Principal Coffee – Friday, April 10th

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Computation in Grades 3-5

Building Understanding of Addition, Subtraction, Multiplication and Division

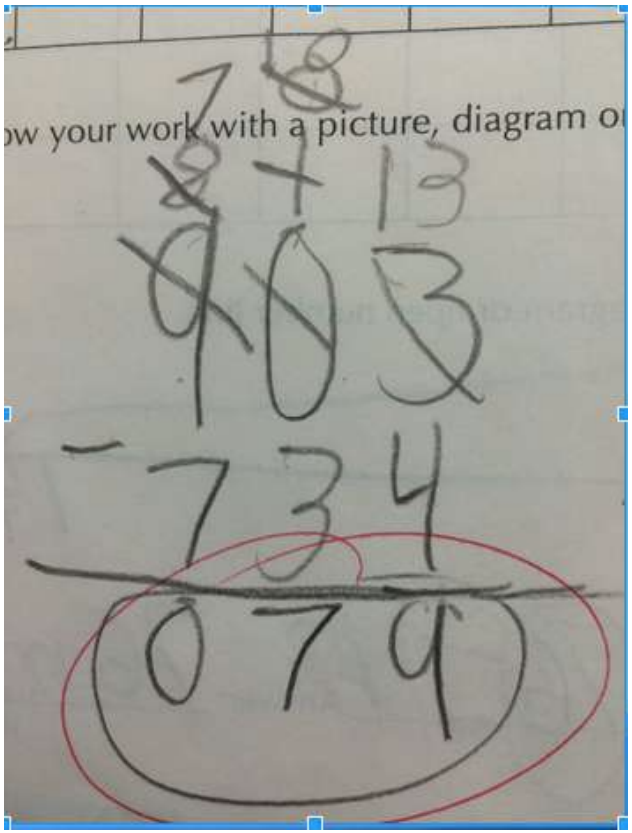
How you can help!!!

13 Rules That Expire

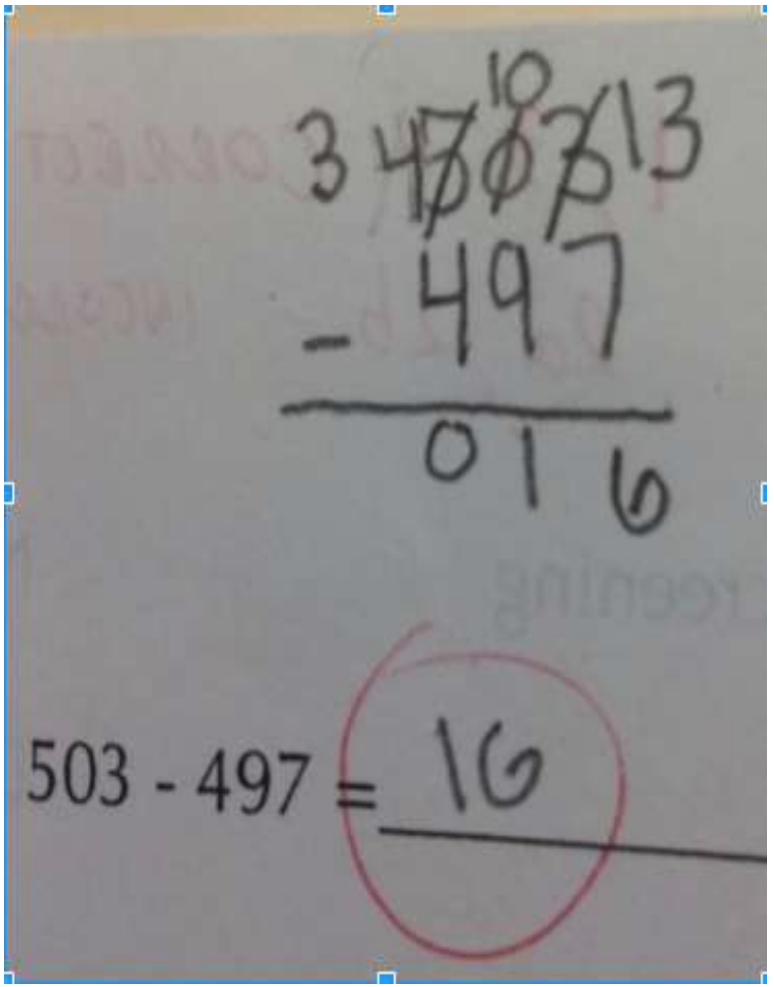
- In your packet, you will find the article, “13 Rules That Expire.” Please take a moment to look it over, and note anything that speaks to our topic of building computational fluency with conceptual understanding.

