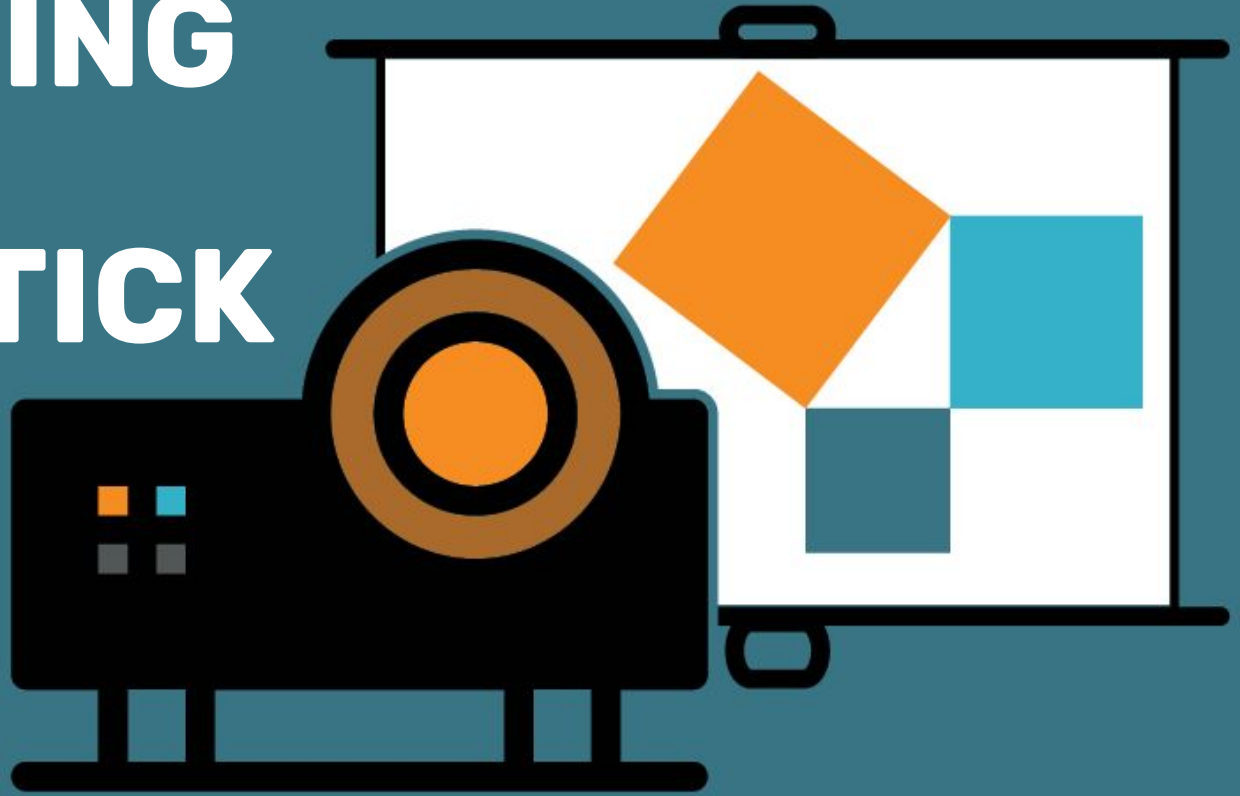
EXPLOELEVATE
INNOVATIVE SCHOOLS COOPERATIVE

DESIGNING SLIDES THAT STICK

The Cognitive Theory of Multimedia Learning

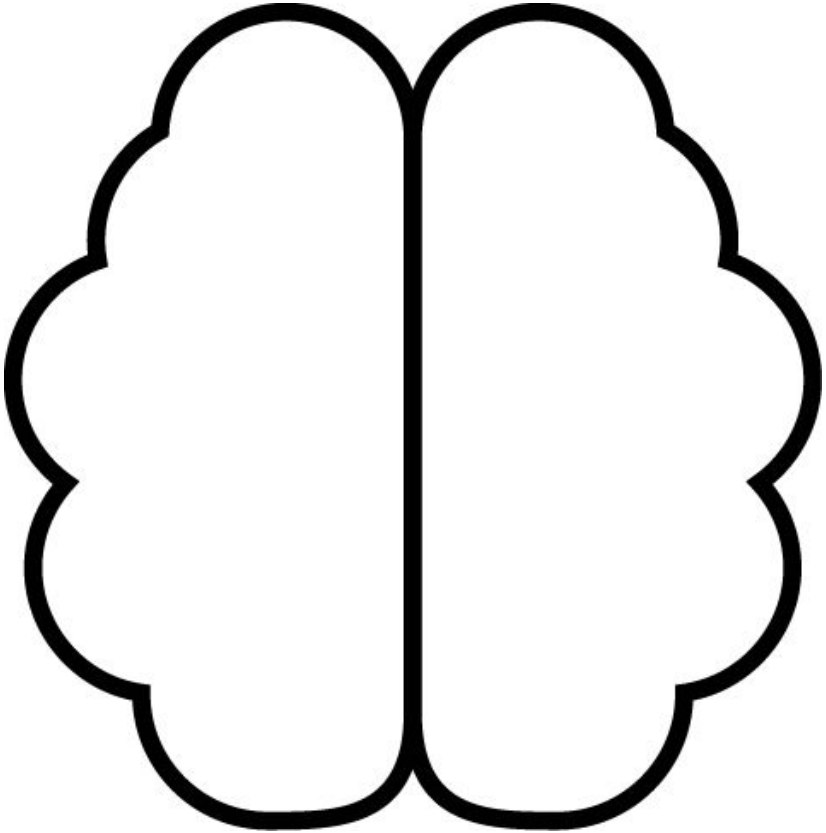


@EXPLOelevate

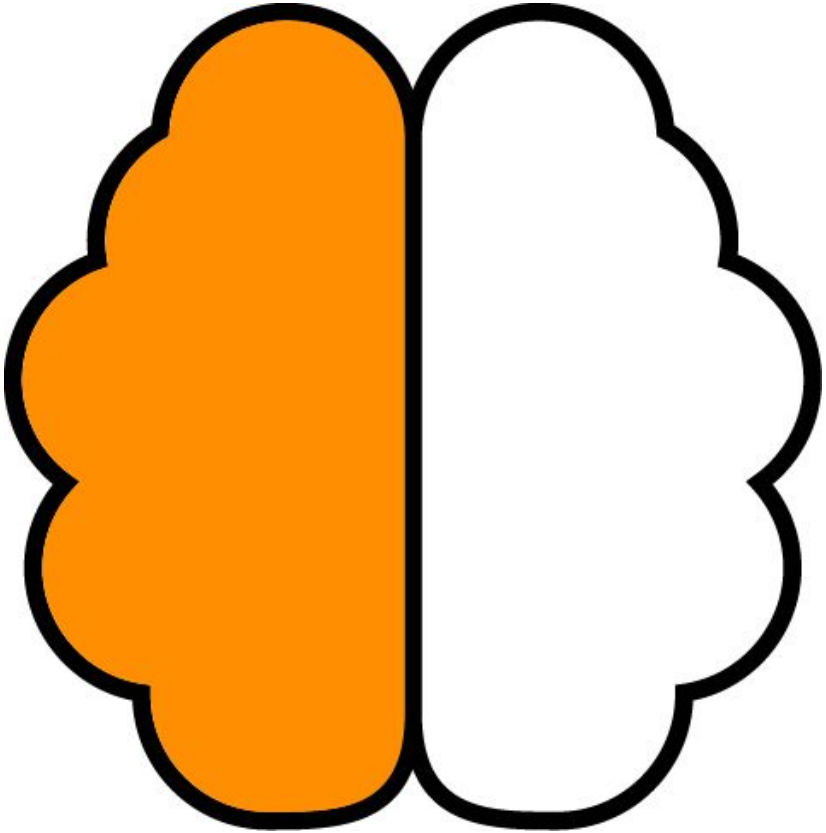
Cognitive theory of Multimedia Learning

RESEARCH

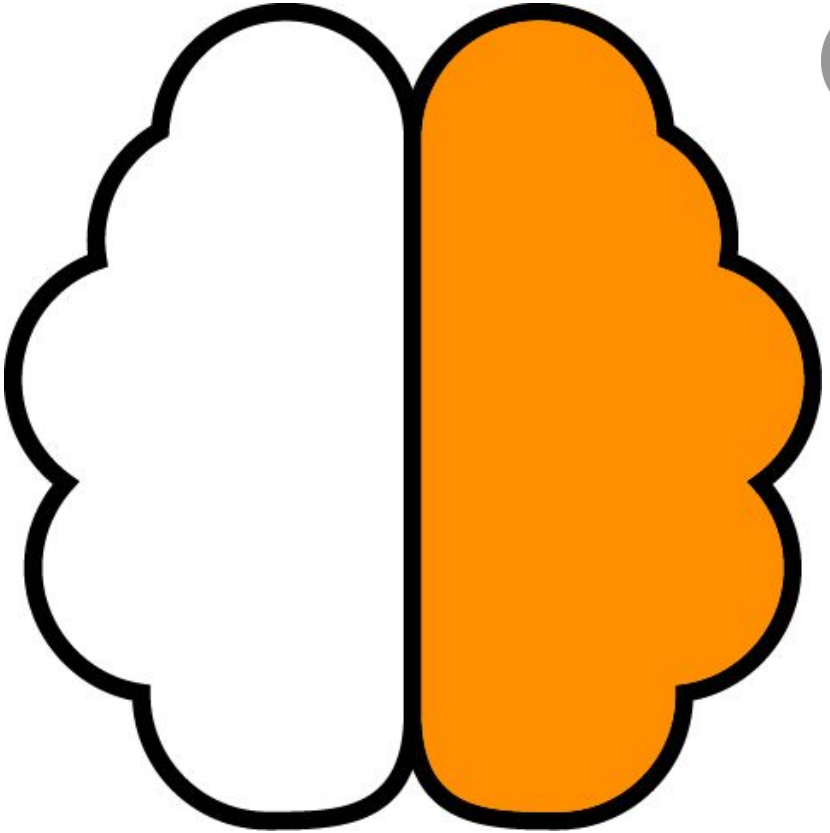
A Cognitive Theory of Multimedia Learning: Implications for Design Principles
Richard E. Mayer and Roxana Moreno



Cognitive Theory of Multimedia Learning



Cognitive Theory of Multimedia Learning



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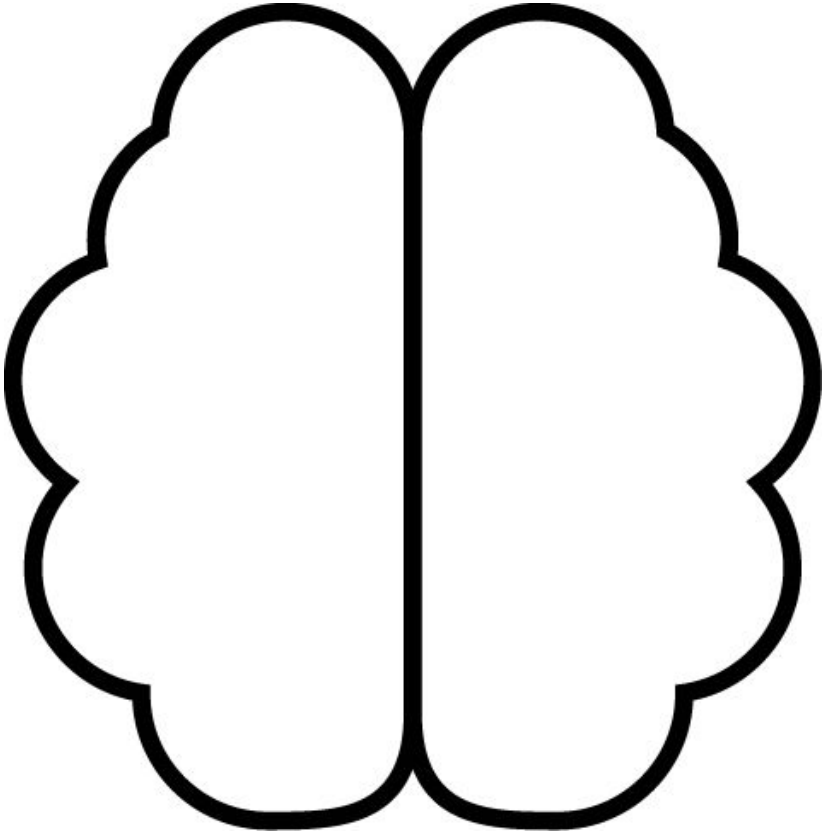
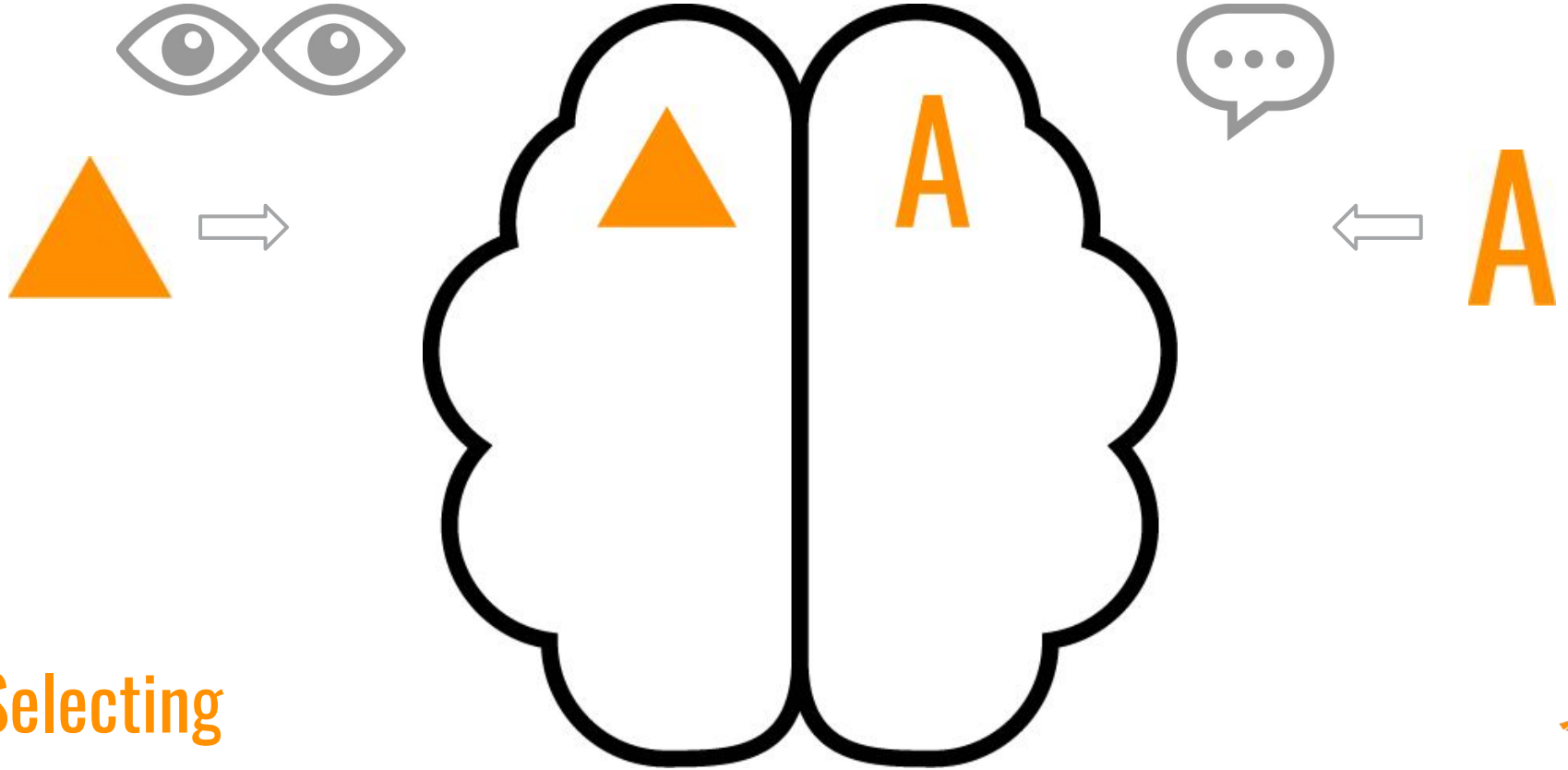
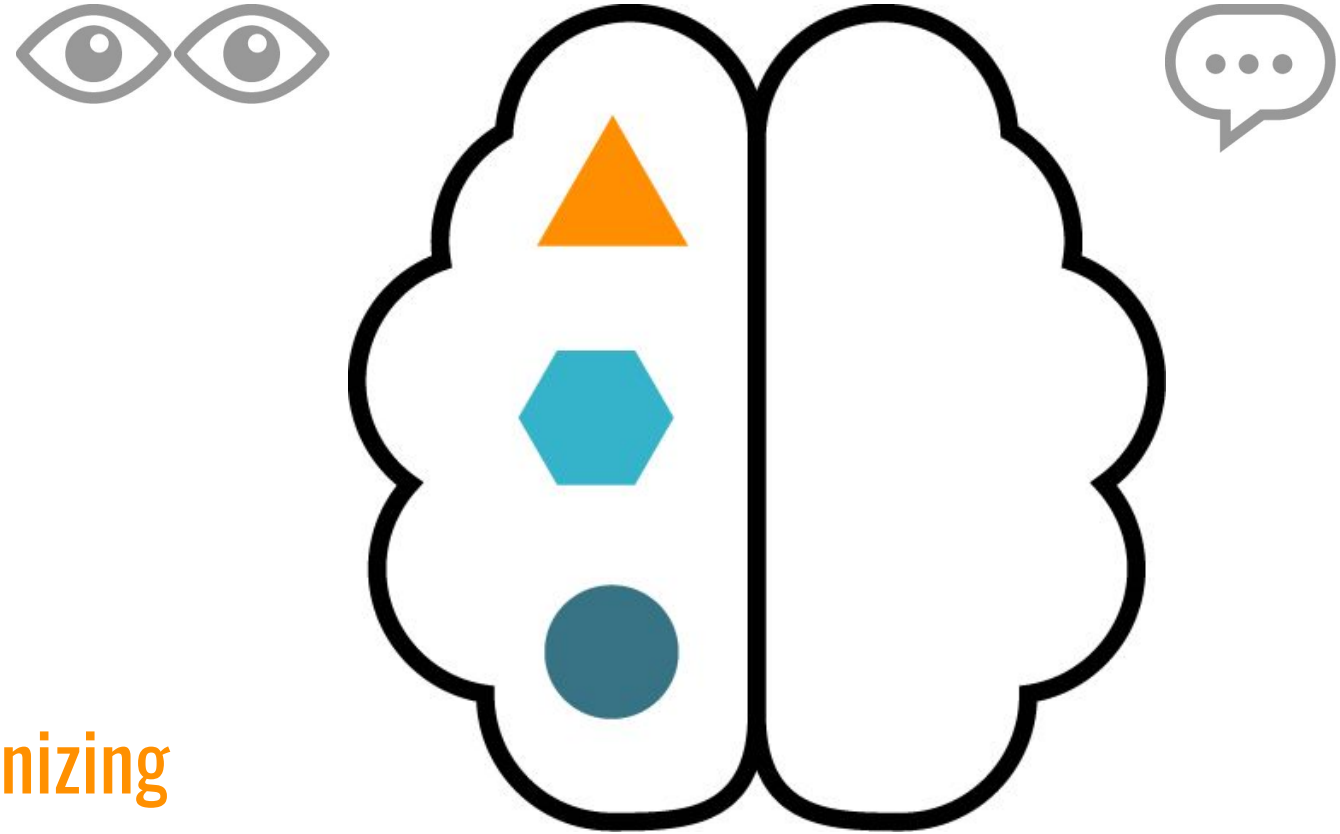


