



# MathLeap

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Self-grading assignments for STEM  
classes

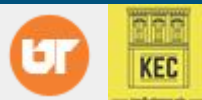
# The Team

## Gareth Aye, CEO



- Middlebury College BA in Computer Science & Math, cum laude with high departmental honors
- Built Luvocracy bookmarking tool (acq by WalMart Labs)
- Engineering lead at Mozilla Firefox, 2013-2016
- Mozilla representative on CalConnect calendar standards committee
- Graduate of inaugural KEC CodeWorks accelerator
- Also at Google, Airtime

## Will Lifferth, Product & Curriculum



- UT Computer Science
- Freelance web designer, 2014-2016
- Web development, marketing at KEC

## Irun Siregar, UI/UX



- 6 years experience designing for web, mobile, and VR
- Platinum designer status on 99Designs
- Designed <http://moodmeterapp.com/> by HopeLab



*MathLeap won the demo competition at PDX Startup Week 2016!*

# The Problem

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Demand for highly skilled labor in STEM outpacing supply

- STEM job creation currently outpacing *all other combined job creation*

Students need more and better feedback

- Math students can't understand or learn from mistakes w/o feedback
- Teachers are responsible for 80+ students at a time
- Avg teacher spends <5 hours grading / week (<4min / student / week)

# MathLeap

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Self-grading assignments that give personalized, granular feedback

- Teachers can create assignments easily by choosing question topics
- Students solve their problems online using interactive math editor
- Smart math engine grades work line-by-line instantly

Offerings for pre-algebra and algebra I classes

- Growing question content includes arithmetic, fractions, equations, and polynomials
- Will expand to cover all common core standards for pre-algebra and algebra I in 2016

# MathLeap (cont'd)

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Launched in beta in Knox County schools

- 50+ teachers currently using MathLeap in their classes

Huge differentiators

- Interactive math editor helps students show their work
- Smart grading engine gives targeted feedback

# Why now?

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STEM is crucial to global innovation

Americans are among the worst mathematicians in the world

- Nearly two-thirds of US 4th graders and 8th graders are not proficient in math
- 2012 study comparing 20 developed countries found Americans rank in bottom five in numeracy

Businesses are struggling to find qualified STEM employees

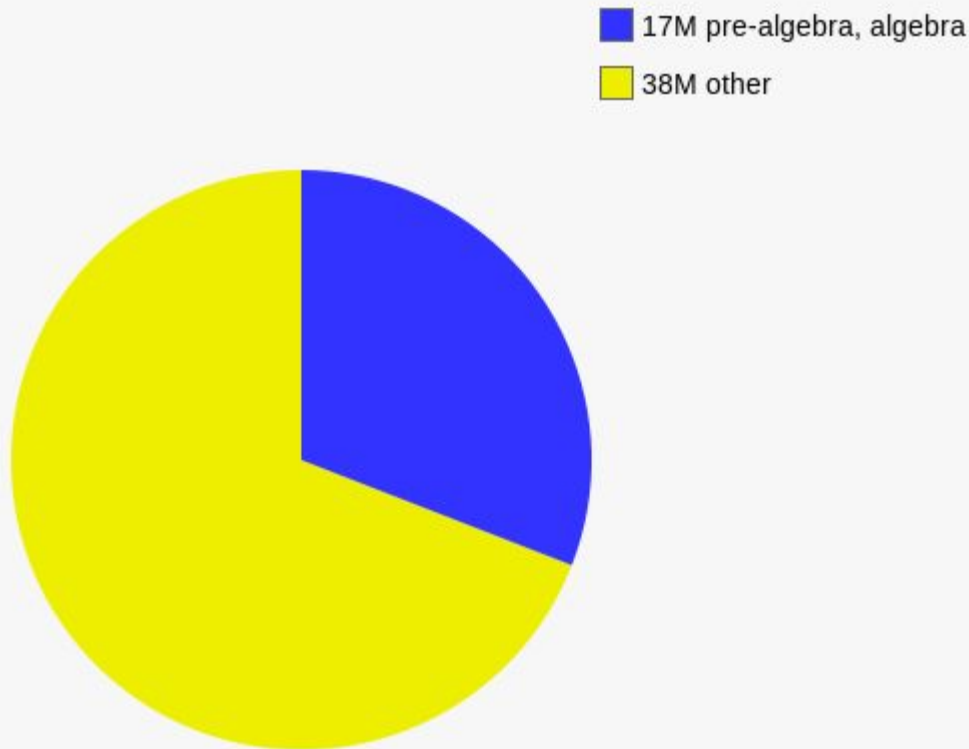
- Highly sought after in virtually all fields

75% of fastest growing jobs require significant math and science preparation

# Market Size

- Nearly 1B students worldwide
- 17M US pre-algebra and algebra students addressable in 2016
- 17M more US students addressable after expanding to physics and chem
- Even more students in higher level classes like calculus, statistics, linear algebra, differential equations, organic chemistry
- \$5 / student / month puts our market at ~1B annually for US pre-algebra and algebra classes alone
- Potential to disrupt 14B US textbook industry

US Math Students



# Business Model

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Freemium. Charge school districts on \$ / student / month basis for premium.