Subtraction in Grade 4

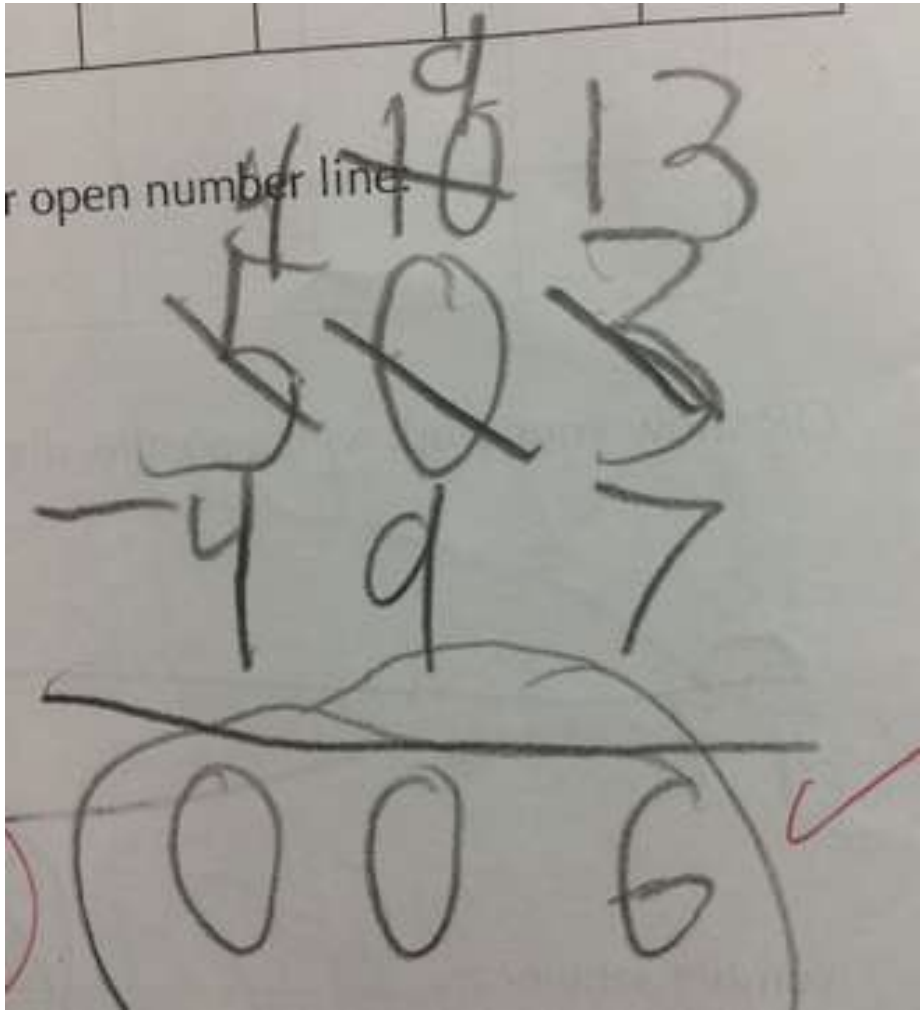
What do you notice about this application of the standard algorithm?



How about here?



Is this an efficient way to solve this problem?