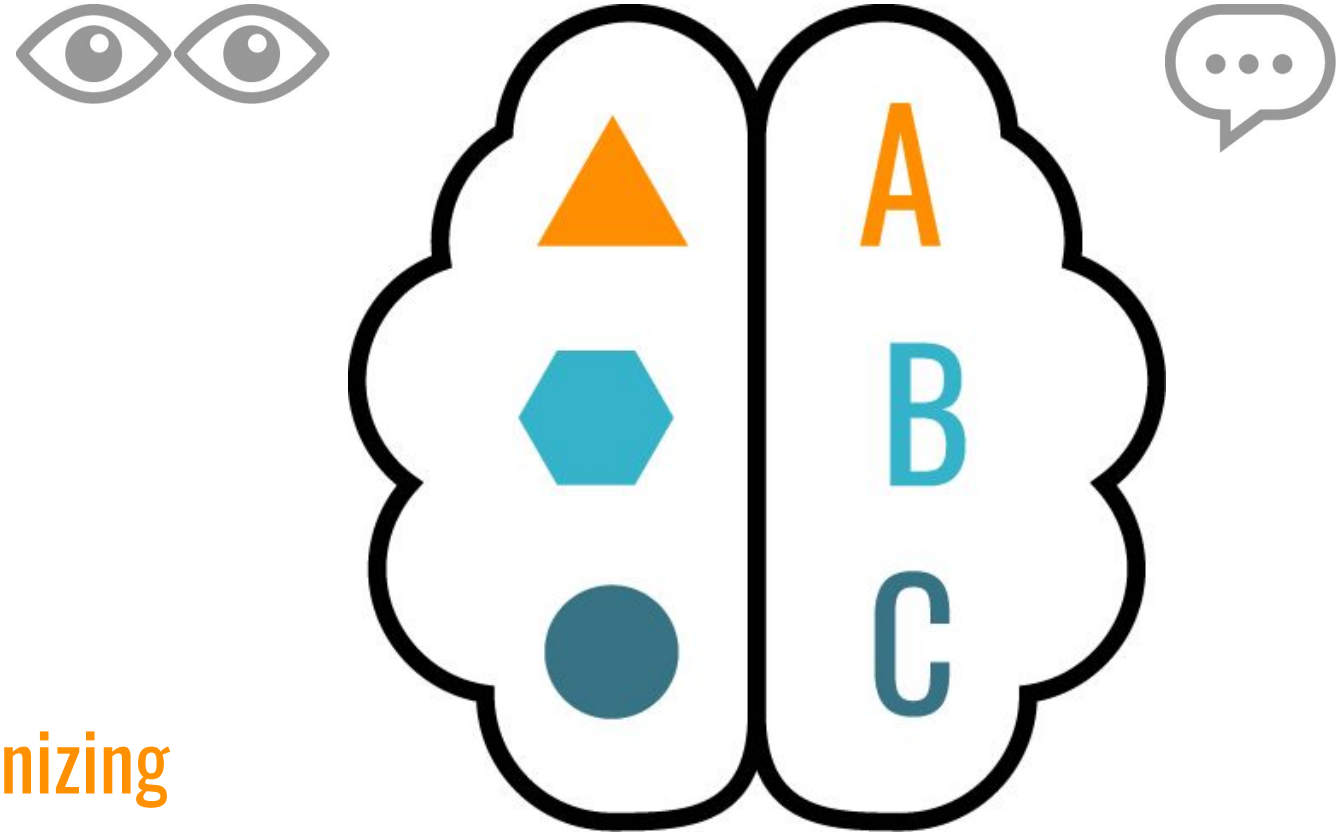
Cognitive Theory of Multimedia Learning



Selecting



Organizing



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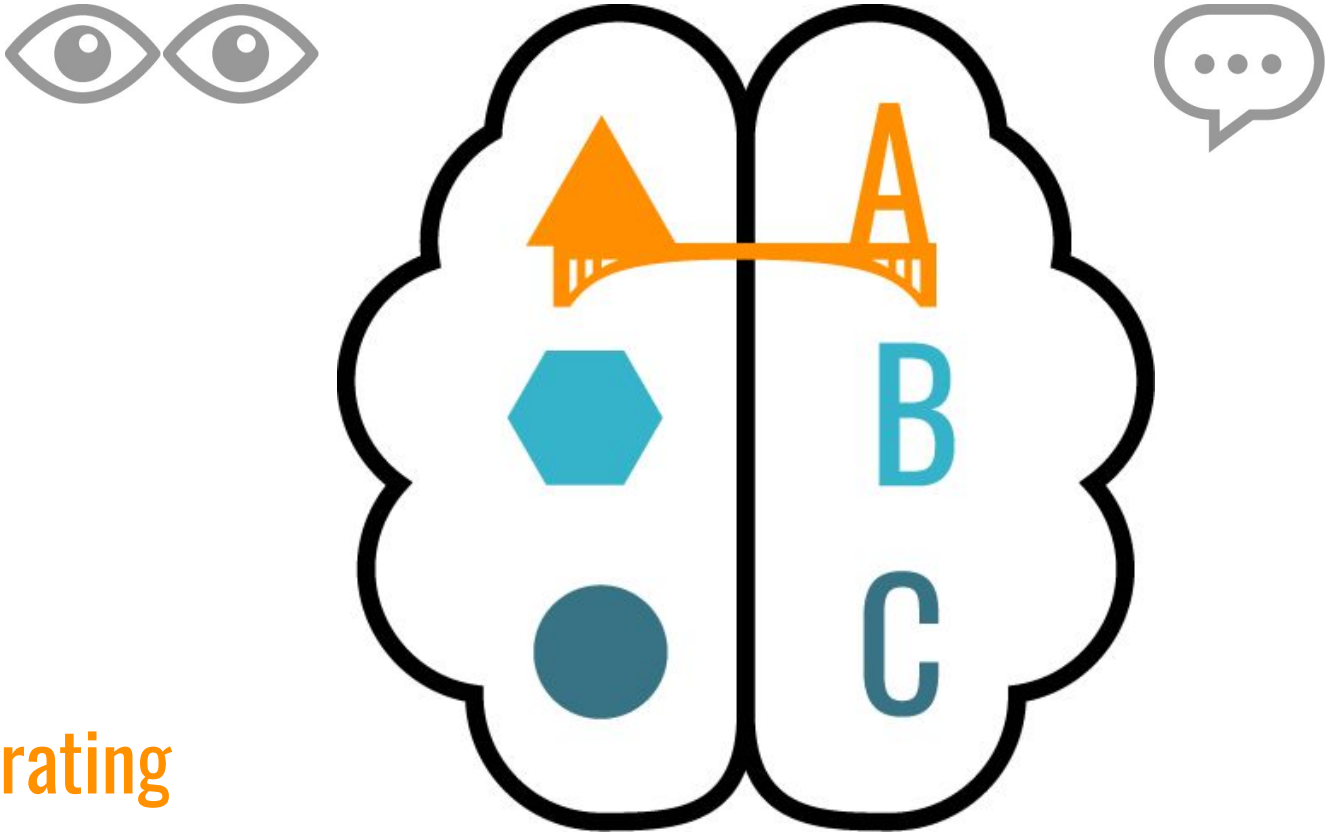
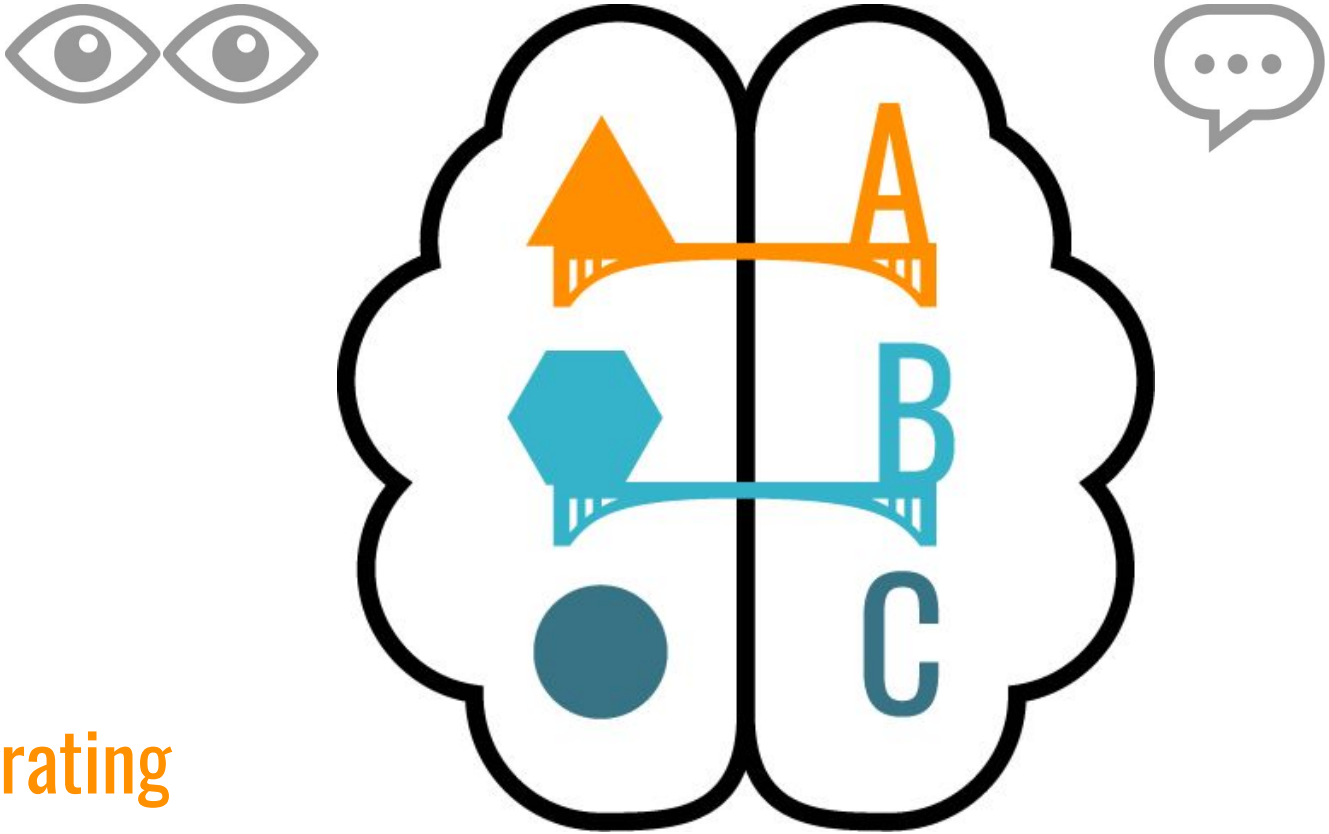


Integrating



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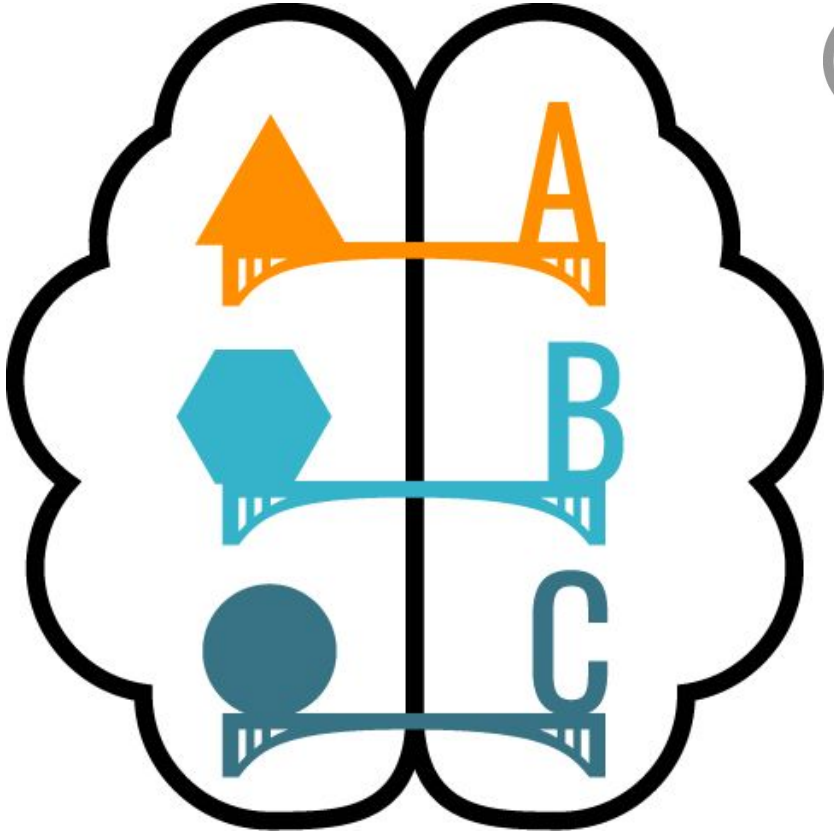

Integrating

Cognitive Theory of Multimedia Learning

Selecting

Incoming Visual
Creates Image Base

Incoming Verbal
Creates Text Base

Organizing

Visual >> Image-based
Model of the
to-be-explained system

Verbal >> Text-based
model of the
to-be-explained system

Integrating

Learner builds
connections between
elements of the
Verbal-based model
and elements of the
Visual-based model

5 secrets for designing better multimedia materials for learning (Based on that research)

1
Speak words and use pictures.

MULTIPLE REPRESENTATION PRINCIPLE:
It is better to present an explanation in words and pictures than solely in words.

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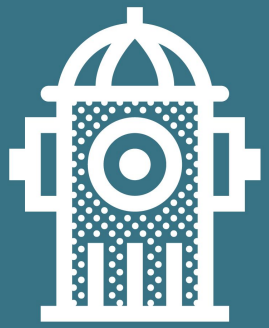
Speak words and use pictures.

MULTIPLE REPRESENTATION PRINCIPLE:
It is better to present an explanation in words and pictures than solely in words.

2
Speak words and use pictures (at the same time).

CONTIGUITY PRINCIPLE

When giving a multimedia explanation, present corresponding words and pictures contiguously rather than separately.



3
Don’t show words you’re saying out loud.

SPLIT-ATTENTION PRINCIPLE:
When giving a multimedia explanation, present words as auditory narration rather than as visual on-screen text.