- Limited coursework available to all teachers at no cost.
- Paid, premium question topics and premium subjects
- Upsell parents and districts on individual and class-level statistical insights







# Product walkthrough



# Generate assignments

| Topics                        | Question Type  |
|-------------------------------|--|
| Arithmetic                    | Adding and subtracting polynomials e.g. $(2x + y) - (4 - x - 2y)$       |
| One Variable Linear Equations | Differing polynomial coefficients e.g. $2(3x - 4y) + 3(-x + 3y - 2)$  |
| Fractions                     | Factoring the difference of squares e.g. $4x^2 - 9$                   |
| Two variable manipulation     |  |
| Polynomials                   |  |

| Topic                         | Question Type  | Number   | Assignment Summary   |
|-------------------------------|--|--|--|
| One Variable Linear Equations | Solving equations of the form $Ax = B$                   | 2   | <div><div></div><div></div><div></div><div></div></div> <div>Topic ratio</div> <div><div></div>25%<div></div>25%<div></div>12.5%<div></div>37.5%</div> |
| One Variable Linear Equations | Solving equations in two steps                           | 2   |  |
| One Variable Linear Equations | Simple distribution                                      | 1   |  |
| Fractions                     | Adding and subtracting fractions, different denominators | 3  |  |

Students  
show their  
work in the  
browser



## Assignment 1

Log out

### < Fractions

Solve for z.

| Questions        | History               | Results (select and edit here) <span>?</span> |
|------------------|-----------------------|---|
| 1 $-17w=221$     | $12(z+12)=264$        | $12z+144=264$                                 |
| 2 $-2q-19=-63$   | $12z+144-144=264-144$ | $12z+144-144=264-144$                         |
| 3 $-16q-11=-299$ | $12z+144-144=264-144$ | $12z=264-144$                                 |
| 4 $7(v-23)=7$    | $12z=264-144$         | $12z=120$                                     |
| 5 $12(z+12)=264$ | $12z/12=120/12$       | $(12z)/12=120/12$                             |
| 6 $-4(b-13)=120$ | $(12z)/12=120/12$     | $z=120/12$                                    |
| 7 $(3/4)+(1/8)$  | $z=120/12$            | $z=10$  |
| 8 $(3/14)+(4/7)$ | $z=10$                | $z=10$  |

Submit



< Fractions

|    | Question       | Response   | Answer Key | Error                                | Result |
|----|----------------|------------|------------|--------------------------------------|--------|
| 1. | $-17w=221$     | $w=-13$    | -13        |                                      | ✓      |
| 2. | $-2q-19=-63$   | $q=22$     | 22         |                                      | ✓      |
| 3. | $-16q-11=-299$ | $q=18$     | 18         |                                      | ✓      |
| 4. | $7(v-23)=7$    | $v=24$     | 24         |                                      | ✓      |
| 5. | $12(z+12)=264$ | $z=10$     | 10         |                                      | ✓      |
| 6. | $-4(b-13)=120$ | $b=-30+13$ | -17        | Incomplete: Answer can be simplified | ✗      |
| 7. | $(3/4)+(1/8)$  | $5/8$      | $7/8$      | Step: $(6/8)+(1/8) \rightarrow 5/8$  | ✗      |
| 8. | $(3/14)+(4/7)$ | $11/14$    | $11/14$    |                                      | ✓      |

# Competition

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- Textbooks
- IXL
- WebAssign

None of our competition *understands* math which means they can't give personalized feedback that helps students learn. Many teachers interviewed during customer development complained about limitations of automated grading for math and science classes.