Timeline for Fact Memorization with Whole Numbers

K	First	Second	Third	Fourth	Fifth	Sixth
Add and Subtract within 5	Add and Subtract within 10	Add and Subtract within 20	Multiply Through 9 x 9	Multiply and Divide Through 12X12	none	none

Timeline for Standard Algorithm with Whole Numbers

K	First	Second	Third	Fourth	Fifth	Sixth
none	none	none	none	Multi - Digit Addition and Subtraction	Multi - Digit Multiplication	Mutli - Digit Division

Fact Fluency
vs.
Fact Memorization

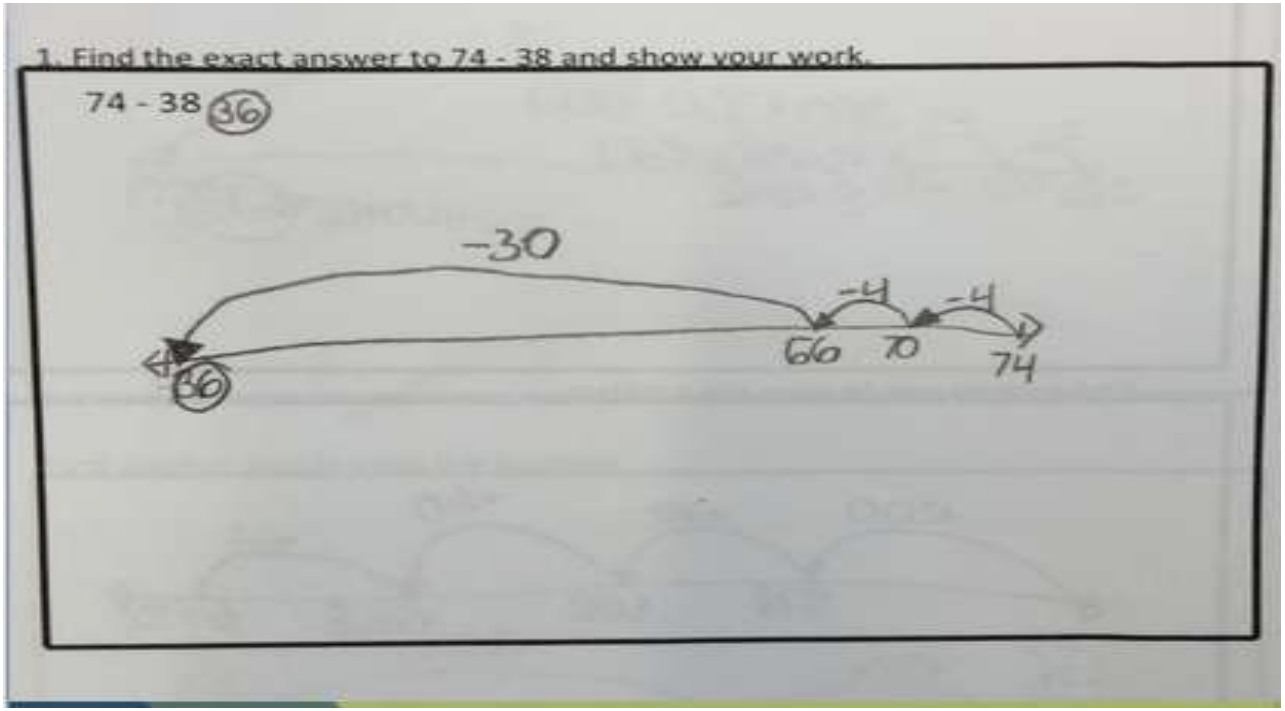
Fluency	Memorization
Visible evidence of place value and number sense	Evidence of understanding not required
Answer and process focus	Answer focus
Solution found at a reasonable pace	Recall facts quickly

Fluency with Operations in Grades 3-5

- Grade 3: Fluently add and subtract within 1000
- Grade 4: Multiply a whole number of up to four digits by a one-digit whole number, and multiply 2 two-digit whole numbers
- Grade 5: Find whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors

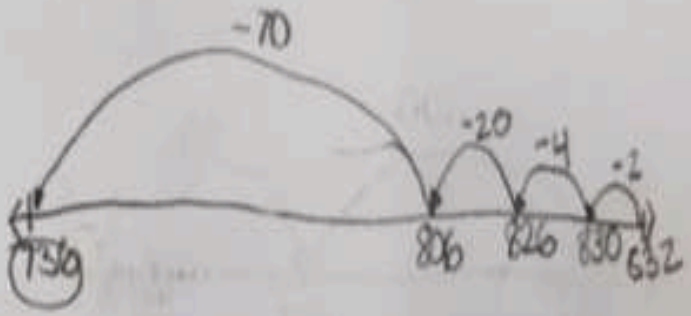
How do third graders add and subtract within 1000?