3

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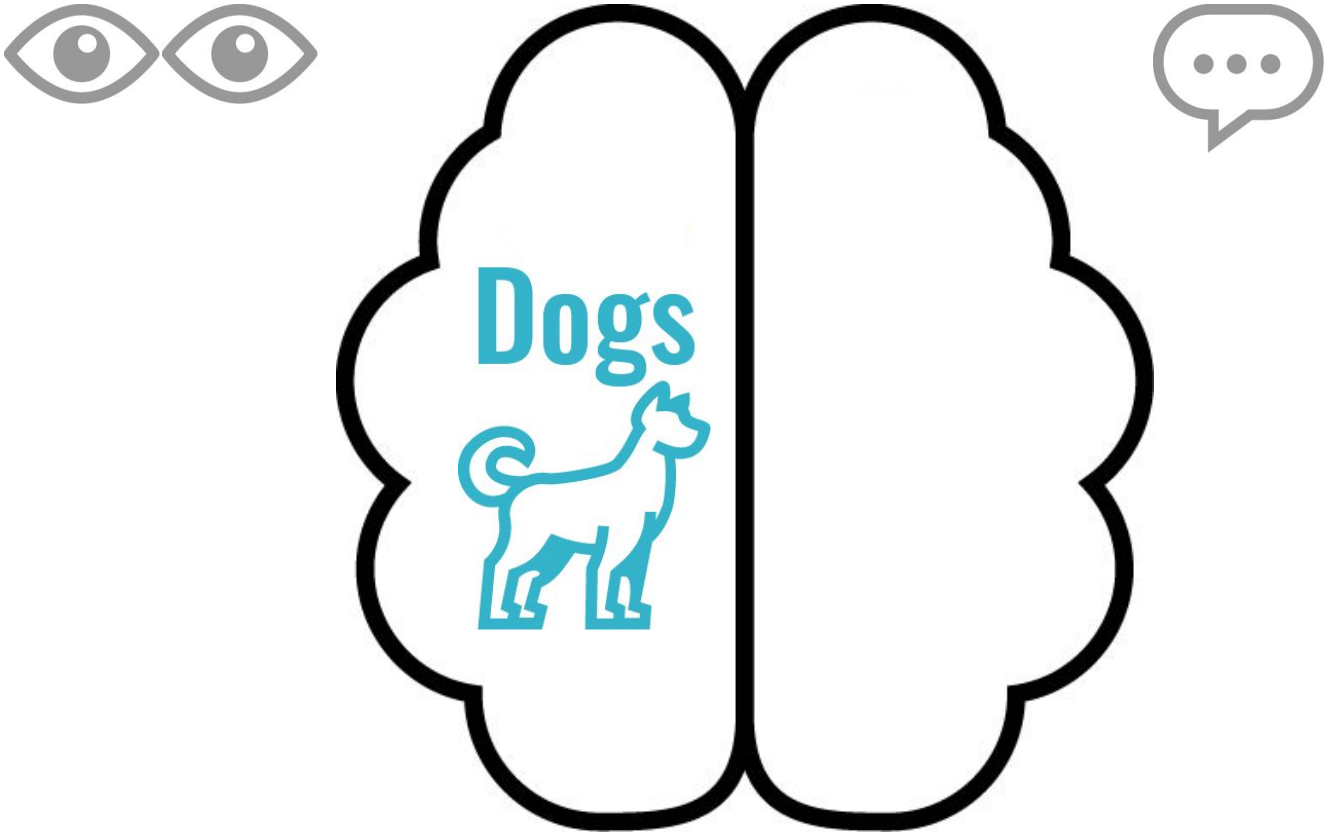
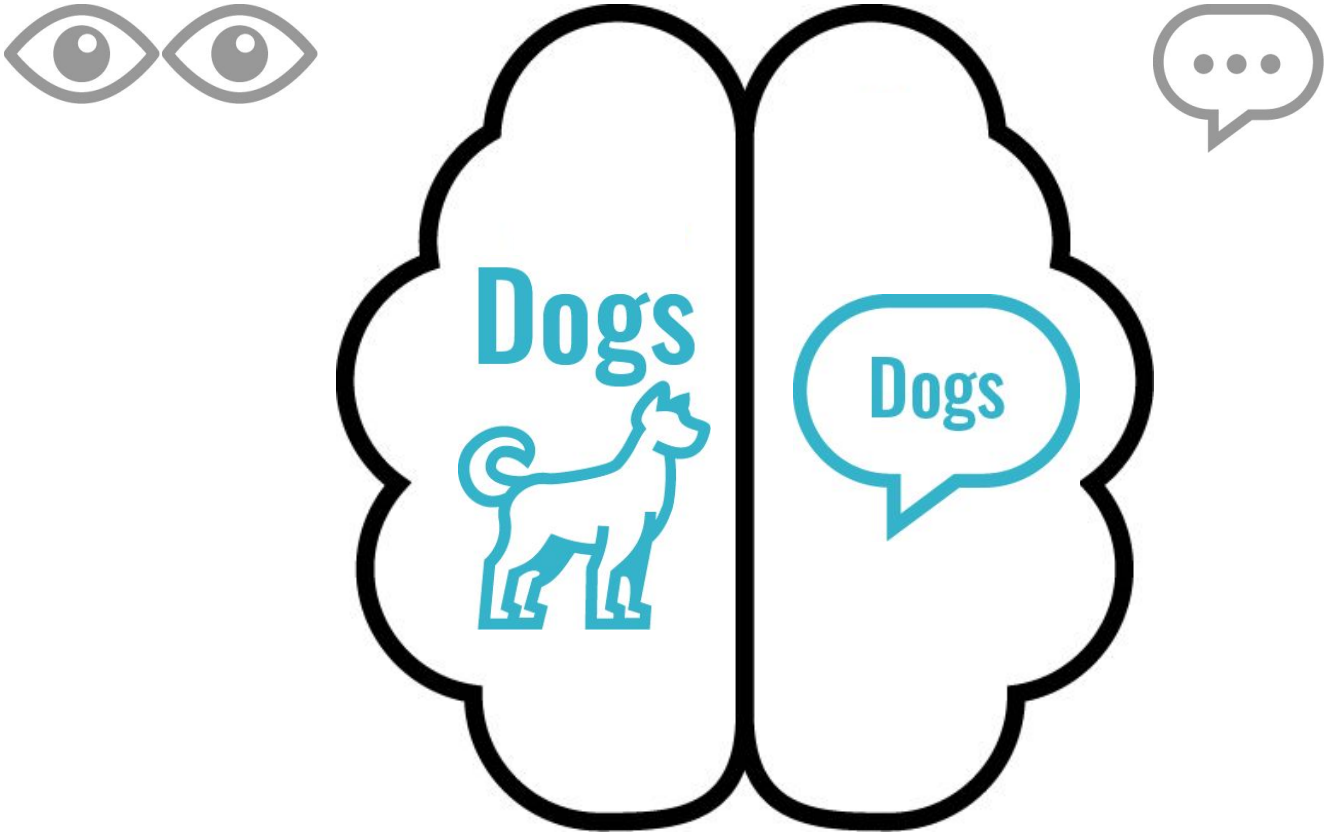

Dogs


Dogs
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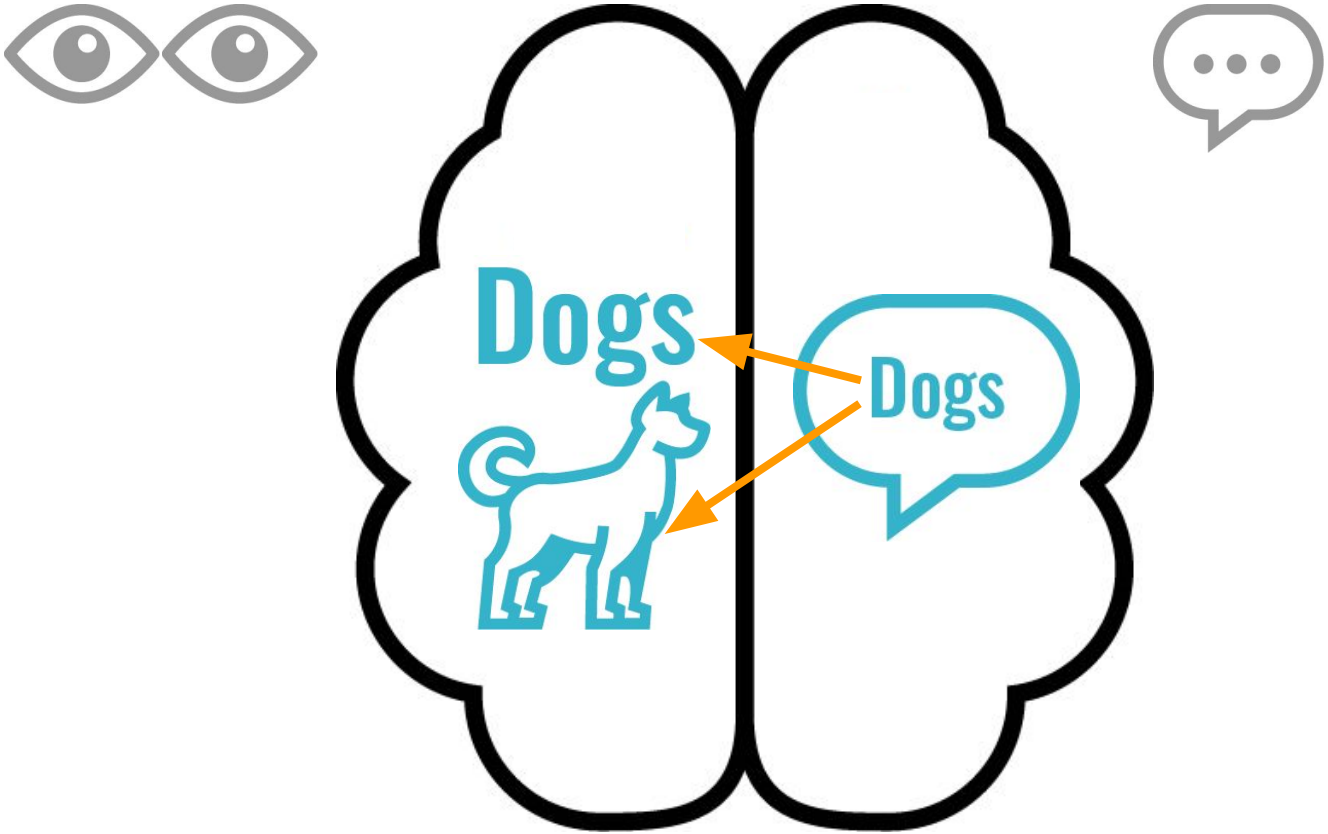
Dogs
Dogs

3

Don’t use pictures
if they don’t relate to the words
your saying out loud.

SPLIT-ATTENTION PRINCIPLE:
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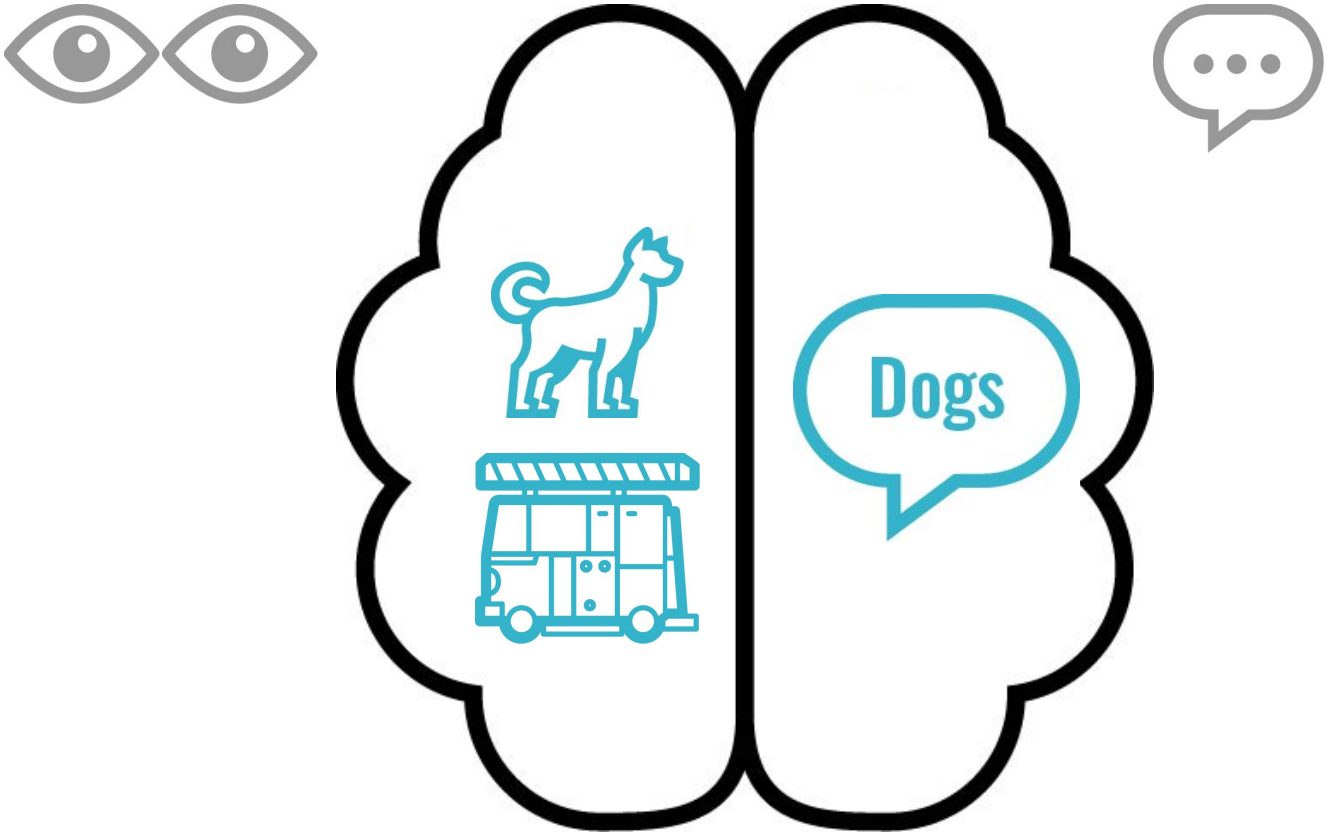
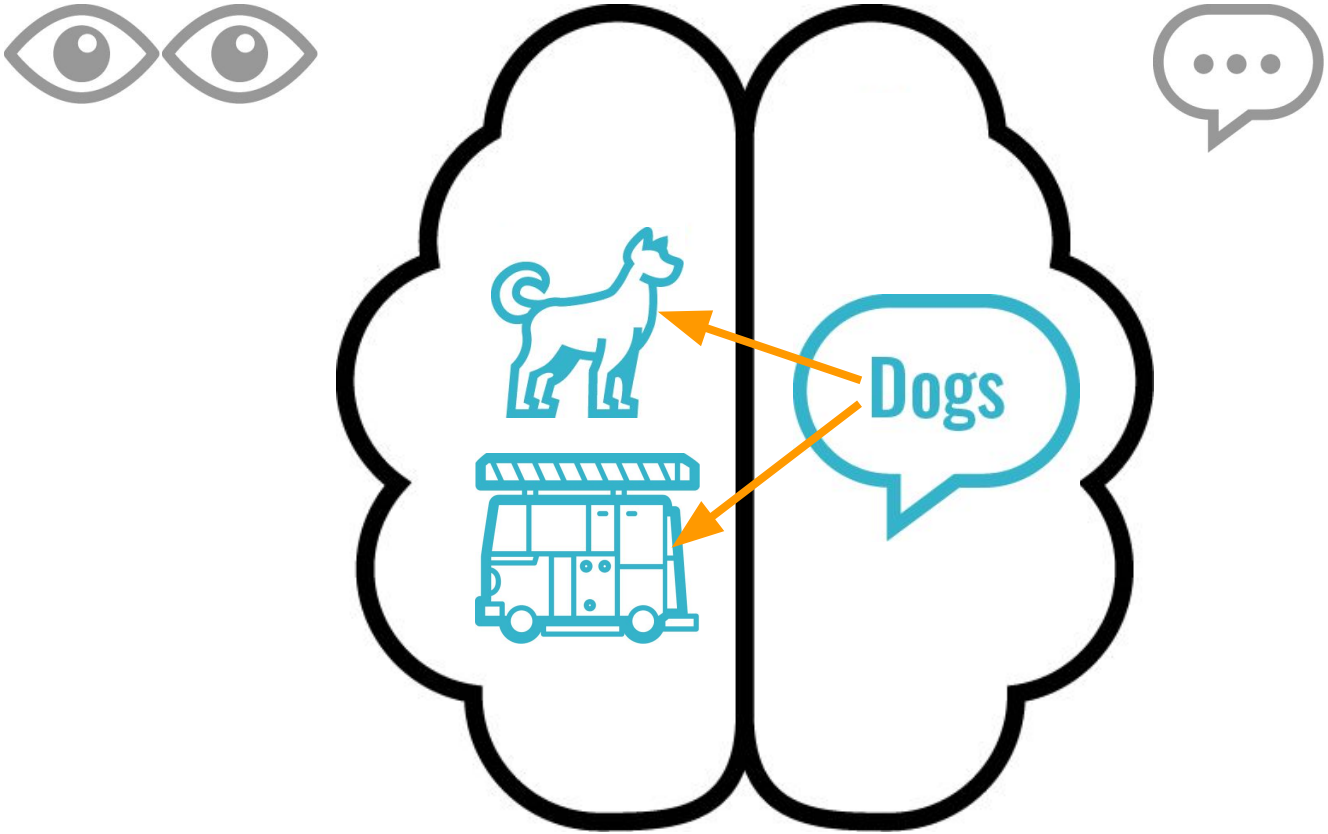
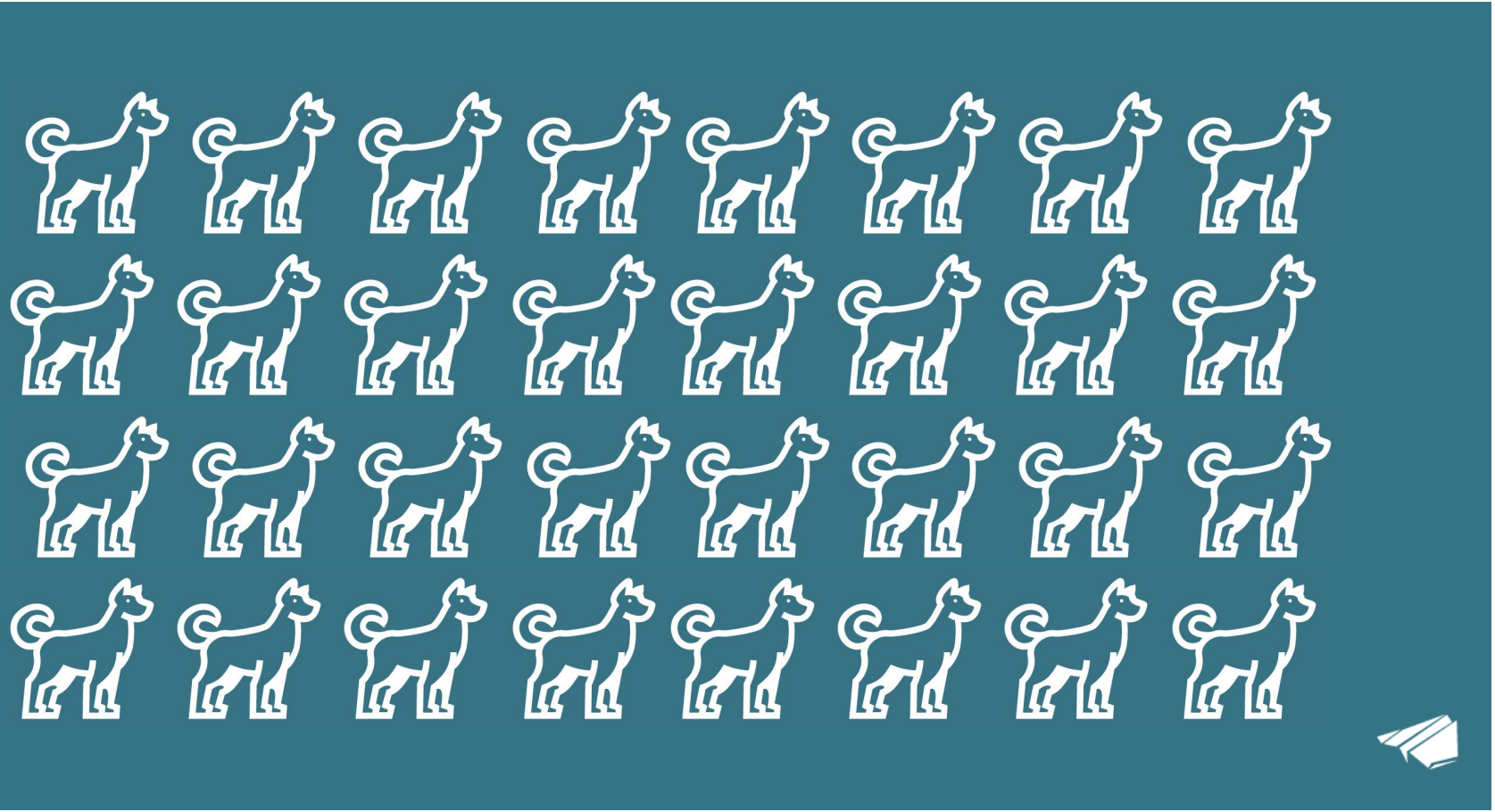

