Transcribing Math & Science using TypeWell

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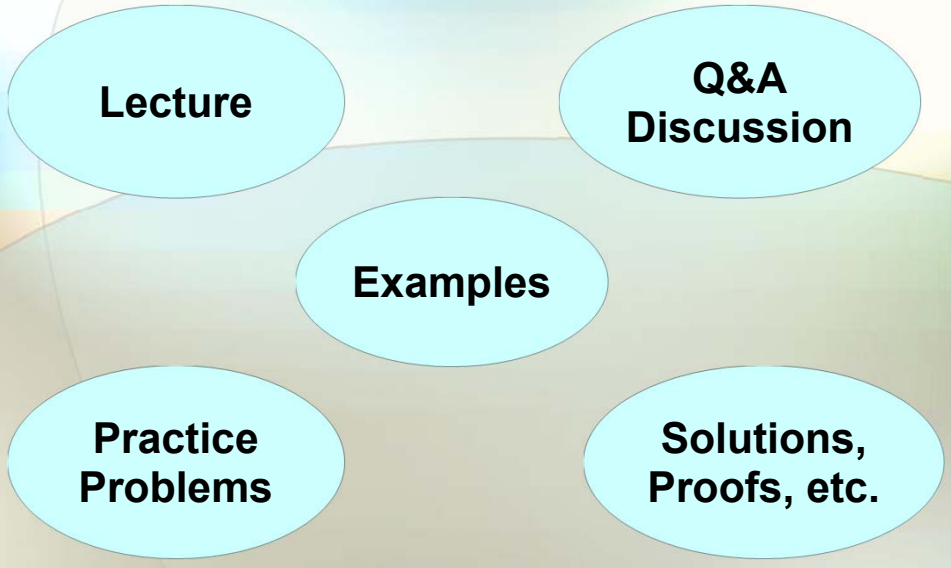
Key Learning Goals

- Benefits (and challenges) of capturing accurate, well-formatted mathematical notation in a typed transcript
- Considerations for evaluating the appropriateness of TypeWell services in math/science classes

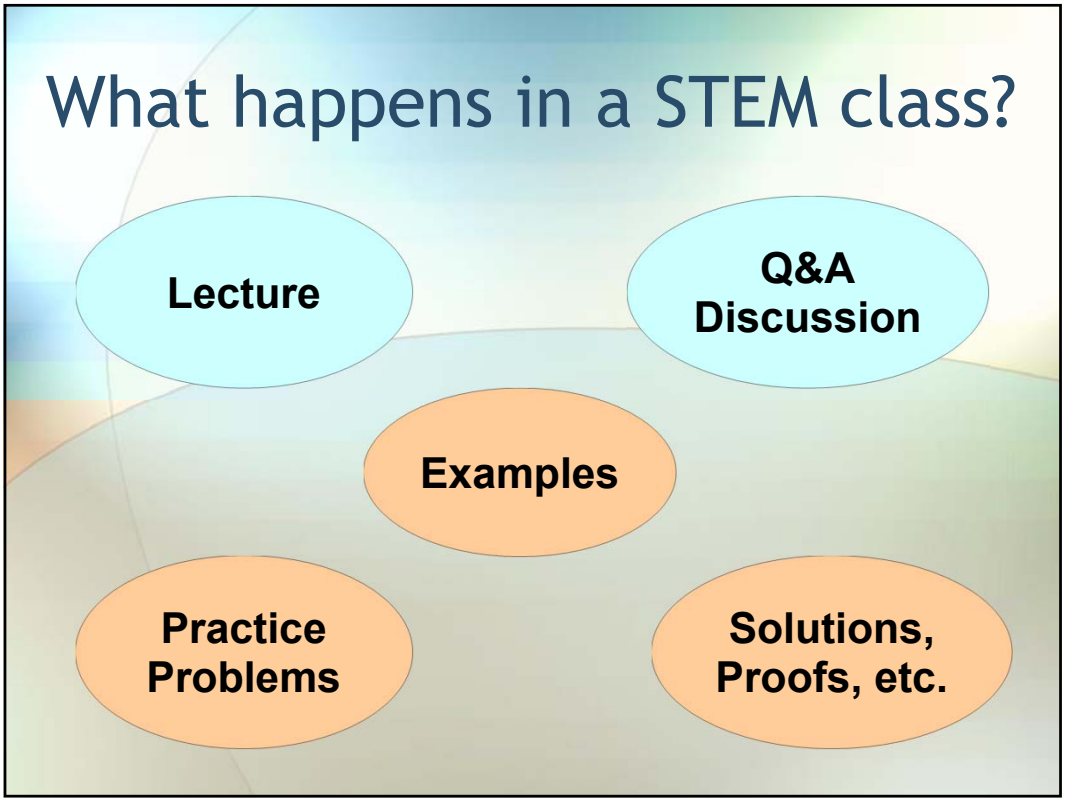
STEM Courses

- College Algebra
- Statistics
- Trigonometry
- Accounting
- Finance
- Economics
- Biology
- Organic Chemistry
- Physics/Mechanics
- Echocardiography

What happens in a STEM class?