They can use an Open Number Line:

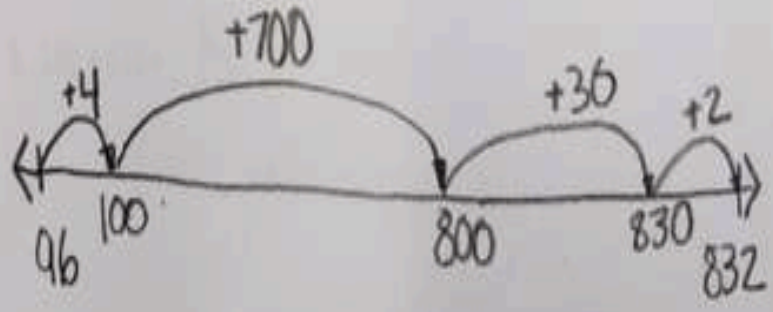


3. Find the answer to 832 – 96 and show your work.

832 – 96



Find another way to solve this problem.



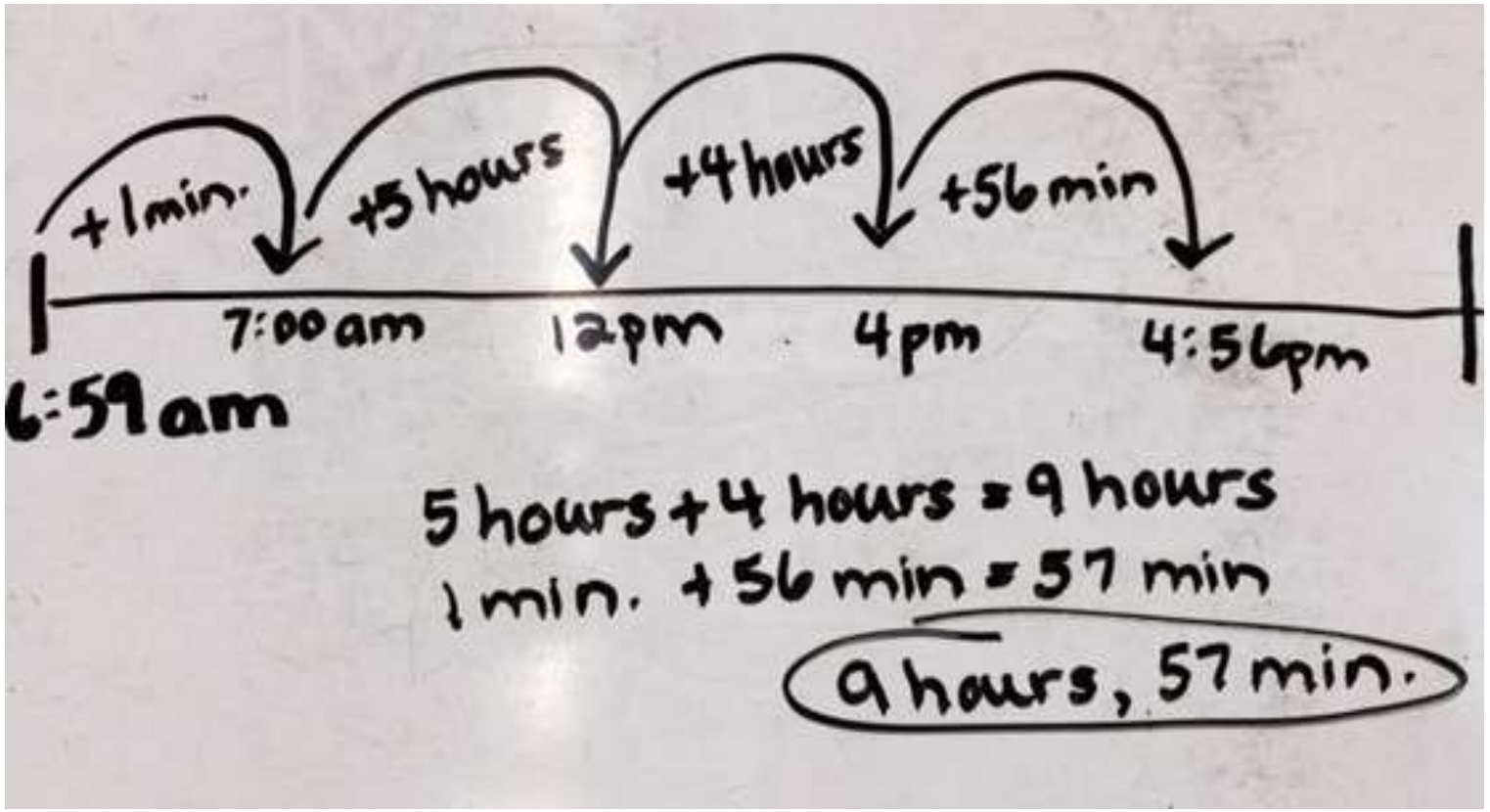
700 + 30 + 4 + 2 = 736

Calculating Elapsed Time

- In 3rd grade, students are expected to calculate elapsed time. A common problem they might encounter:

- On Friday, January 30th, the sun rose in Newton Center at 6:59 AM. It set at 4:56 PM. How much daylight did Newton Center get on January 30th?