Dogs


Dogs

4
Less is more.

Coherence Principle:
When giving a multimedia explanation, use few rather than many extraneous words and pictures.



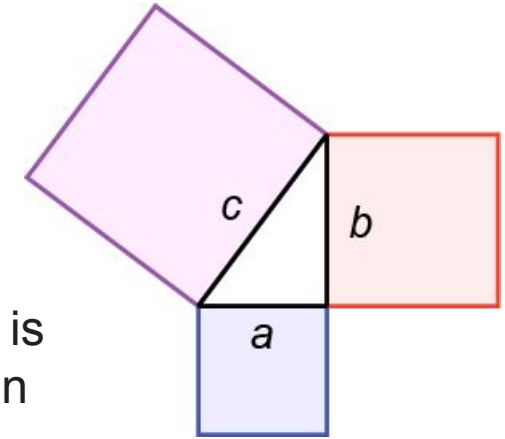
5
Everybody's different.

Individual Differences Principle:
The foregoing principles are more important for learners with less prior knowledge than for those with more prior knowledge and high-spatial learners than low-spatial learners.

Slide RE-design

Pythagorean Theorem

$a^2+b^2=c^2$



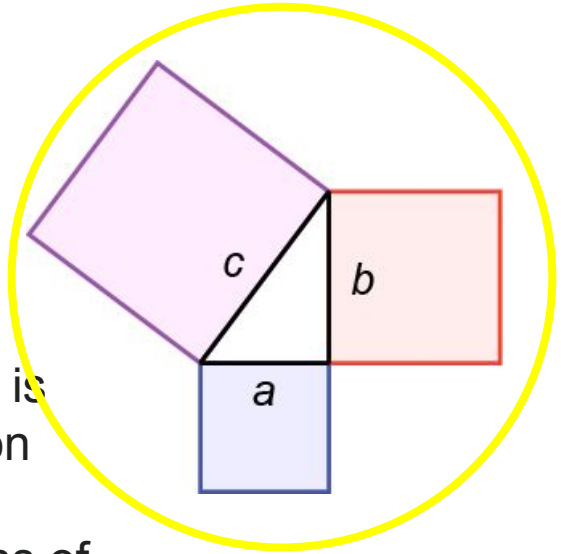
- The area of the square whose side is the hypotenuse (the side opposite the right angle) is equal to the sum of the areas of the squares on the other two sides.
- This theorem is an equation relating the lengths of the sides *a*, *b* and *c*:[1] $a^2+b^2=c^2$ where *c* represents the length of the hypotenuse and *a* and *b* the lengths of the triangle's other two sides.

Backward Design

What's most important about this slide?

Pythagorean Theorem

$a^2+b^2=c^2$



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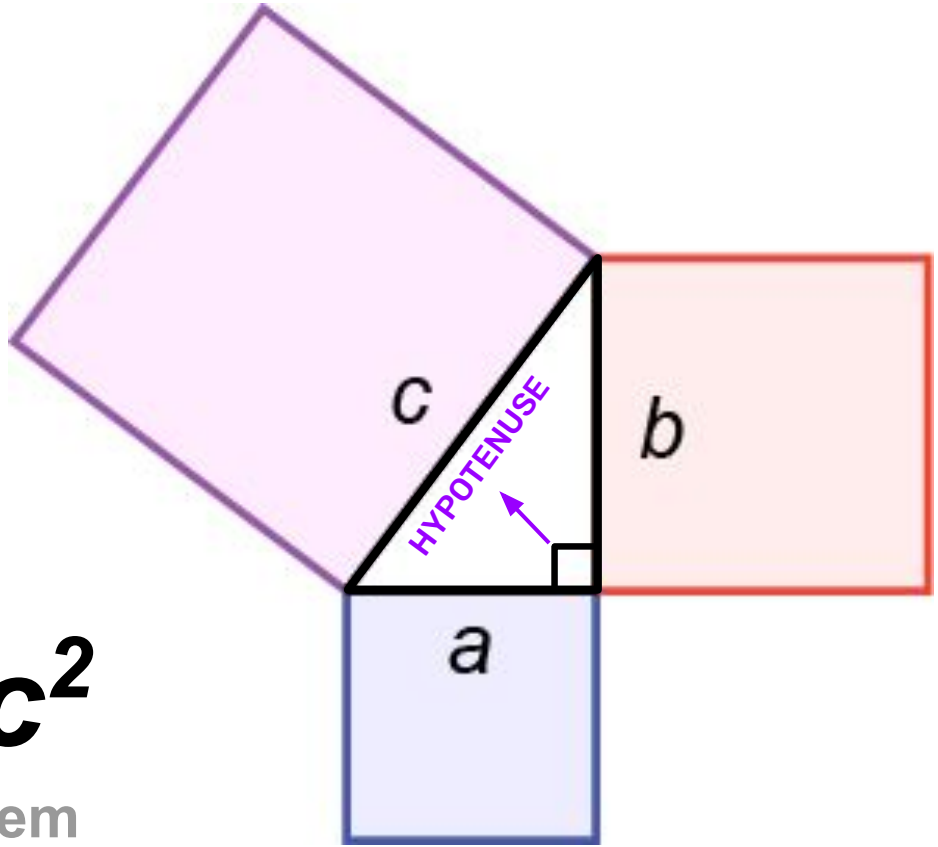

$$a^2 + b^2 = c^2$$

Pythagorean Theorem

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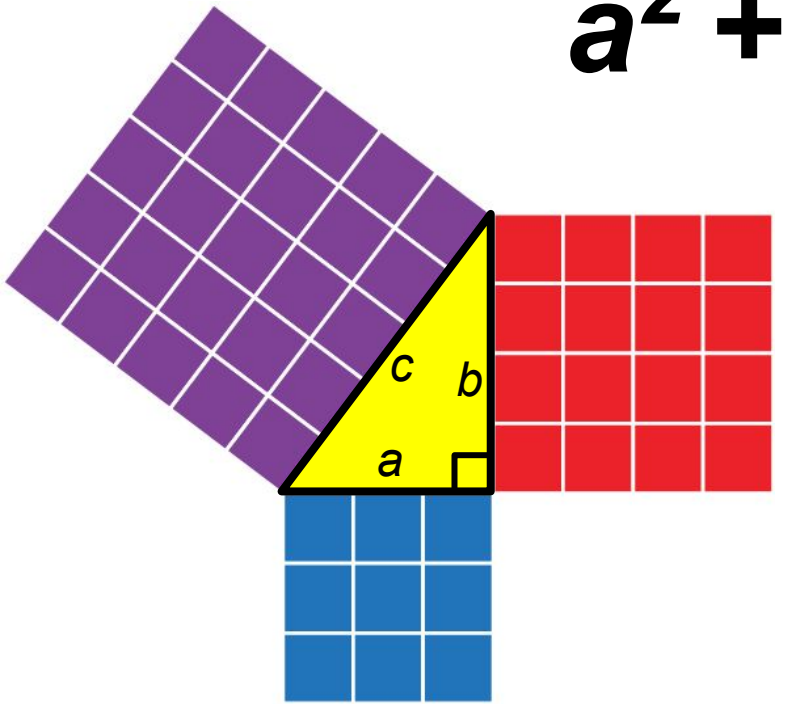

Pythagorean Theorem

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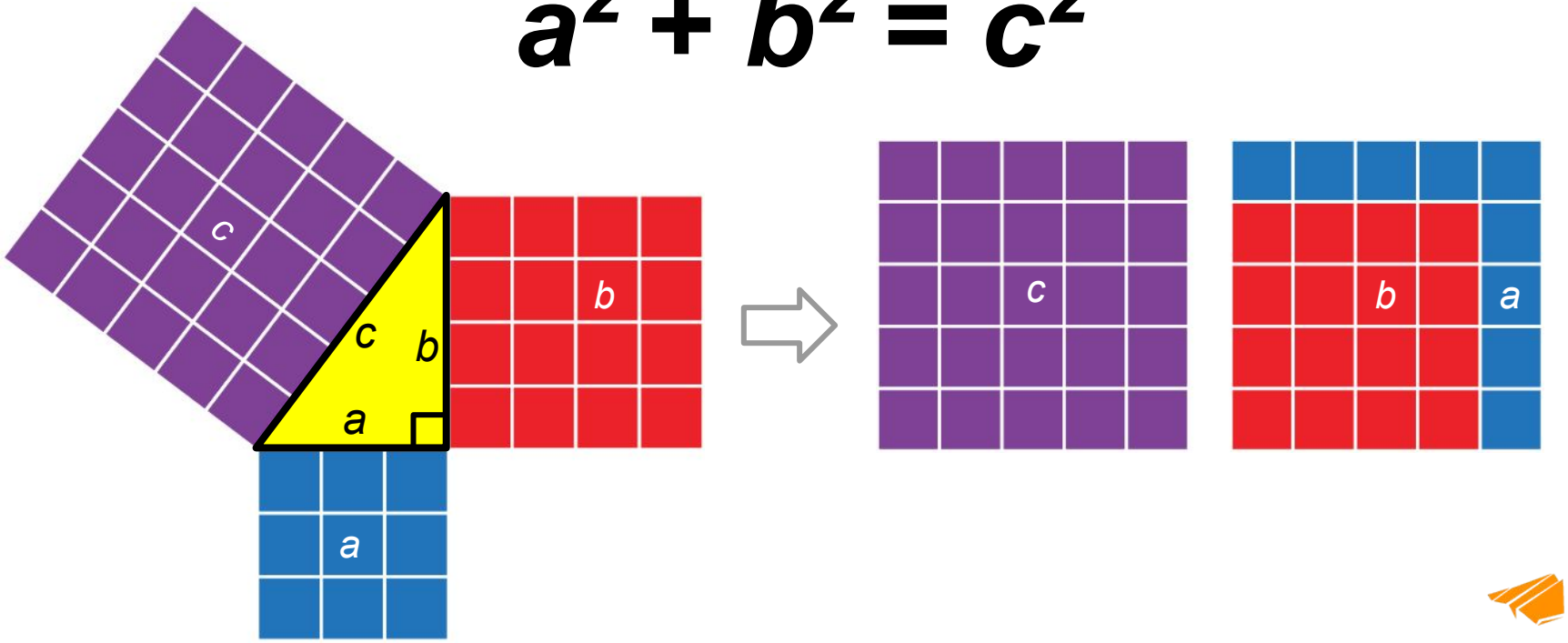
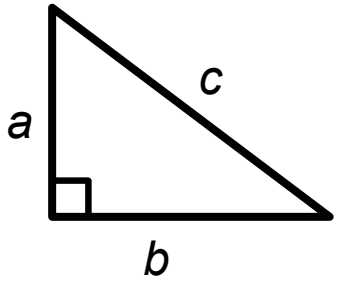
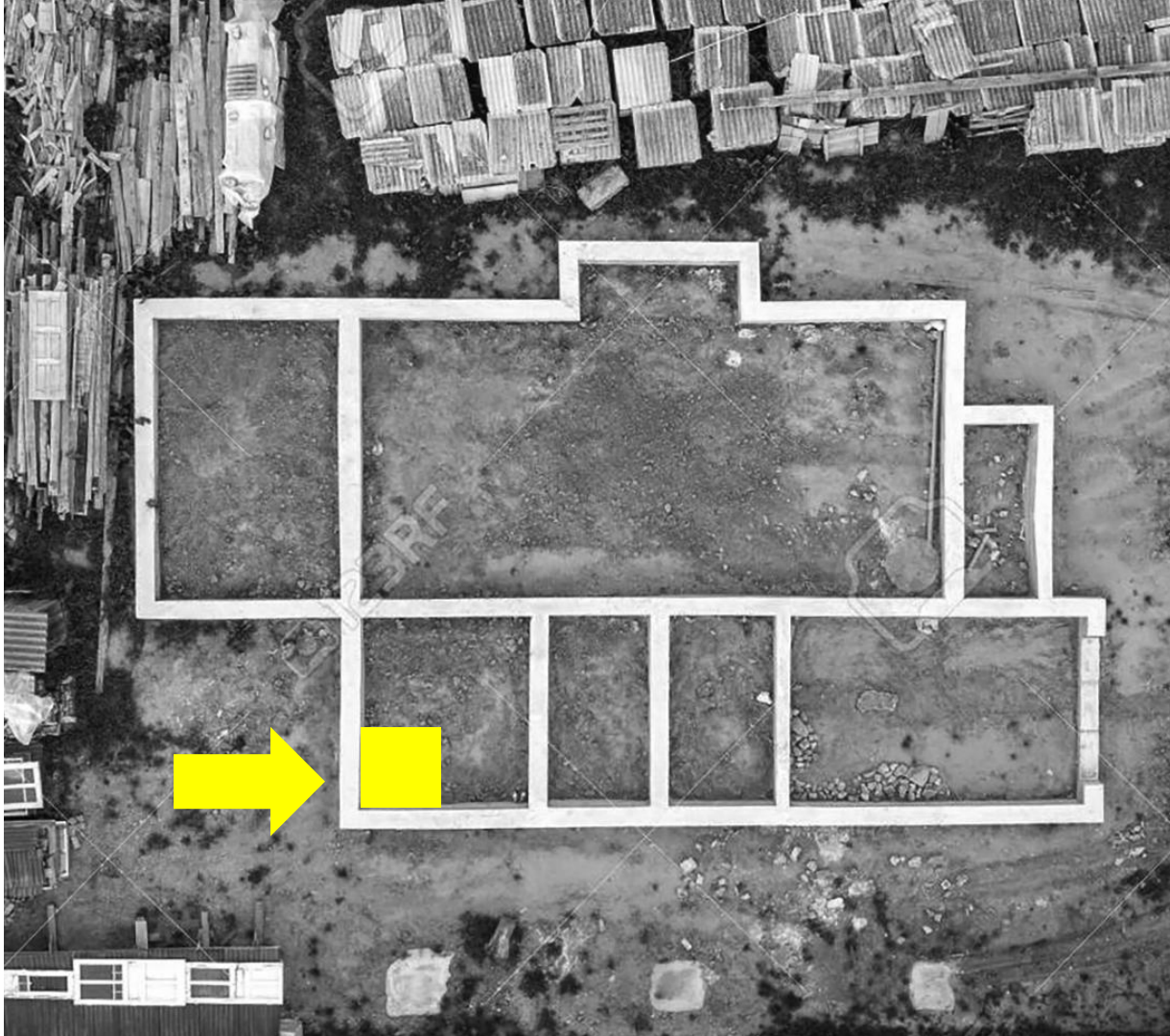


Why do I have to know this?