# Customer Acquisition

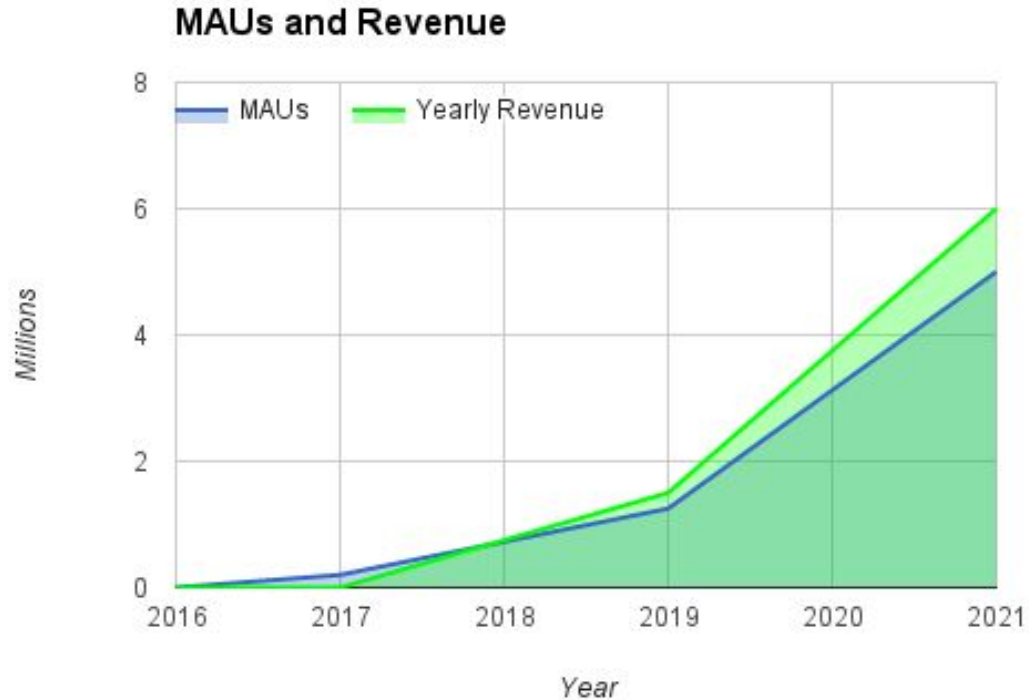
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- Distribution through the popular Edmodo education apps marketplace
- Presenting at regional teachers' conferences
  - Already invited to present at a number of events catering to early edtech adopters including Startup Weekend EDU
- Rewarding teachers with more content for referring other teachers
- Mode for students to practice and learn outside of a class context
- Explore textbook partnerships

# Milestone Roadmap

|               | 2017  | 2019   | 2021   |
|---------------|---|--|--|
| Content       | <ul style="list-style-type: none"> <li>- 100% CC pre-algebra, algebra 1</li> <li>- Alg 2, trig, precalc</li> </ul>                | <ul style="list-style-type: none"> <li>- 100% CC alg 2, trig, precalc</li> <li>- Geometry, calculus, mechanics, e&amp;m, general chem</li> </ul> | <ul style="list-style-type: none"> <li>- 100% CC geometry, calc, mechanics, e&amp;m, general chem</li> <li>- Linear algebra, multivariable calc, differential equations</li> </ul> |
| Localization  | <ul style="list-style-type: none"> <li>- Translated to top 10 langs</li> <li>- Address common core</li> </ul>                     | <ul style="list-style-type: none"> <li>- Individual US state standards</li> </ul>  | <ul style="list-style-type: none"> <li>- Address top 10 countries standards</li> </ul>   |
| Mobile        | <ul style="list-style-type: none"> <li>- Initial iOS and Android tablet releases for teachers and students</li> </ul>             | <ul style="list-style-type: none"> <li>- Smartphone releases</li> </ul>  |  |
| Smart grading | <ul style="list-style-type: none"> <li>- Common pre-algebra and algebra 1 errors recognized and mapped to explanations</li> </ul> | <ul style="list-style-type: none"> <li>- Ability to notice statistical trends in students' problem solving for personalized hints</li> </ul>     | <ul style="list-style-type: none"> <li>- Ability to optimally guide students through learning from mistakes</li> </ul>   |

# Revenue Projections





# Acquisition Landscape

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415 education acquisitions in 2015 worth 18B

Deal volume increased year over year for 3 years from 2013 to 2015

Textbook companies with 10B+ market caps moving into online assessments

- e.g. McGraw Hill, Houghton Mifflin Harcourt, Pearson Publishing

# Fundraising

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- Raising 600K to support 5 person team for 18 months in 2016-17
- Target milestones for end of 2017
  - 200k monthly active students
  - 100% content coverage for pre-algebra, algebra 1 classes
  - Offerings for algebra 2, trigonometry, and precalculus
  - Available in top 10 languages by population
  - Native tablet offerings for teachers and students on iOS and Android
  - Common errors recognized and mapped to appropriate explanations and web content
- Plan to raise A funding in Q3 2017 to convert users to paid subscriptions and meet 2019 milestones

# MathLeap is in beta!

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Interested? Send us an email

*hello@mathleap.org*