Example of Third Grade Elapsed Time Problem Solving



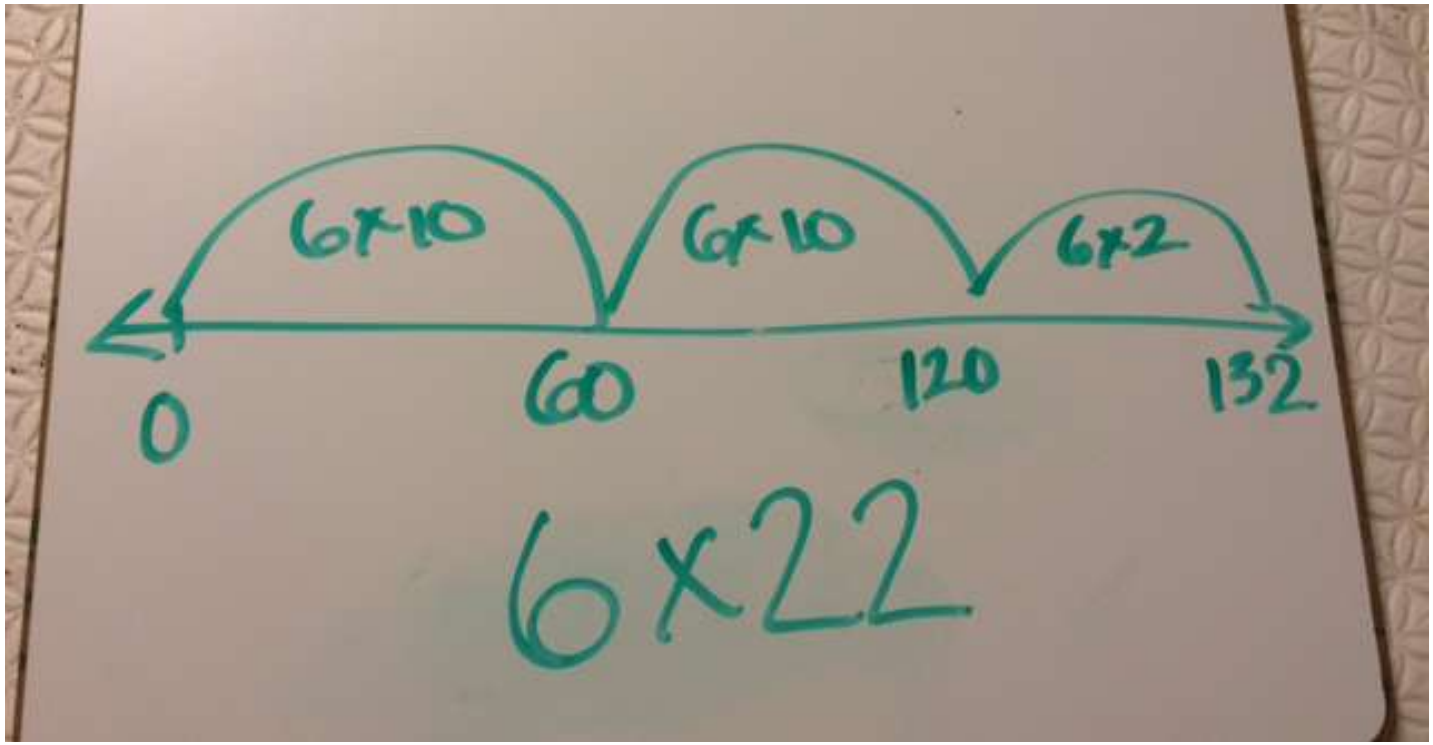
Grade 3