Pythagorean Theorem

$$a^2 + b^2 = c^2$$





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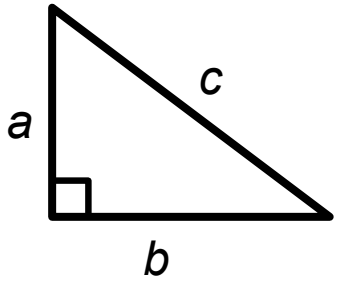

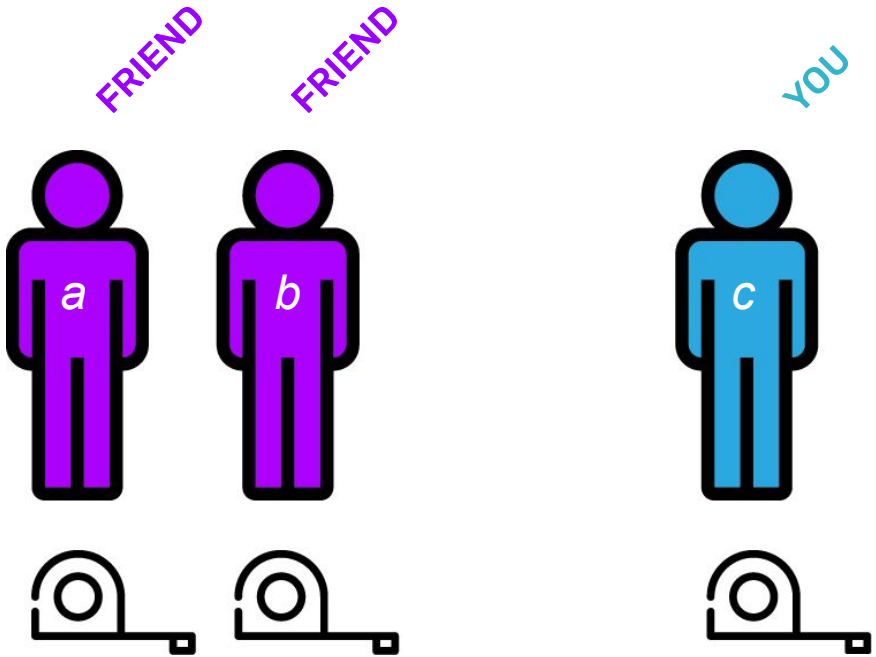

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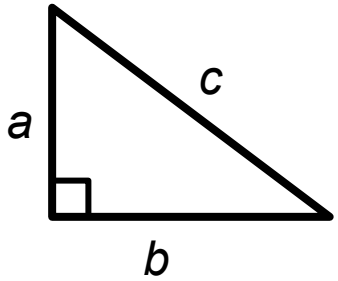

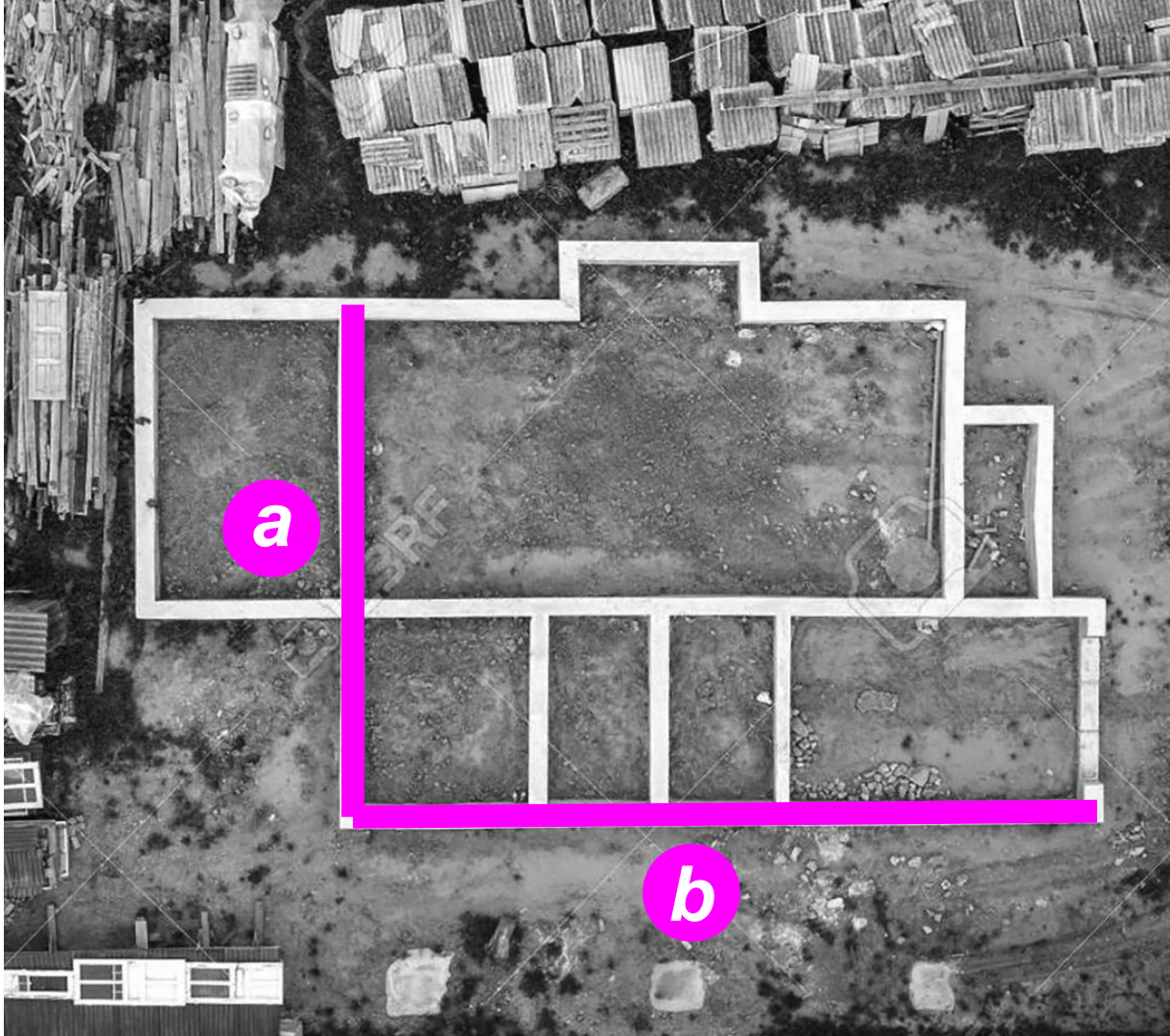

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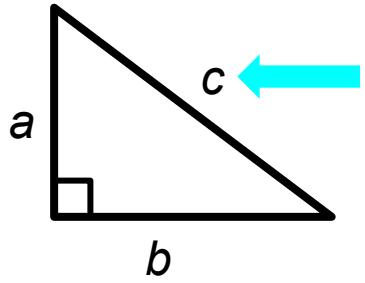
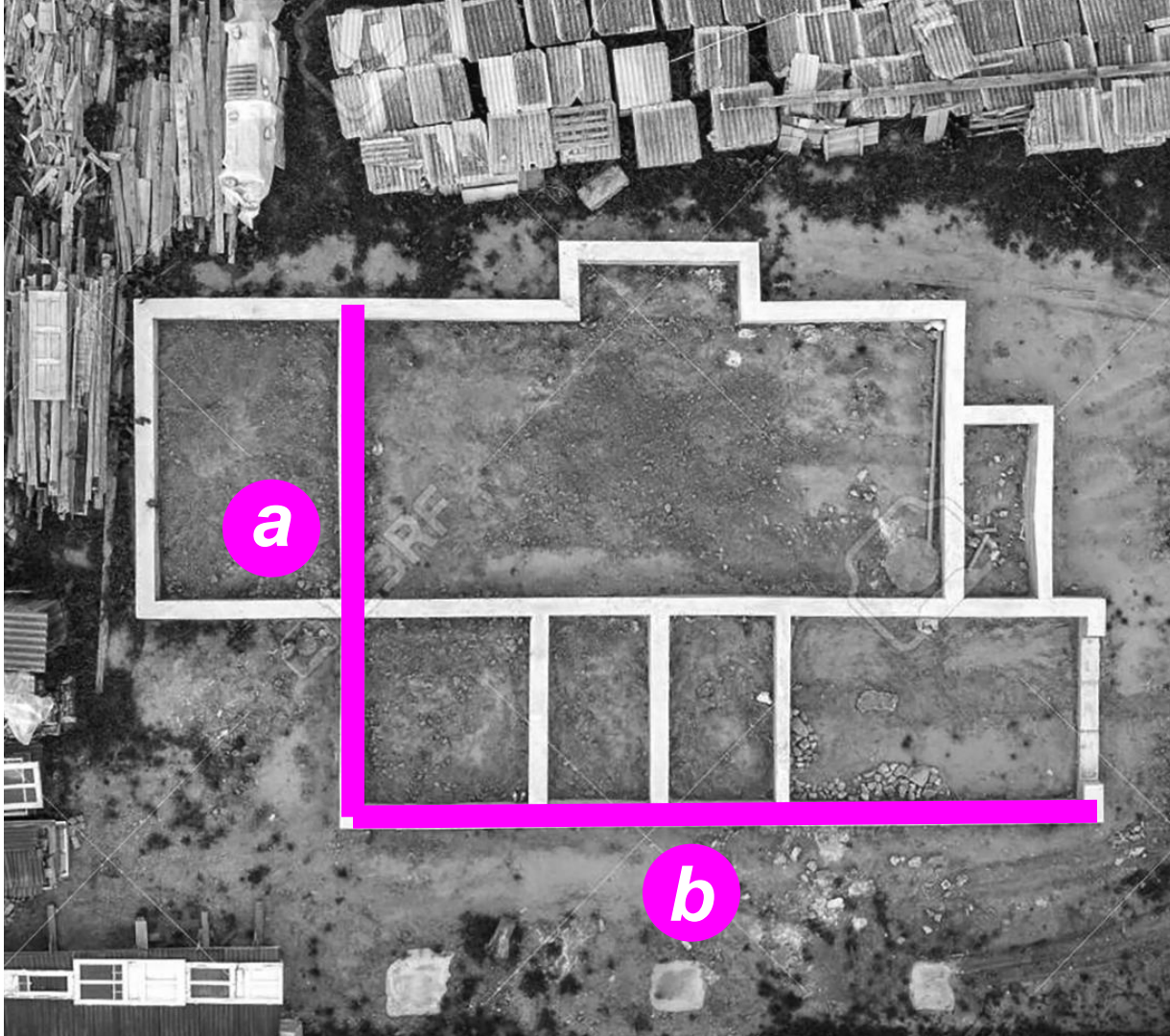


$$\sqrt{(a^2+b^2)} = c$$



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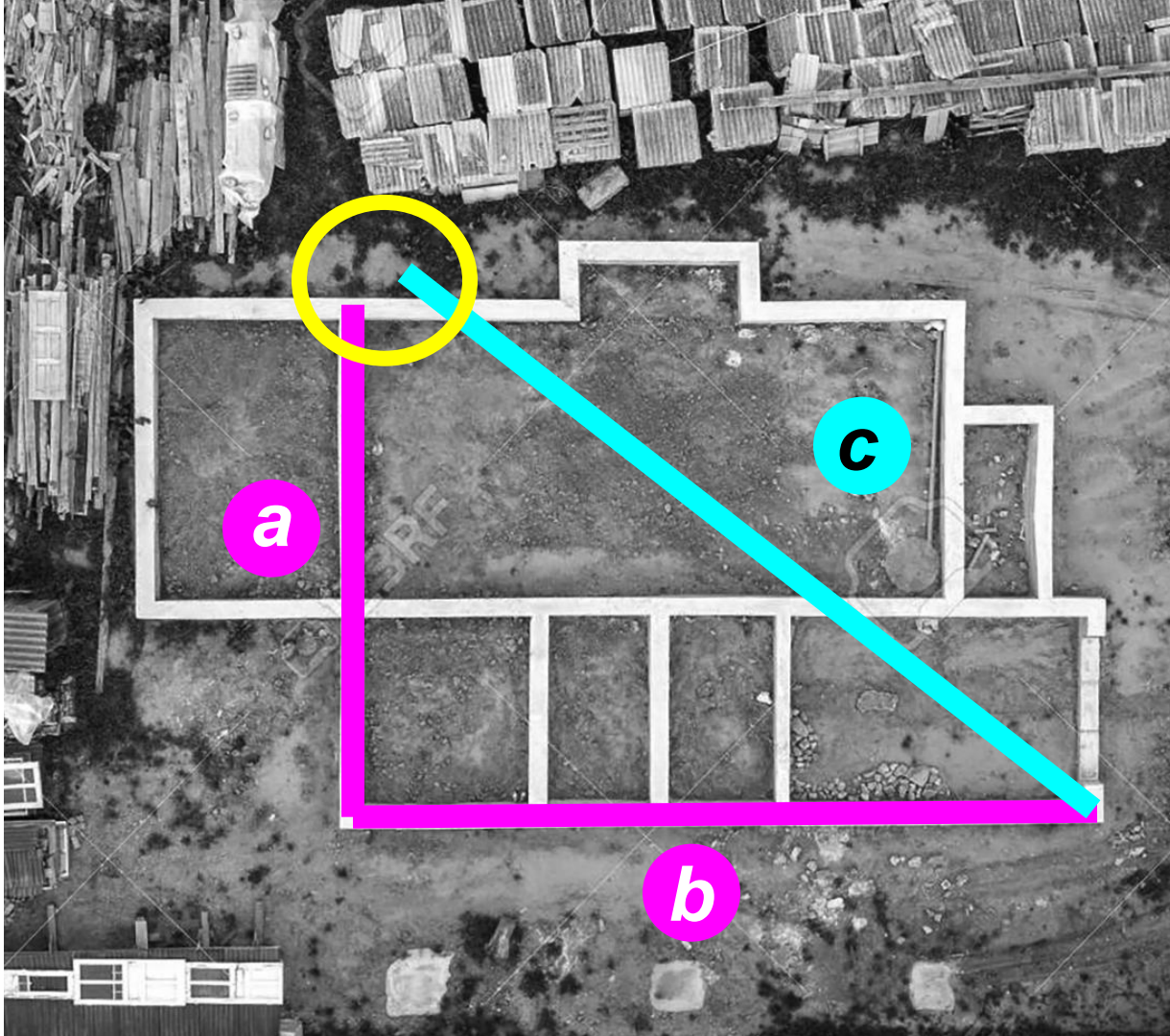

