MathLeap

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 Manager

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

MathLeap won the demo competition at PDX Startup Week 2016!

The Problem

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

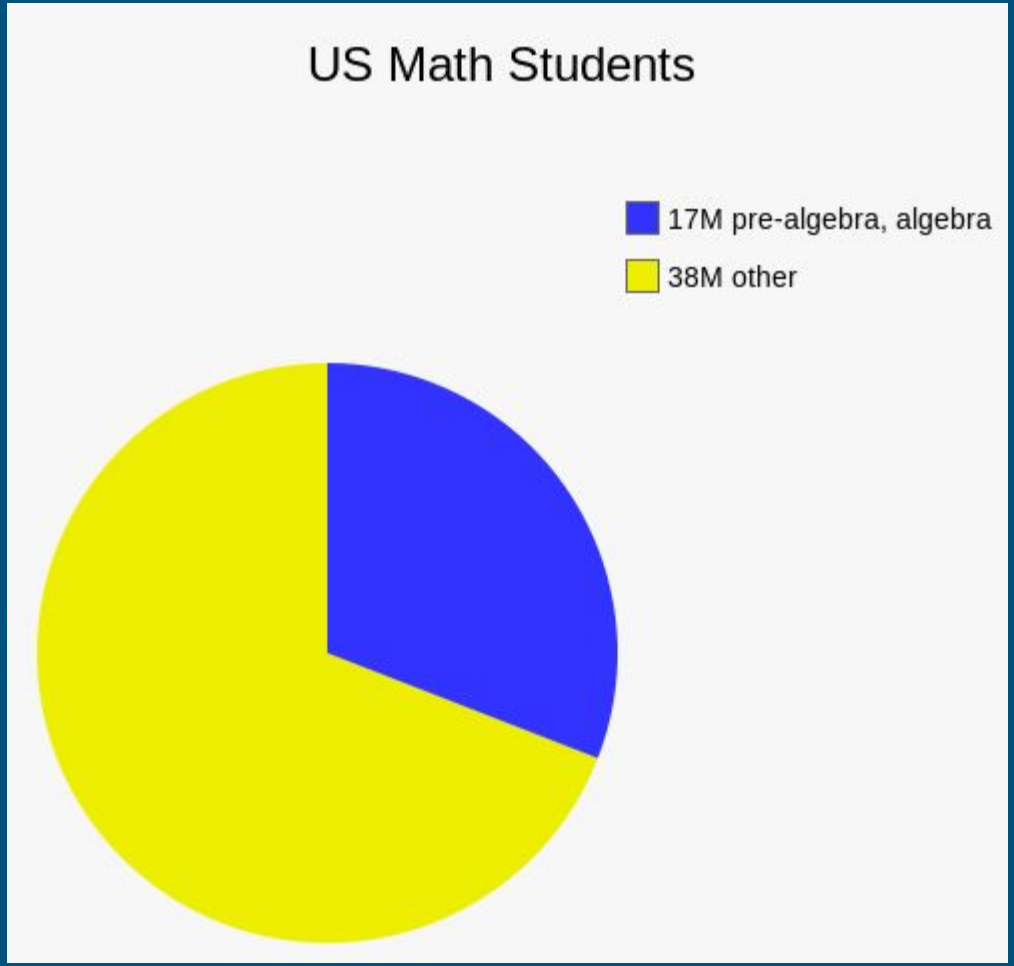
- Self-grading assignments that give personalized, granular feedback
  - Teachers can create assignments easily by choosing question topics
  - Students solve their problems online using interactive math editor
  - Smart math engine grades work line-by-line instantly
- Offerings for pre-algebra and algebra 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
- Launched in beta in Knox County schools
  - 20 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

- 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 countries found that 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 occupations 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



Business Model

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

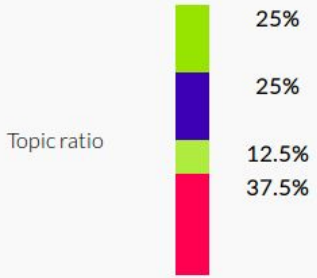
Generate assignments

Topics
Arithmetic
One Variable Linear Equations
Fractions
Two variable manipulation
Polynomials

Question Type	
Adding and subtracting polynomials	e.g. (2x + y) - (4 - x - 2y)
Differing polynomial coefficients	e.g. 2(3x - 4y) + 3(-x + 3y - 2)
Factoring the difference of squares	e.g. 4x^2 - 9

Topic	Question Type	Number
One Variable Linear Equations	Solving equations of the form Ax = B	2
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

Assignment Summary



Students show their work in the browser

Assignment 1

Log out

< Fractions

Solve for z.

Questions		History	Results (select and edit here)
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

Instant smart grading

Fluffy Hare, Assignment 1, 6 / 8

Log out

< 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)→5/8	✗
8.	(3/14)+(4/7)	11/14	11/14		✔

Customer Acquisition

- 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

Competition

- 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.

MathLeap is in beta!

Interested? Send us an email

hello@mathleap.org