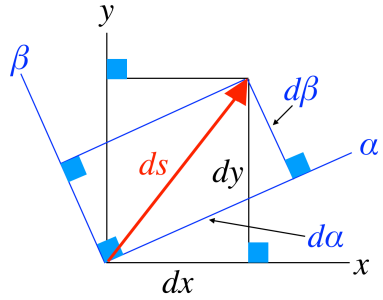
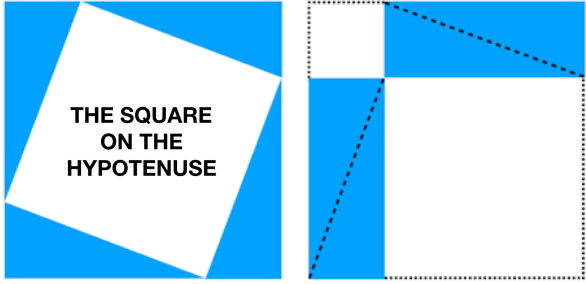


Albert Einstein explained **WHY GEOMETRY** won't let us go any faster than light!



Pythagorean Theorem's proof

Visual proof of the Pythagorean theorem: the two BIGGEST squares are the same size. Also, all **8 blue triangles** are identical, and they therefore have identical areas. So, if you take **4 blue triangles** away from each of the two BIG squares, the areas that are left must be **exactly** the same in each!

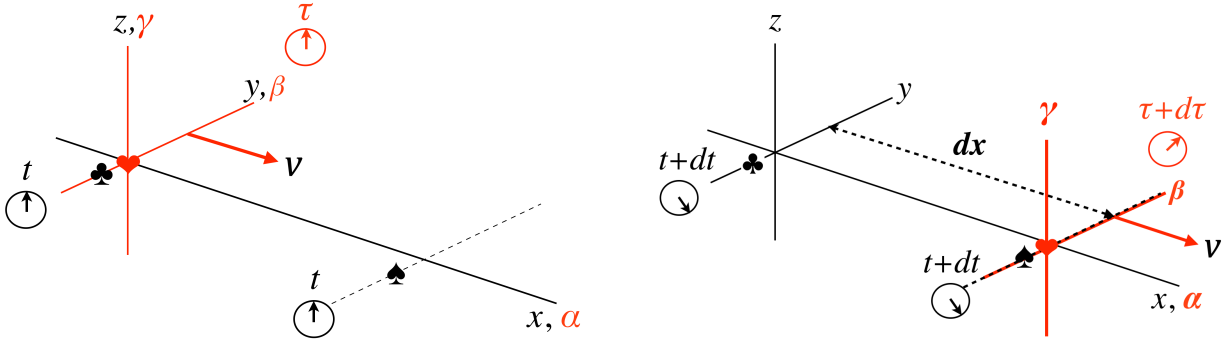
Pythagoras is invariant under ROTATION

The triangle with sides dx and dy has hypotenuse ds . But **so does** the triangle with sides $d\alpha$ and $d\beta$, so: **ds** is **invariant** under a **rotation** — here, the rotation that rotated the axes x, y into α, β . *All right! But so what?* **And THEN ALGEBRA was invented!** Which provided us with a **rotational-invariance EQUATION**: $d\alpha^2 + d\beta^2 = ds^2 = dx^2 + dy^2$

AND SO at long last (in 1905) **the great discovery** by **Albert Einstein** of his **RELATIVITY**:

CONSTANT-MOTION invariance: $(d\alpha^2 + d\beta^2 + d\gamma^2) - d\tau^2 = (dx^2 + dy^2 + dz^2) - dt^2$

Twice, **♥ snaps her fingers!** — as first ♣, and, later, ♠, see **♥ move dx** at **constant v**:



♥-moves at $v \Rightarrow \boxed{0 + 0 + 0 - d\tau^2 = dx^2 + 0 + 0 - dt^2} \Leftarrow \spadesuit \ \heartsuit \ \clubsuit$ both **stationary** in x, y, z

$d\tau^2 = dt^2 - dx^2 \therefore \heartsuit$'s **time slows!** But $dx = v dt$ and so $\boxed{d\tau^2 = dt^2(1 - v^2)}$ and $v \leq 1$
 The square of *any* number is *positive*! If v were larger than **1**, the equation's right-hand side would be *negative* and so **could not** be equal to the left hand side! So there is a *speed limit*!
Algebra claims that **velocities must be ≤ 1** (*just like you can't go north of the North Pole!*)
LIGHT does move at $v = 1$ light-year/year [$\therefore d\tau = 0 \therefore$ for **LIGHT NO time ever passes!**]

Experiment with particle accelerators shows: We **can** force **huge** energies onto particles— **BUT, we CANNOT make them go faster than 1** light-year per year: **Einstein-proven-right!**

A Pythagorean **MINUS SIGN** gives **TIME** \Leftarrow Human-invented **ALGEBRA: is miraculous!**