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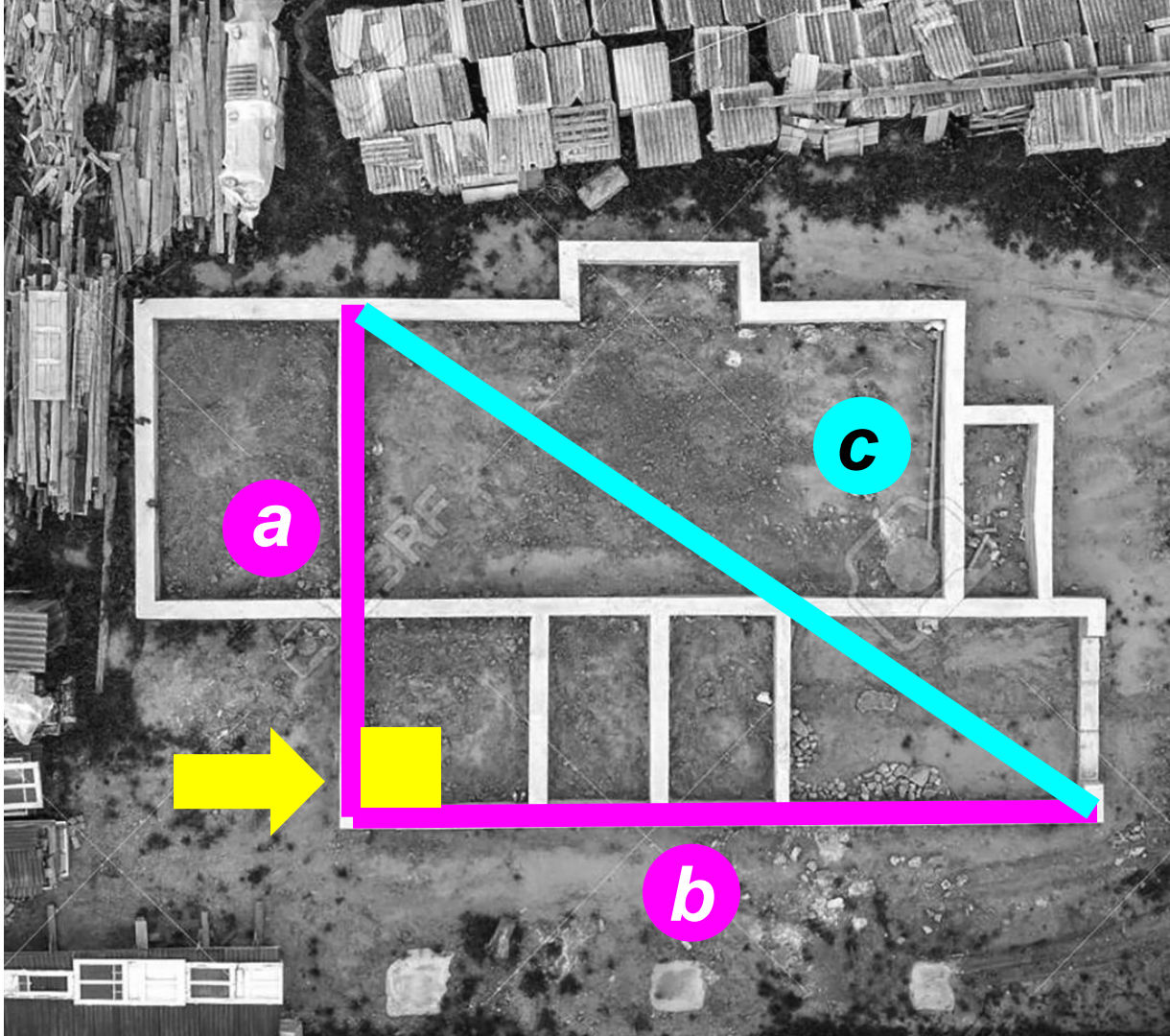

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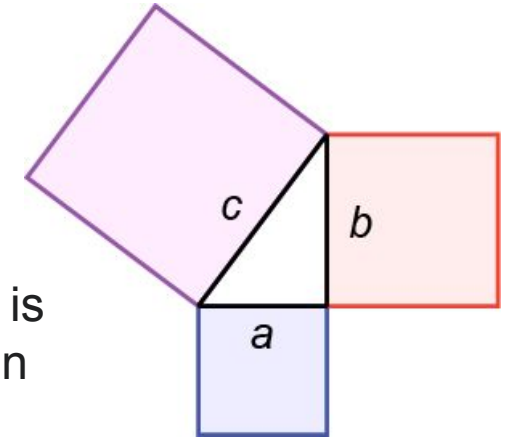

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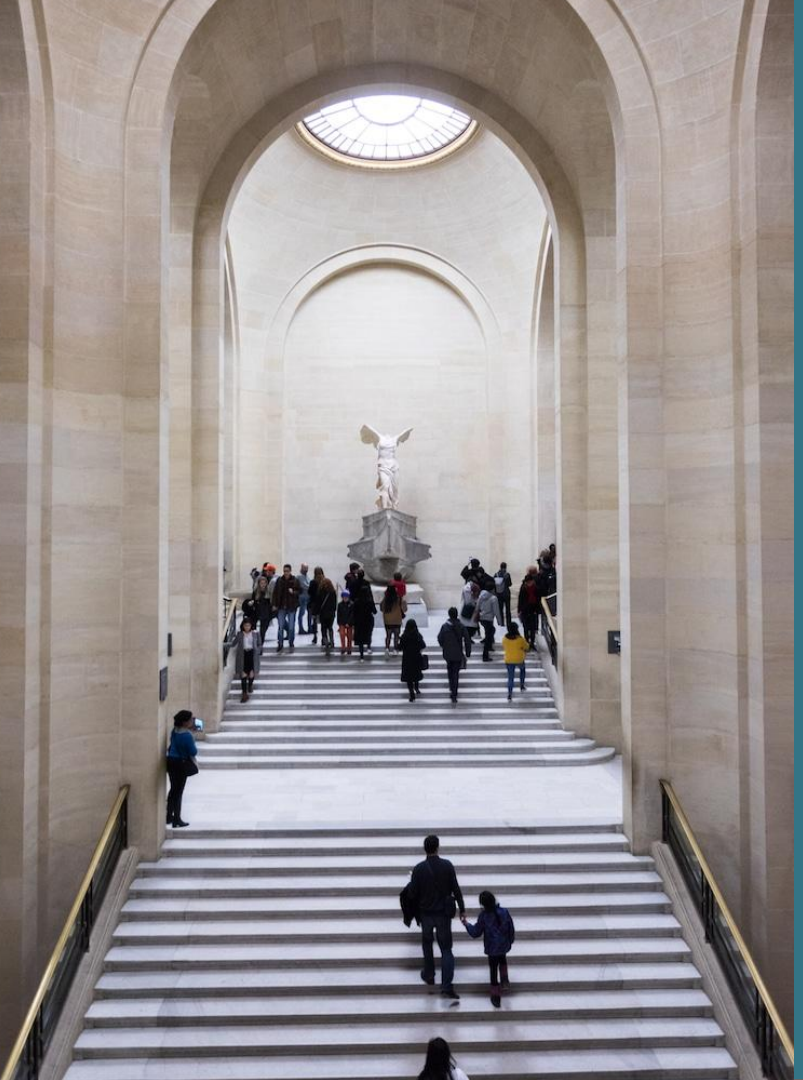


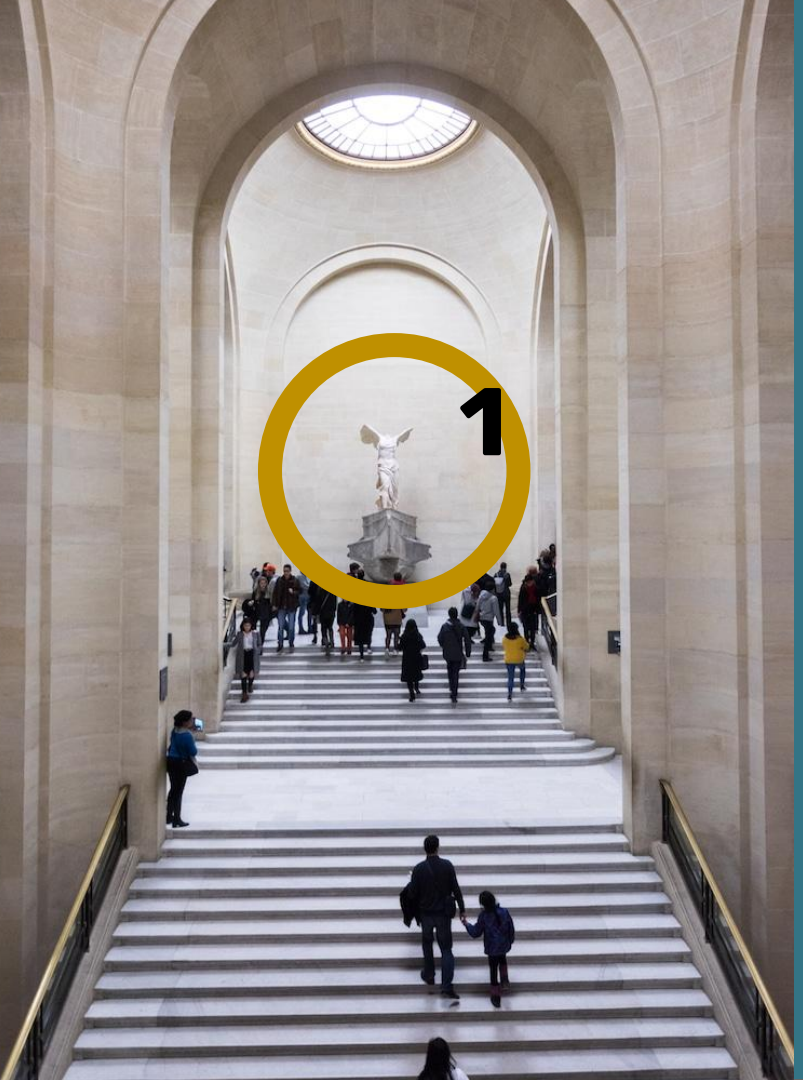
The Winged Victory of Samothrace

The winged goddess of Victory standing on the prow of a ship overlooked the Sanctuary of the Great Gods on the island of Samothrace. This monument was probably an ex-voto offered by the people of Rhodes in commemoration of a naval victory in the early second century BC. The theatrical stance, vigorous movement, and billowing drapery are hallmarks of this Hellenistic sculpture.

Greek, Etruscan, and Roman Antiquities
Hellenistic Art (3rd-1st centuries BC)
Author(s): Astier Marie-Bénédicte

Backward Design

What's most important about this slide?



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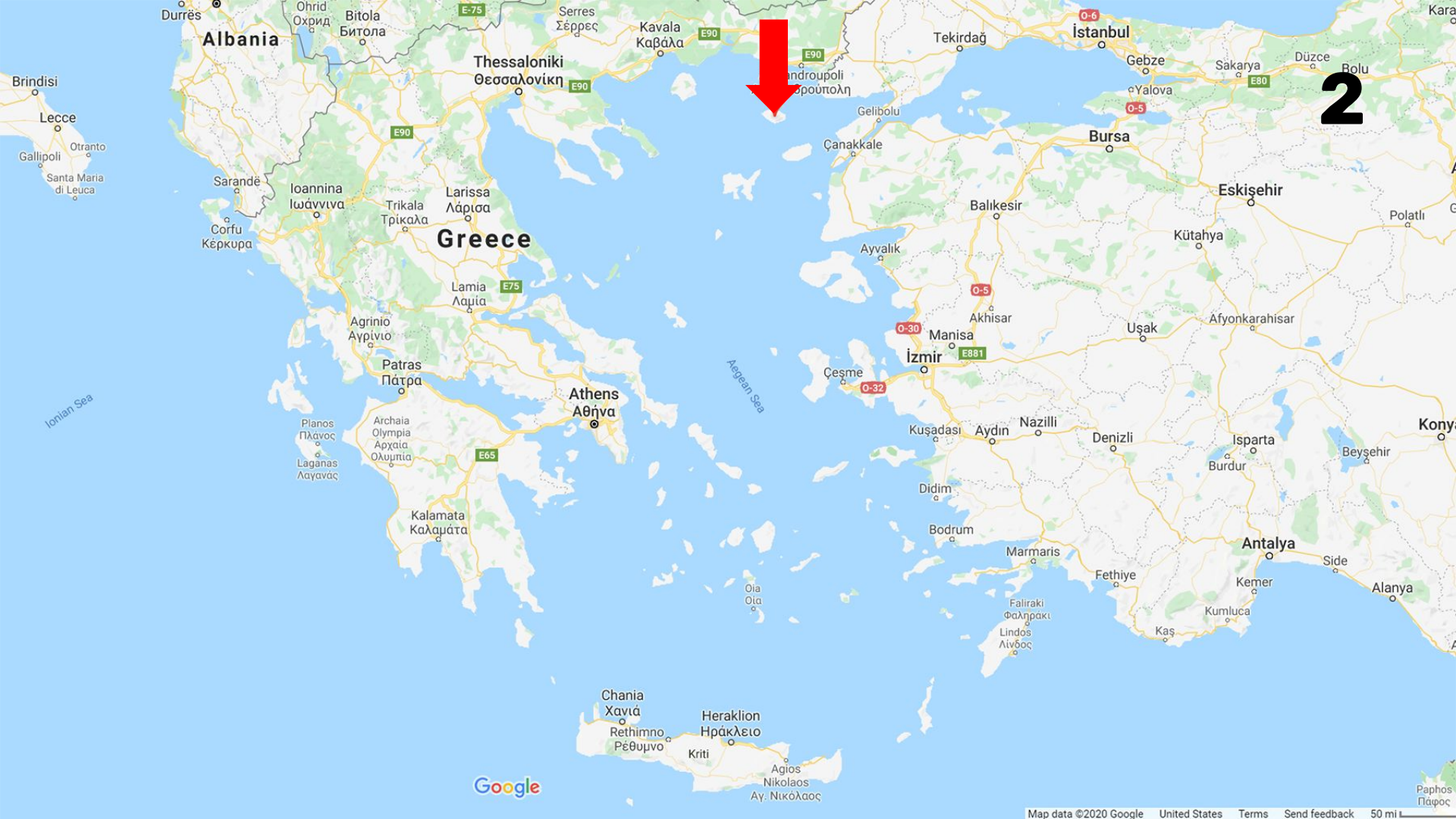
The Winged Victory of Samothrace