What happens in a STEM class?



What works?

- Accurate content
- Quick readability
- Correct notation
- Clear explanation of board work

What hurts?

- Inaccuracies
- Cluttered format
- Confusing notation
- Missing explanations of board work

Formatting

- White space
- Math Mode
  - font
  - special characters
  - expansions
- Indentation and alignment

What works?

Solve for c in this equation:

$$a(b-c)=3d$$

Since c is located inside a set of parentheses, I would first distribute the a through the parentheses on the left side of the equation:

$$ab-ac=3d$$

Next, isolate the c term ($-ac$) by subtracting ab from both sides of the equation:

$$-ac=3d-ab$$

Finally, to get c by itself, divide by $-a$ on both sides of the equation. Cancel the $-a$ on the left side. Then we have our answer:

$$c=\frac{3d-ab}{-a}$$

What hurts?

To solve for c - since c is in parentheses - distribute a through the parentheses. So we have a times b (ab) minus a times c (ac) equals 3d. [Missed.] [On board.] Finally to get c by itself, simply divide by negative a on both sides of the equation... -ac/-a = 3d – ab /-a Cancel the negative a's on the left. Then we have our answer. [On board.]

c = 3d - ab / -a

Example Lecture:

"How to Do Algebra"

Transcriber skills: formatting
toggling Math Mode on/off
fraction template (*frac*)

Transcript Evaluation

- ✓ Content
  - Initial equation
  - Steps explained
  - Final answer
- ✓ Formatting
  - White space
  - Indentation
- ✓ Technical Skills
  - Math mode
  - *frac*
- ✓ Grammar
  - Complete sentences
  - Punctuation

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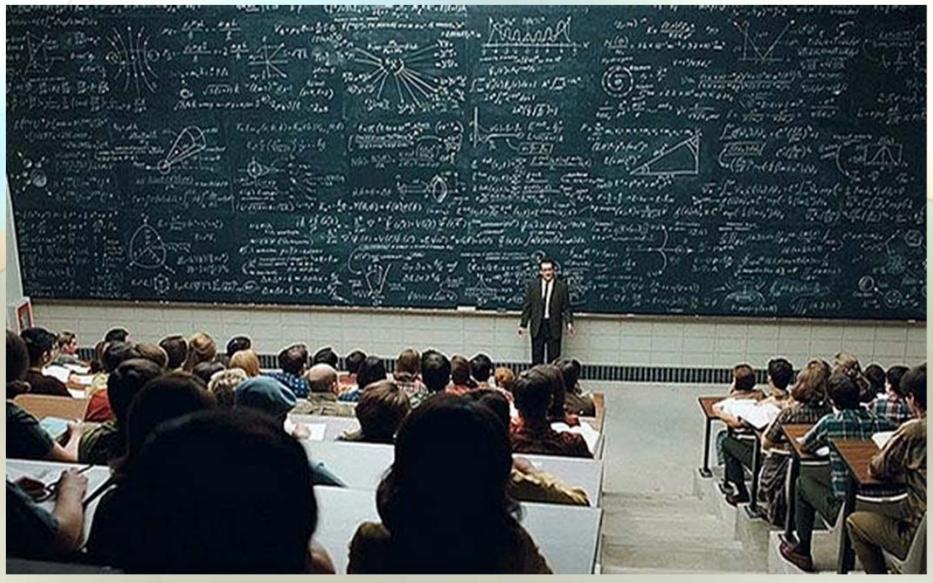
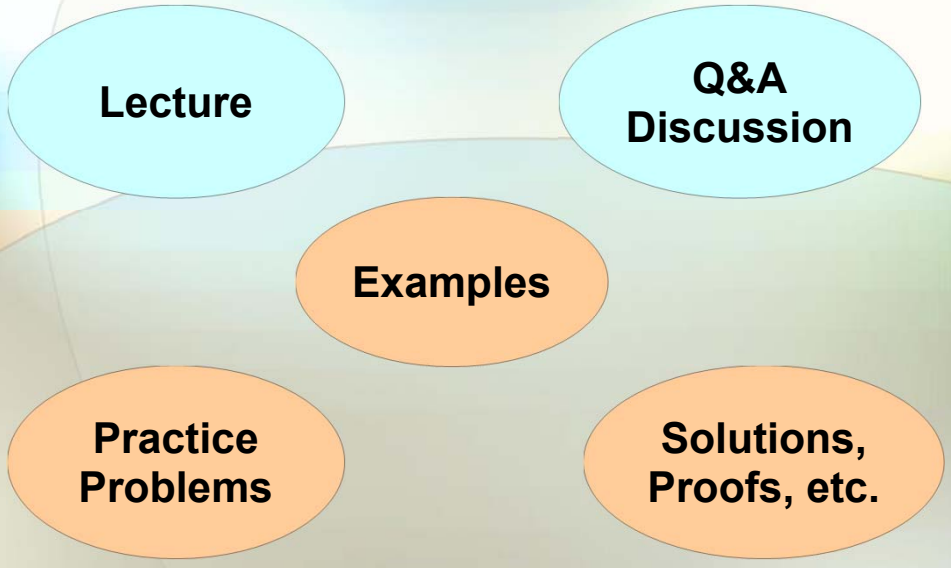
A note about notes...



