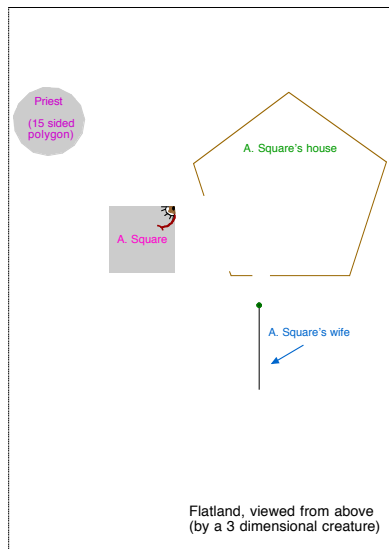
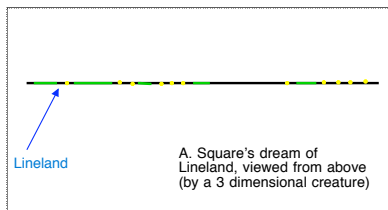


Lower Dimensions



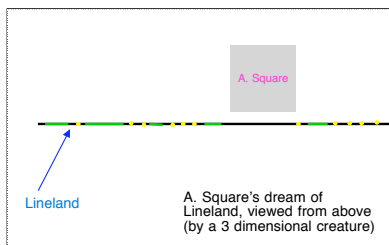
- In *Flatland*, Flatland exists not in 3 dimensions as our world does, but in 2.
- The world is a plane, not a space.
- Flatland residents can not see **up** or **down**, can not go **over** or **under**.
 - **These concepts don't even exist!**
- They *can* move left, right, forward, back, or at angles in plane
- Men are polygons, women are lines.
- Women are invisible from end-on.
- No matter what view he finds in Flatland, A. Square can never see the inside of the nearby Priest.

Lineland



- A. Square dreams he visits Lineland
 - A 1-dimensional world
 - No left or right, only forward and back
 - Men are line segments [green], women are points [yellow].

A. Square's Dream of Lineland



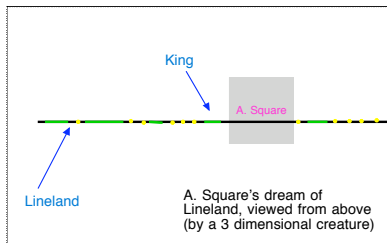
- A. Square tries to convince the King of Lineland of the existence of a 2nd dimension.
- One argument: A. Square can pass *through* Lineland.
- What would the King see and hear as A. Square passes through?
 - If A. Square passes through edge first (as illustrated)?
 - If A. Square passes through corner first?

What the King would see as A.Square passes through...

- Edge first?

What the King would see as A.Square passes through...

- Edge first?

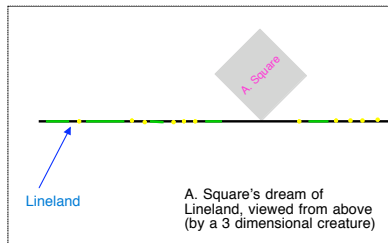


What the King would see as A.Square passes through...

- Edge first?
- Corner first?

What the King would see as A.Square passes through...

- Edge first?
- Corner first?



Other Ideas?

What else could A. Square do to try to convince the King of Lineland that he lives in a higher dimension?

Visiting Sphere

How could a Sphere visiting Flatland convince A. Square of the existence of a third dimension?

4th Dimension

- If we were visited by a 4-dimensional being, what would we see?
Would there be any clues that it was a higher-dimensional being?

4th Dimension

- If we were visited by a 4-dimensional being, what would we see?
Would there be any clues that it was a higher-dimensional being?
- What (besides passing through our space) could it do to convince us that comes from a higher dimension?