1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Gallipoli
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Chania
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Heraklion
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Kriti
Antalya
Bodrum
Didim
Marmaris
Fethiye
Kalamata
Patras
Πάτρα
Larissa
Λάρισα
Ioannina
Ιωάννινα
Lamia
Λαμία
Manisa
Akhisar
Aydın
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Nazilli
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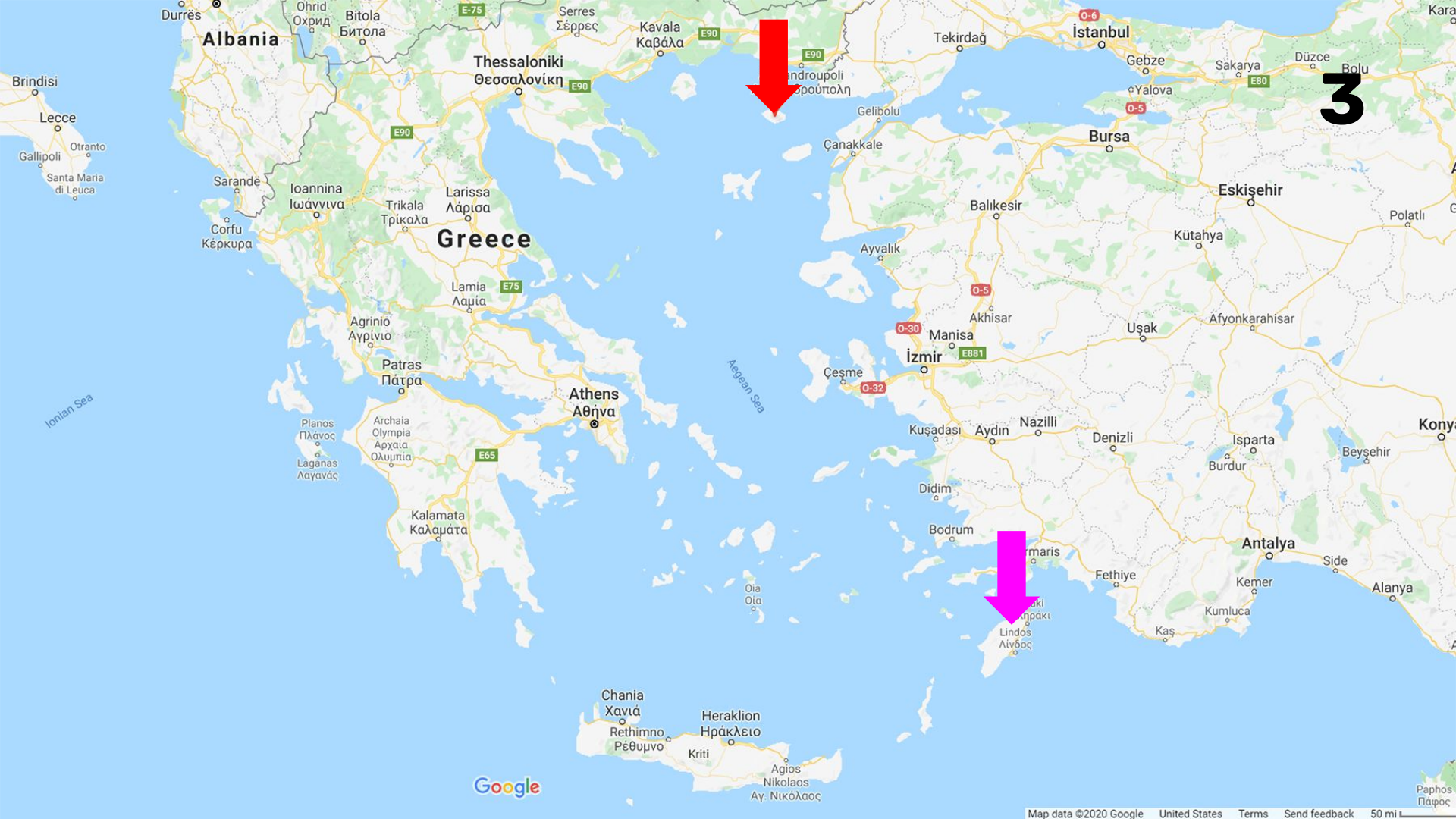
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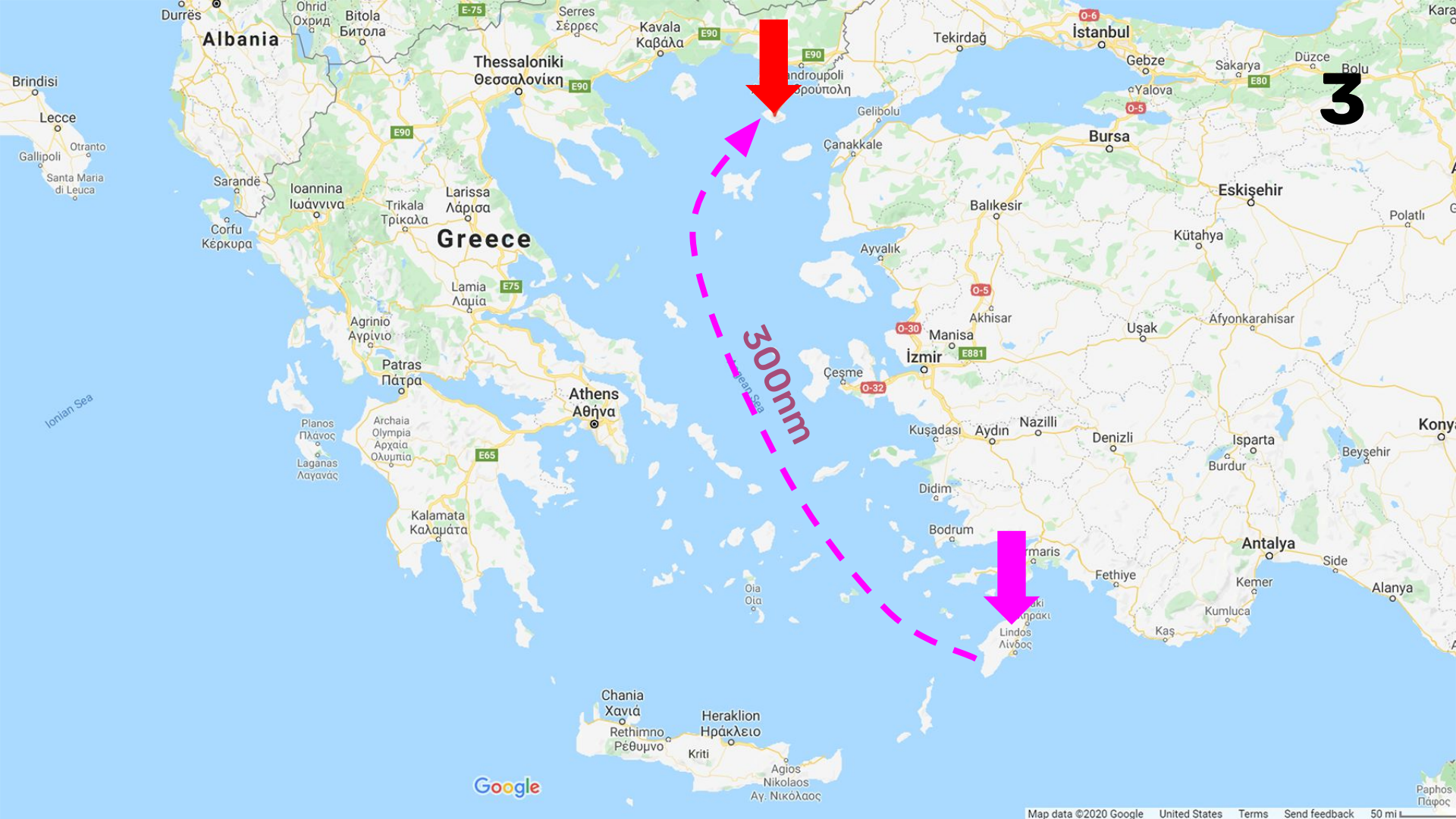
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Ohrid
Tekirdağ
İstanbul
Gebze
Sakarya
Düzce
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Yalova
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Çanakkale
Bursa
Eskişehir
Balıkesir
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Ayvalık
Akhisar
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Uşak
Afyonkarahisar
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Rethimno
Kriti
Agios Nikolaos
Brindisi
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Otranto
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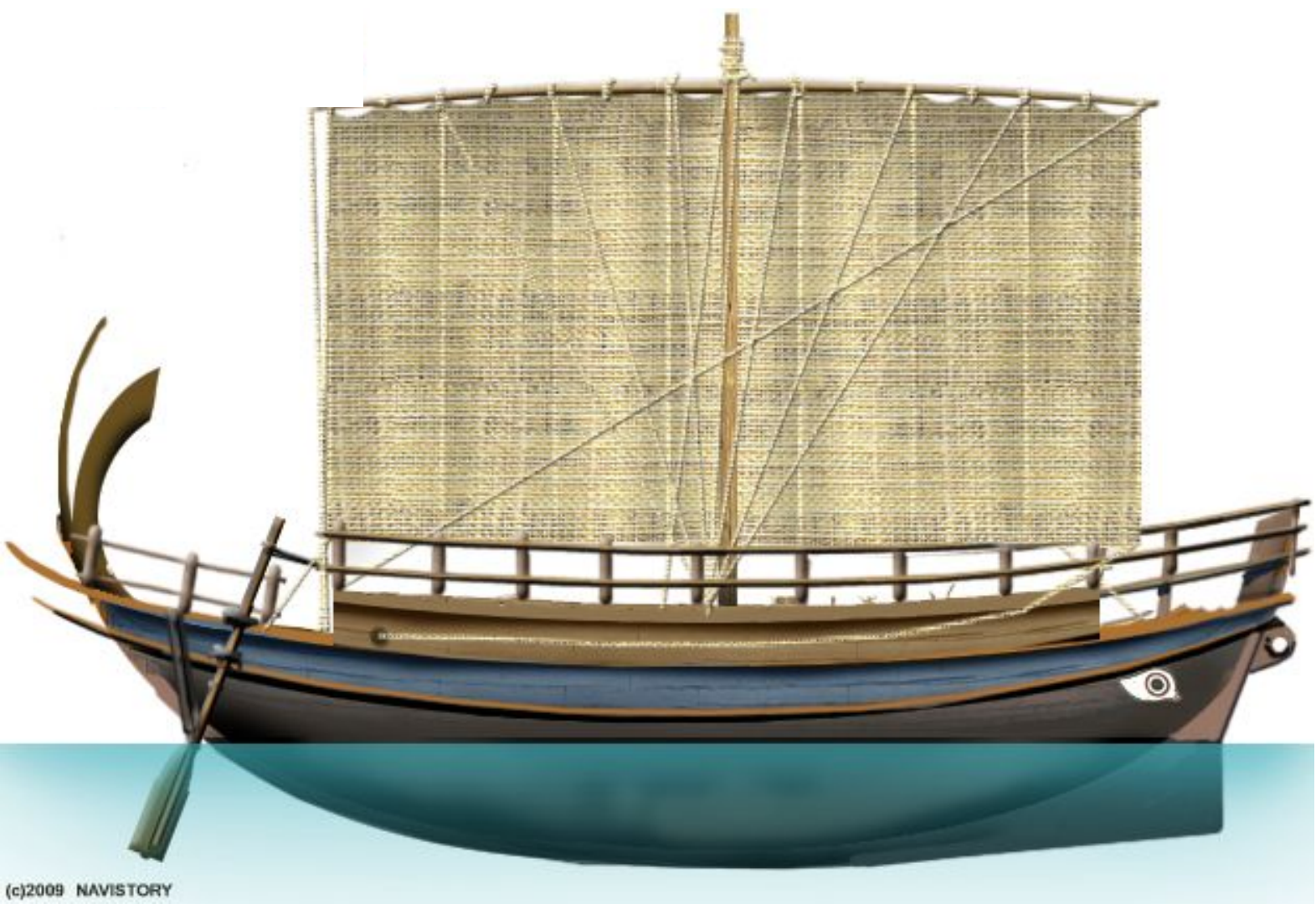
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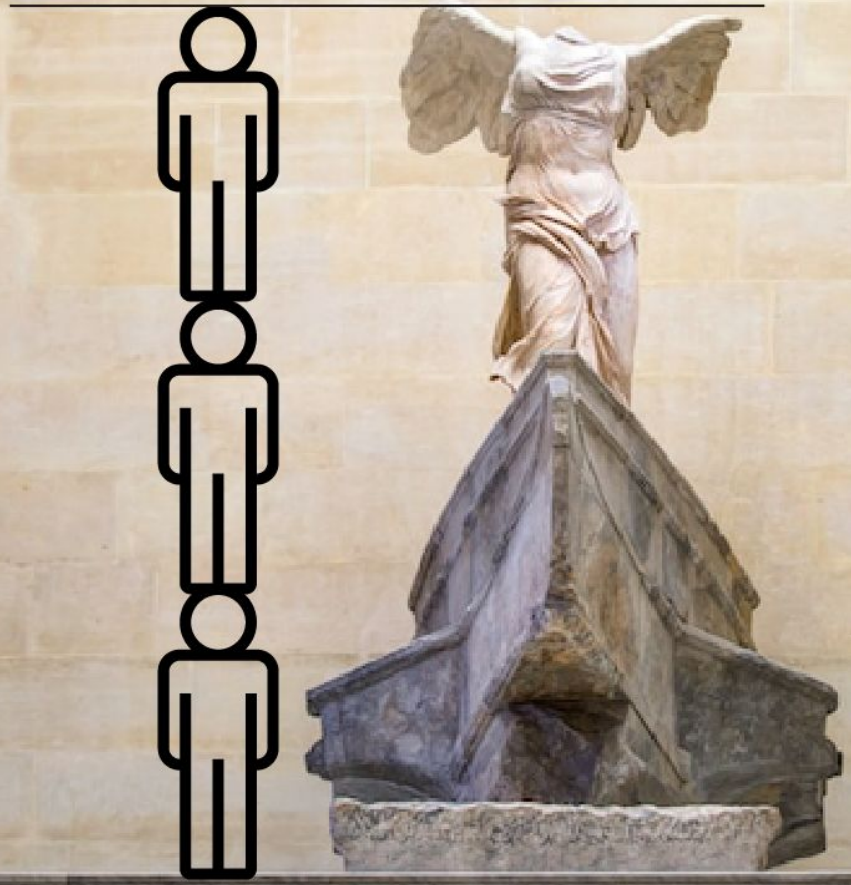
The Winged Victory of Samothrace



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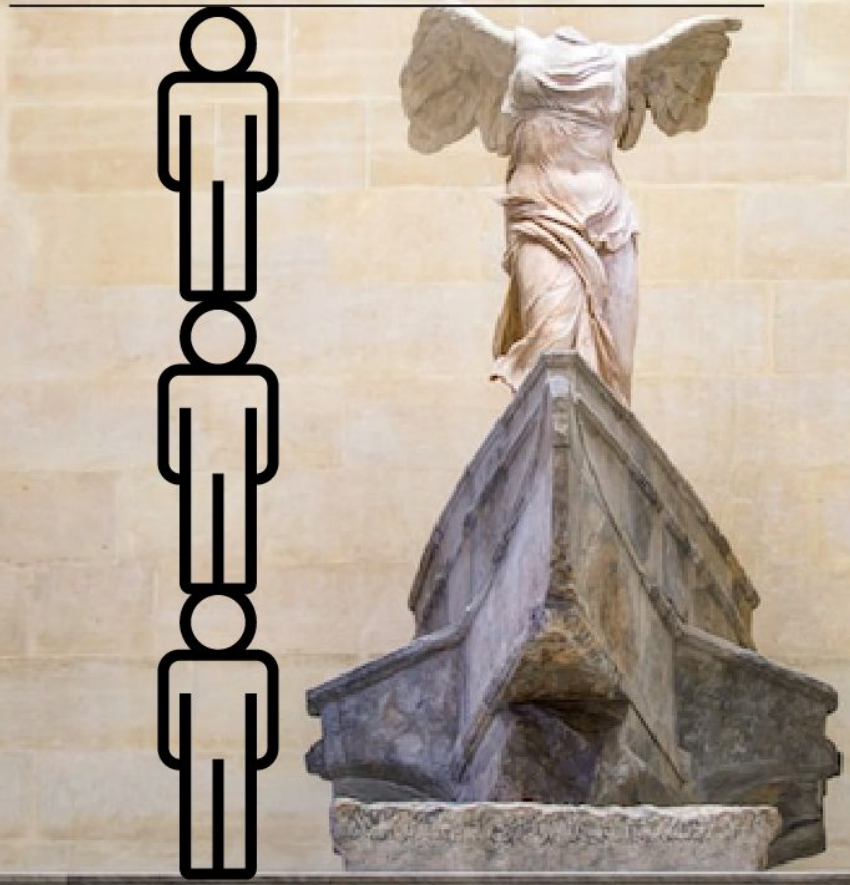

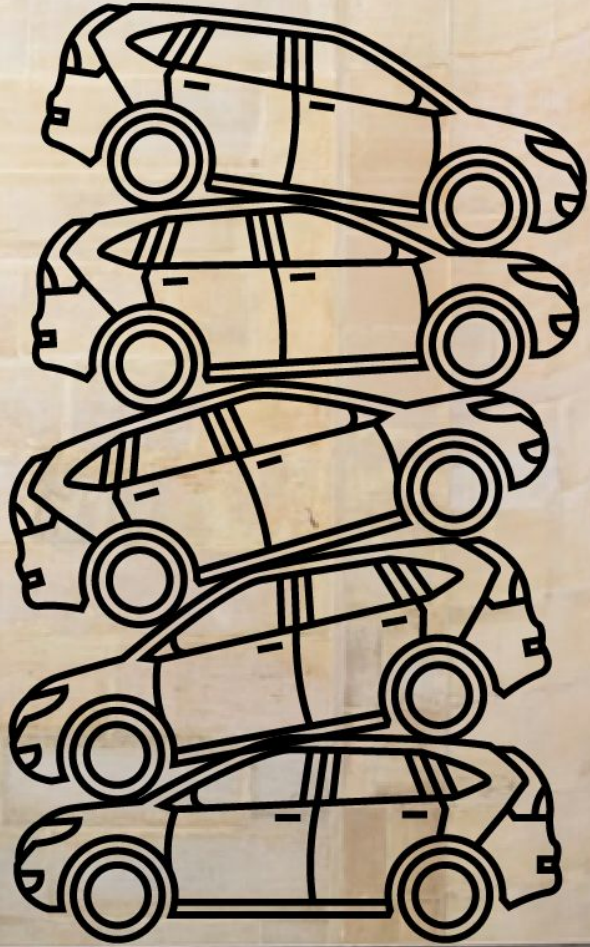

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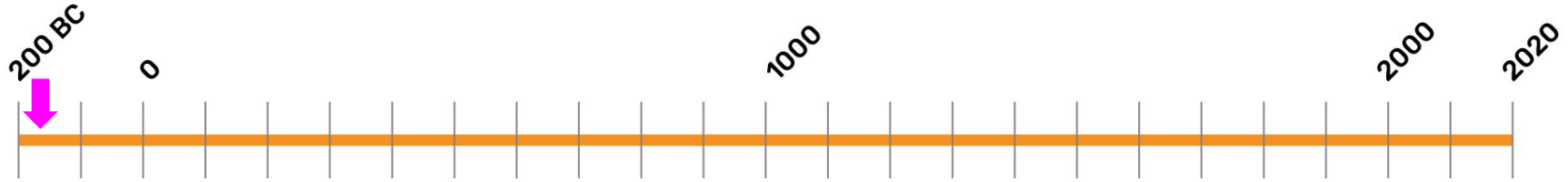