To type, or not to type

- Previews
- Summaries
- Relationships
- Cause & effect
- Questions asked of the class
- Definitions
- Formulas
- Proofs
- Reasons
- Exceptions
- Textual references

What happens in a math class?



To type, or not to type

- Verbal explanations
- [Reader orientations]
- Board work
  - Initial problem
  - Final answer
- Intermediate steps
- Diagrams, graphs
- Complex equations
- Mistake/correction
- *Everything* written on the board

To type, or not to type

- Verbal explanations
- [Reader orientations]
- Board work
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  - Final answer
- ~~Intermediate steps~~
- ~~Diagrams, graphs~~
- ~~Complex equations~~
- ~~Mistake/correction~~
- ~~*Everything* written on the board~~

Prep Time

- Familiarity with content
- Enter key terms into English dictionary
- Enter formulas into Math dictionary
- Practice typing and formatting equations

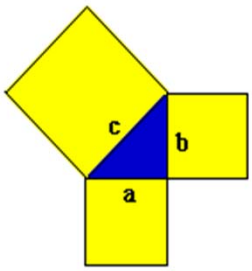
The Pythagorean theorem deals with the lengths of the sides of a right triangle.

It is often written in the form of the equation:

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

The theorem states that:

The sum of the squares of the lengths of the legs of a right triangle ('a' and 'b' in the triangle shown below) is equal to the square of the length of the hypotenuse ('c').



Example Lecture

"Pythagorean Theorem"

Transcript Evaluation

✓ Content

- Pythagorean theorem
- Define a, b, and c
- Equation from board
- Goal
- Description of steps
- Answer

✓ Formatting

- Math mode

✓ Technical Skills

- Abbrev for theorem
- Square root notation

✓ Grammar

- Complete sentences

To find the value of x in this example, notice that we have a right triangle. We can use the Pythagorean theorem. This theorem states that the sum of the squares of the lengths of the legs of a right triangle is equal to the square of the length of the hypotenuse.

$a^2 + b^2 = c^2$ (Where a and b are the legs, and c is the hypotenuse)

Using the triangle on the board, we can set up this equation:

$(6)^2 + (8)^2 = (x)^2$

Solve for x:

$36 + 64 = x^2$

$100 = x^2$

Take the square root of both sides of the equation:

$\sqrt{100} = \sqrt{x^2}$

$10 = x$

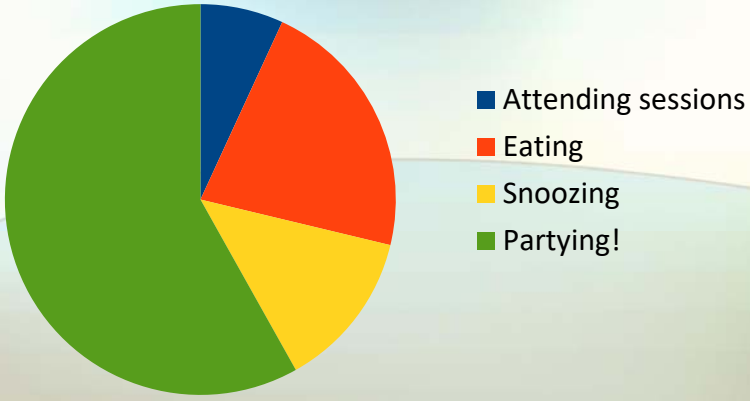
Remember what works!

- ✔ Accurate content
- ✔ Quick readability
- ✔ Correct notation
- ✔ Clear explanation of board work

Transcribers' Best Practices

- Formatting
  - White space
  - Indentation
- Content
  - Initial/final equations
  - Explanation of steps
- Technical Skills
  - PAL, Math Mode
  - Practice!
- Grammar
  - Clear wording
  - Complete sentences
  - Punctuation

Graphs and Commentary



Speaker says: "*This wedge highlights a worrisome trend.*"

Transcript: "The **blue** wedge highlights a worrisome trend."

Considerations for Students

- Verbatim vs. meaning-for-meaning
- What do you expect/need from the speech-to-text accommodation?
  - During class
  - After class (i.e., the transcript file)
- Notetaking & working problems

Considerations for the Teaching Team

- On-site vs. remote transcriber
- Providing transcriber with prep material
- Transcriber's level of technical skill
- Transcriber's math/science proficiency
- Managing student/parent expectations