Math Modeling Pathways to Industry

Dr. Rachel Levy
@mathcirque

Deputy Executive Director
Mathematical Association of America
What mathematical science-related skills do you think recruiters want from prospective employees?
Employers want

• Creative problem solvers
• Good communicators
• Appropriate computing skills
• People who can explain why things go wrong when they do
• People who can use their skills in context
• Flexibility and adaptability
• Learners and self-motivators

The mathematical sciences provide a great learning environment!
Here’s what we hear from employers:
Even when students have mathematical tools, they may have no idea when to select and use them or how to compare and justify the value of various tools and solution options.
In the job search process, each individual is going to need to be ready to provide evidence (and stories) that convey their skills and experience.
How will you make space and time in your curriculum for mathematical modeling?

Uri: support structures then pedagogy
Modeling challenge:

My flight home is at 6:45 AM. When should I leave this hotel to get to the airport?
Context matters.
Client matters.
What are you trying to optimize?
What constraints will you have?
What data/information do you need?
What will a useful solution look like?
Are there relevant ethical or equity issues?

Nobody will be handed a typical “word problem” on the job.
When should I leave to go to the airport?

This is a math modeling problem if math helps propose, develop and justify solutions...

The modeler chooses and uses mathematical tools, and must develop a solution that is useful to a future user of the model.
Your challenge: balance time to focus on prescribed content with time and space for students to choose and decide how to use mathematical tools.

Center math modeling and statistics in your standards and practices. They are not “extras” to let go because time is precious.

The time they take will connect mathematics with careers and life.
How to assess modeling?
Get ideas from competitions.

HIGH SCHOOL  m3challenge.siam.org

Assessments can answer: For which tools do your students reach?

COLLEGE  www.comap.com/undergraduate/contests
How can high school and college students find and tackle real problems?


Ask any business: what’s your biggest problem?
What’s your biggest problem?

Watch how math modeling can connect people with math!
Connecting with math is also part of my story. I persisted in mathematics because my senior year at Oberlin College, Dr. Bruce Pollack-Johnson brought us to NASA to work with Dr. Sylvia Hood Washington.
I hope your conversations will include:

how your state will make space and time in your curriculum for mathematical modeling and context-rich problems?

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Thank you!

For free info on math modeling: Guidelines for Assessment and Instruction on Mathematical Modeling Education (GAIMME)

Ray Levy
LEVY@MAA.ORG
Twitter @mathcirque