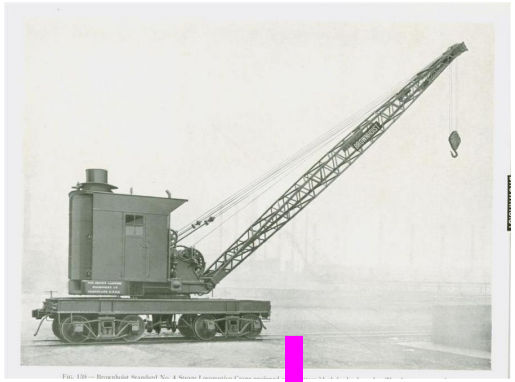

200 BC

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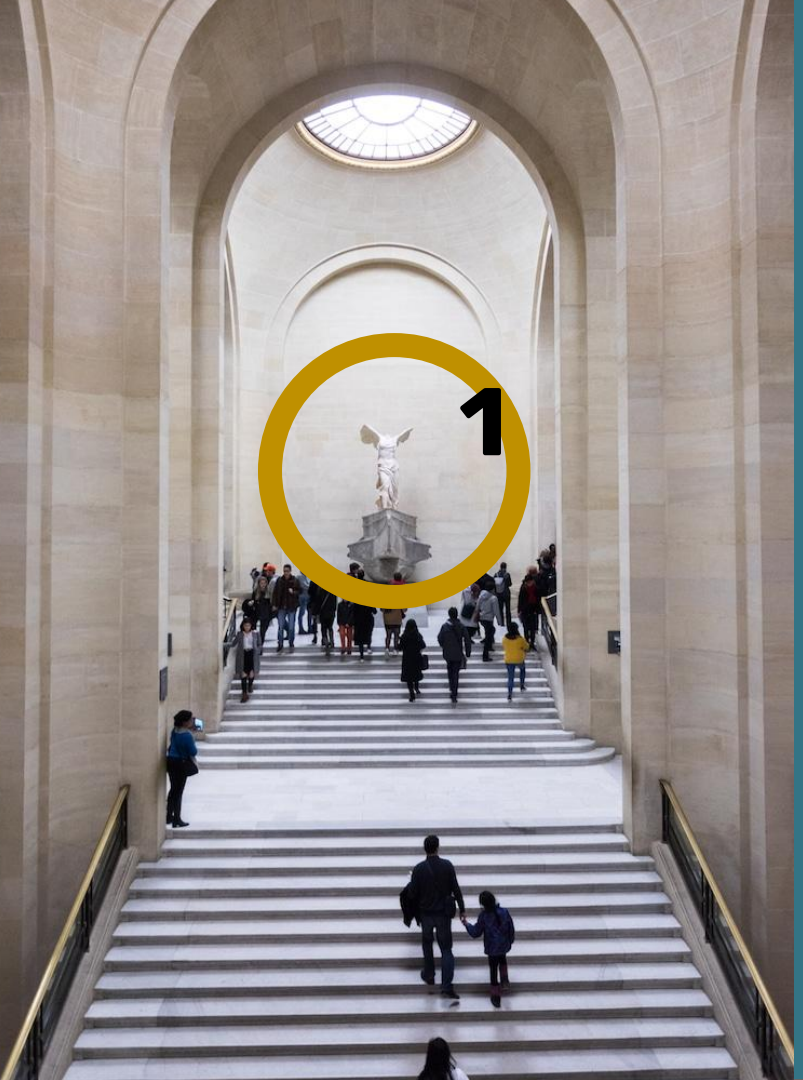
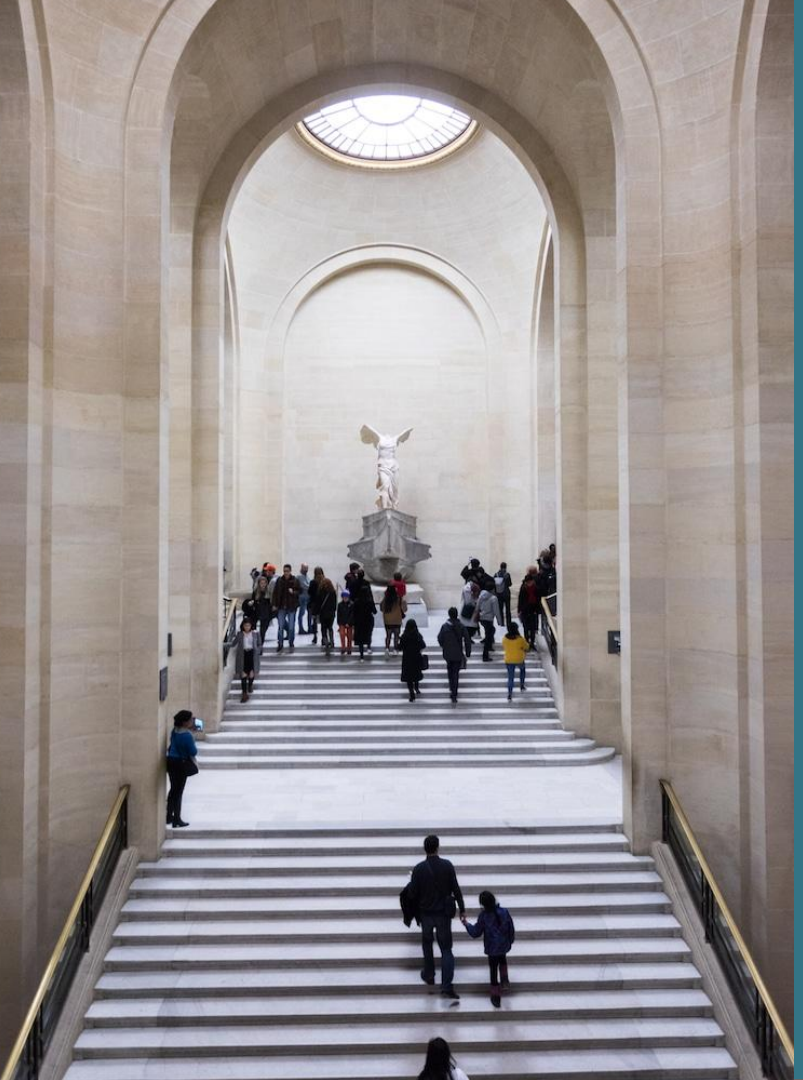


The Winged Victory of Samothrace

The winged goddess of Victory standing on the prow of a ship overlooked the Sanctuary of the Great Gods on the island of Samothrace. This monument was probably an ex-voto offered by the people of Rhodes in commemoration of a naval victory in the early second century BC. The theatrical stance, vigorous movement, and billowing drapery are hallmarks of this Hellenistic sculpture.

Greek, Etruscan, and Roman Antiquities
Hellenistic Art (3rd-1st centuries BC)
Author(s): Astier Marie-Bénédicte



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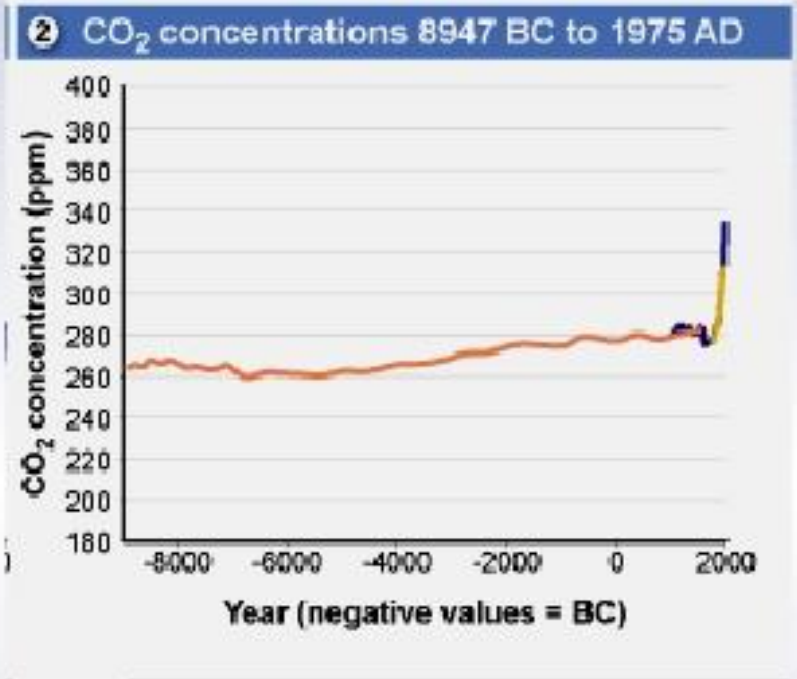
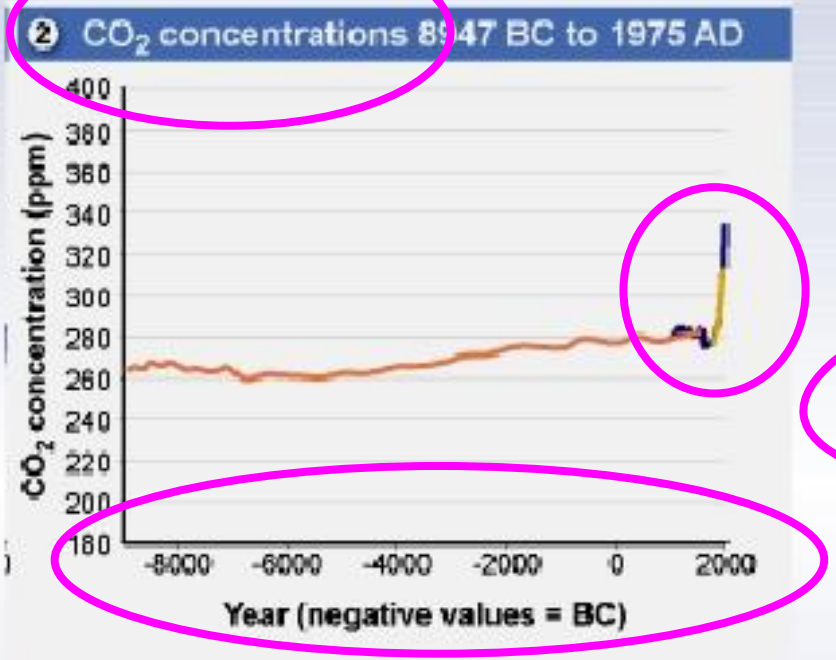


Carbon Dioxide in Earth's atmosphere has risen by about 30% since the beginning of the industrial revolution. Most of the increase is due to the combustion of fossil fuels, which releases the long-stored CO_2 back into the atmosphere.

Backward Design

What's most important about this slide?



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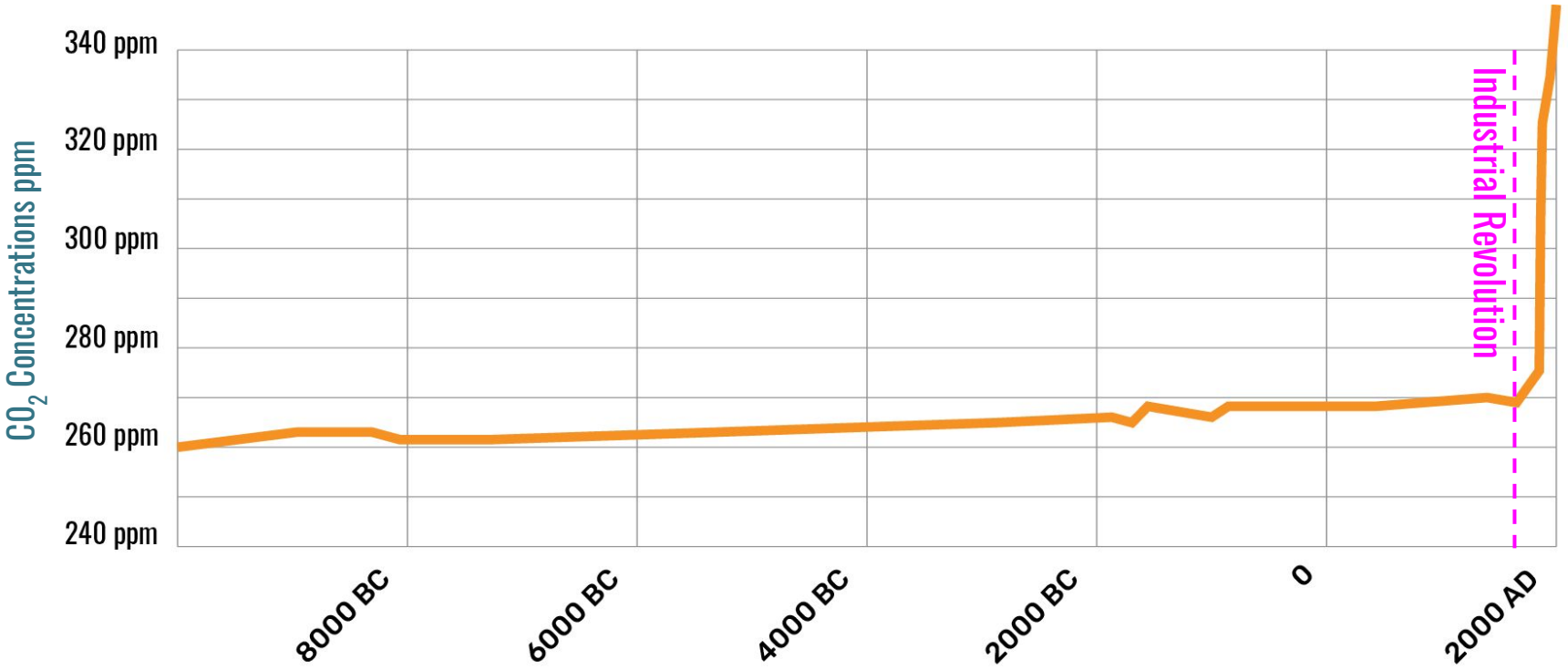
CO_2 Atmospheric Concentrations: 12,000 years



Design Better Multimedia Materials for Learning

1) Speak words and use pictures.
2) Speak words and use pictures (at the same time).
3) Don't show words you're saying out loud.
   - ➡ Don't use pictures if they don't relate to the words your saying out loud.
4) Less is more.

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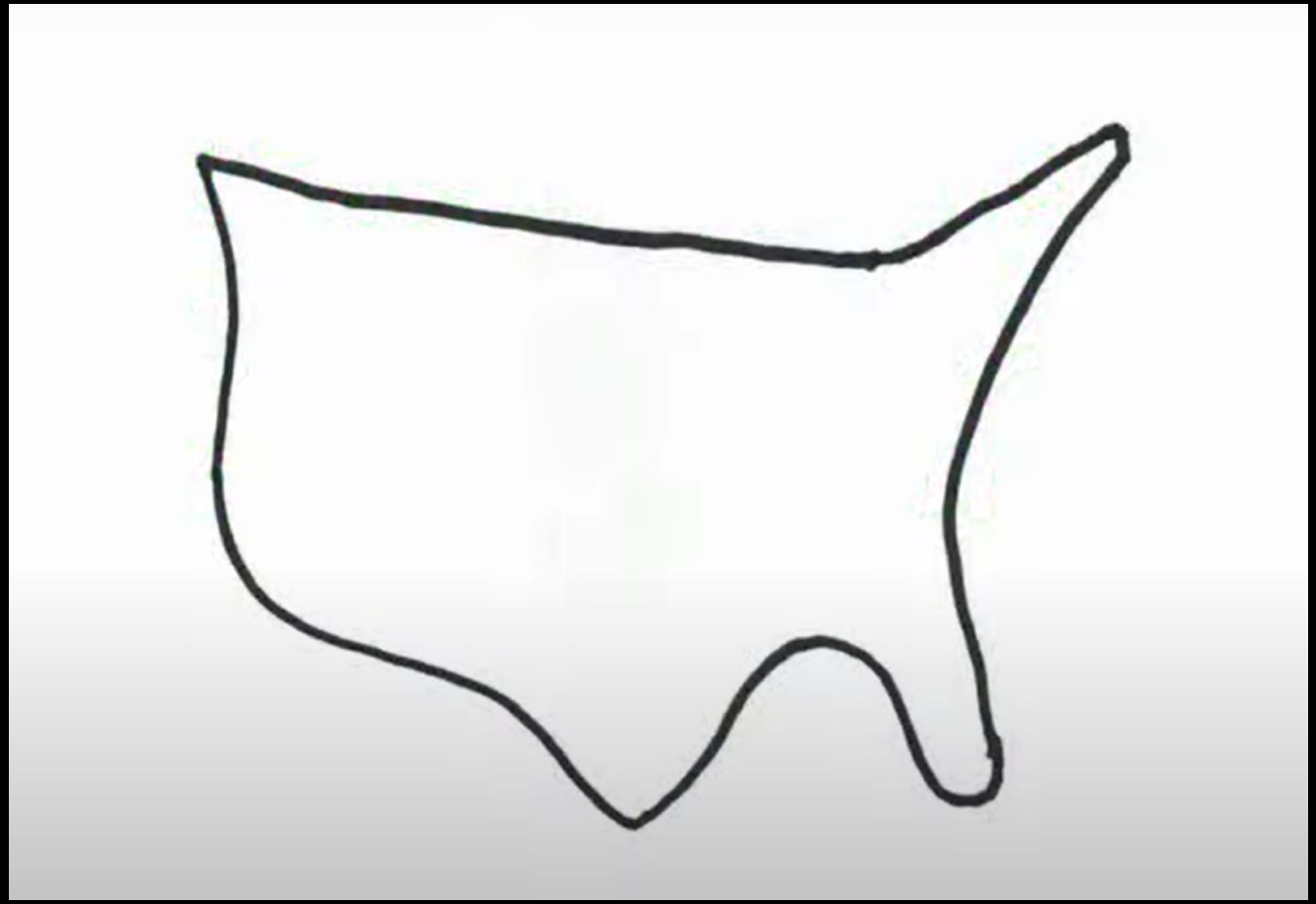
These same rules apply to video

mjmfoodie. (2011, Jan 13). *Episode 4: Micro vs. Macro Economics*. YouTube. https://youtu.be/w8tUIq7Blsg



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TED. (2016, April 6). *Inside the Mind of a Master Procrastinator | Tim Urban.* YouTube. https://youtu.be/arj7oStGLkU

Don’t let perfect be the enemy of the good.

Don’t let perfect be the enemy of the good enough.

THANK YOU!

EXPLO ELEVATE
INNOVATIVE SCHOOLS COOPERATIVE

@EXPLOelevate

Designing Videos for Learning

- Segment your content to stay below 6 minutes
- Use first-person narration
- Provide spoken narration
  - For accessibility, provide a means to access the text
- Associate the content with an emotion
- Give user tools for searching and navigation
  - Add title and pause cards to encourage user interaction.

Optimal Length of Videos

Introductions/Brief Overviews	1-3 minutes
“Big Picture” Topic Overview	2-5 minutes
“Deep Dives”/Complex Topic	5-15 minutes
Full Lessons	15+ minutes Avoid! Segment!

6 Minute Barrier
Prepare to segment