Array Multiplication

3 x 6 = 18

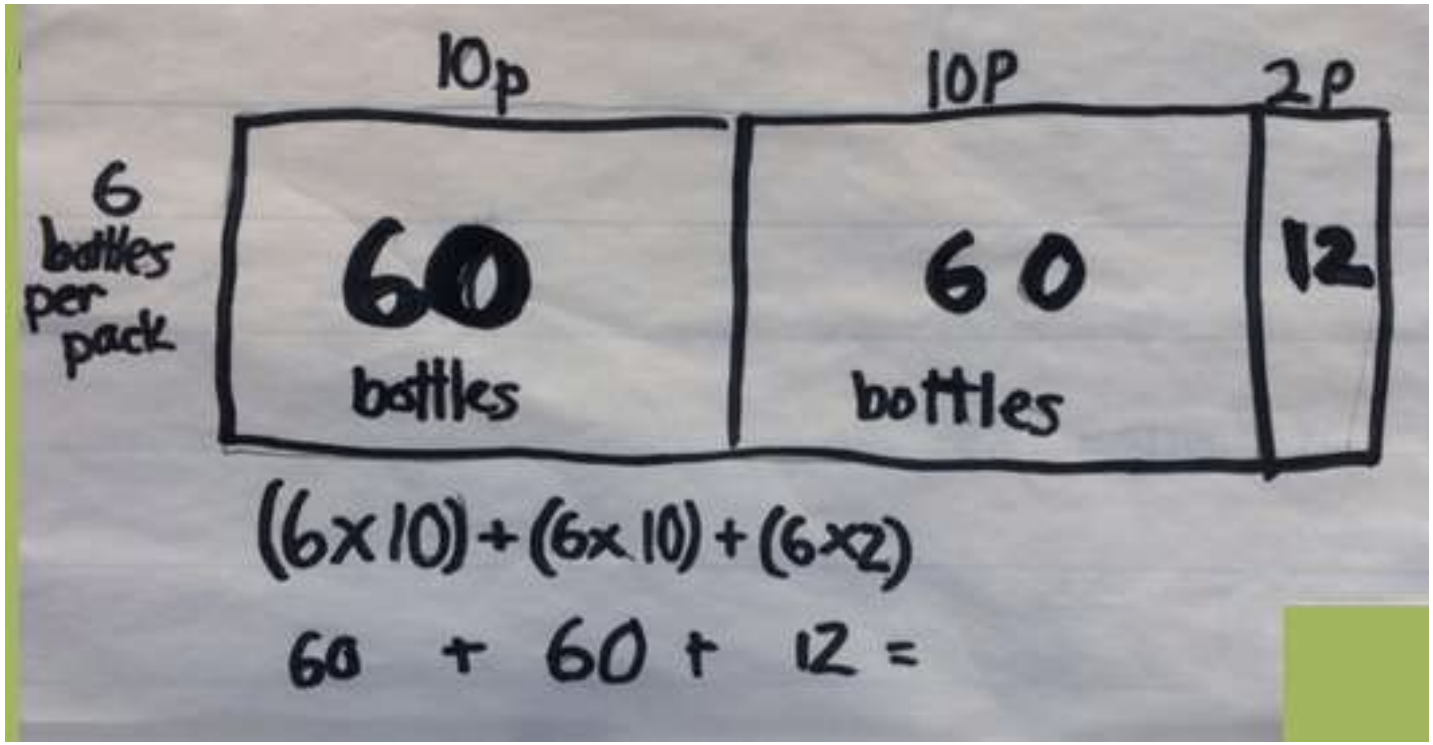
Why are we making multiplication so complicated?

