploratorium.edu/seeing/ideas/moon3.html



NEED HELP?

Useless can't help (he's an eraser, and he's busy measuring himself again), but we can. Problems with your file, or spotted something we should fix? Email **info@reallybyte.com**.

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