

**Communication  
and knowledge transfer  
...**

**How do you read a math paper?**

**How do you read a novel or news article?**

# Digesting a math paper often requires independent work

*Mathematics is commonly explained and recorded in symbolic and concrete forms that are easy to communicate, rather than in conceptual forms that are easy to understand once communicated. Translation in the direction conceptual  $\rightarrow$  concrete and symbolic is much easier than translation in the reverse direction, and symbolic forms often replaces the conceptual forms of understanding.*

~ Bill Thurston, Mathoverflow.net

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**There is no time for the audience to do independent work during a talk!**

**What can we learn from documentaries, popular math and science books, newspaper articles, etc.?**

1. **Point of View:** What is the main point of the story and what is the perspective of the author?
2. **A Dramatic Question:** A key question that keeps the viewer's attention and will be answered by the end of the story.
3. **Intellectual Connection:** Serious issues that come alive in a powerful way and connects the audience to the story.
4. **The Gift of Your Voice:** A way to personalize the story to help the audience understand the context.
5. **Economy:** Using just enough content to tell the story without overloading the viewer.
6. **Pacing:** The rhythm of the story and how slowly or quickly it progresses
7. **Characters:** Who are the main characters and how does the audience remember, differentiate them, and relate to them?

Adapted from *Elements of Digital Storytelling*, The Center for Digital Storytelling

# Characters

In a traditional story:

- People or beings
- Guide audience through a story
- Plot and theme are revealed through character interactions

Interpretation for a math talk:

- Mathematical objects and maybe lemmas/propositions/theorems
- Guide audience through motivation/proofs
- Insights and novelty of a result are character revelations/development



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## Lessons

Don't introduce too much notation at once.

Emphasize which lemmas/propositions/theorems are the main players

Emphasize distinguishing characteristics so audience can remember and differentiate

Examples of this aspect from traditional stories? What is the purpose of this aspect in traditional storytelling?

What is the analogue or translation of this to a math talk?

What lessons can we learn about the structure of a math talk from this aspect of storytelling?

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# 1. Point of view

## 2. A dramatic question

### 3. Intellectual connection

## 4. The gift of your voice



## 5. Economy

## 6. Pacing