- Dr. Raj Shah explains: https://www.youtube.com/watch?v=X_CK1e0Lmxw

Grade 4
Number Line Multiplication



Grade 4
Open Array Multiplication



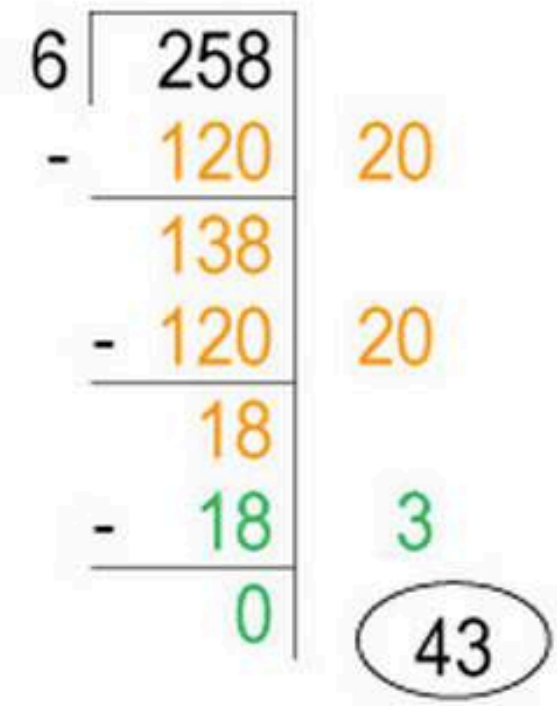
Division in Grade 5 – Why don't we teach the traditional algorithm?

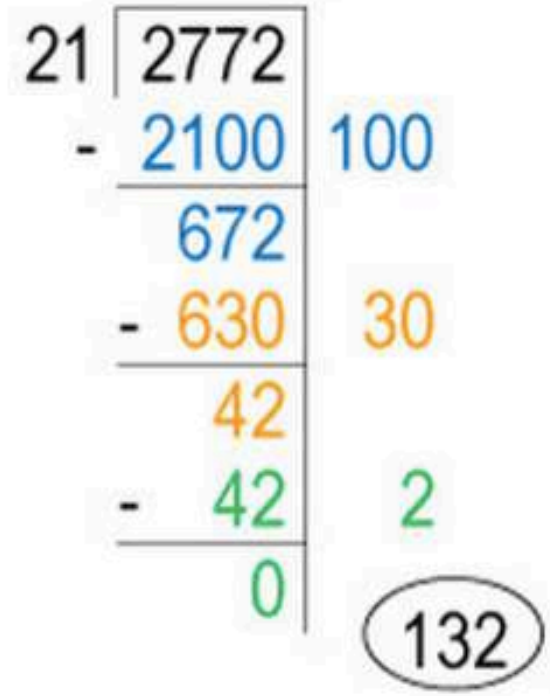
- The traditional algorithm is rigid, and students are blindly following a process.
- We teach for conceptual understanding, where students are finding quotients by making sense of the problem

Advantages of Partial Quotients

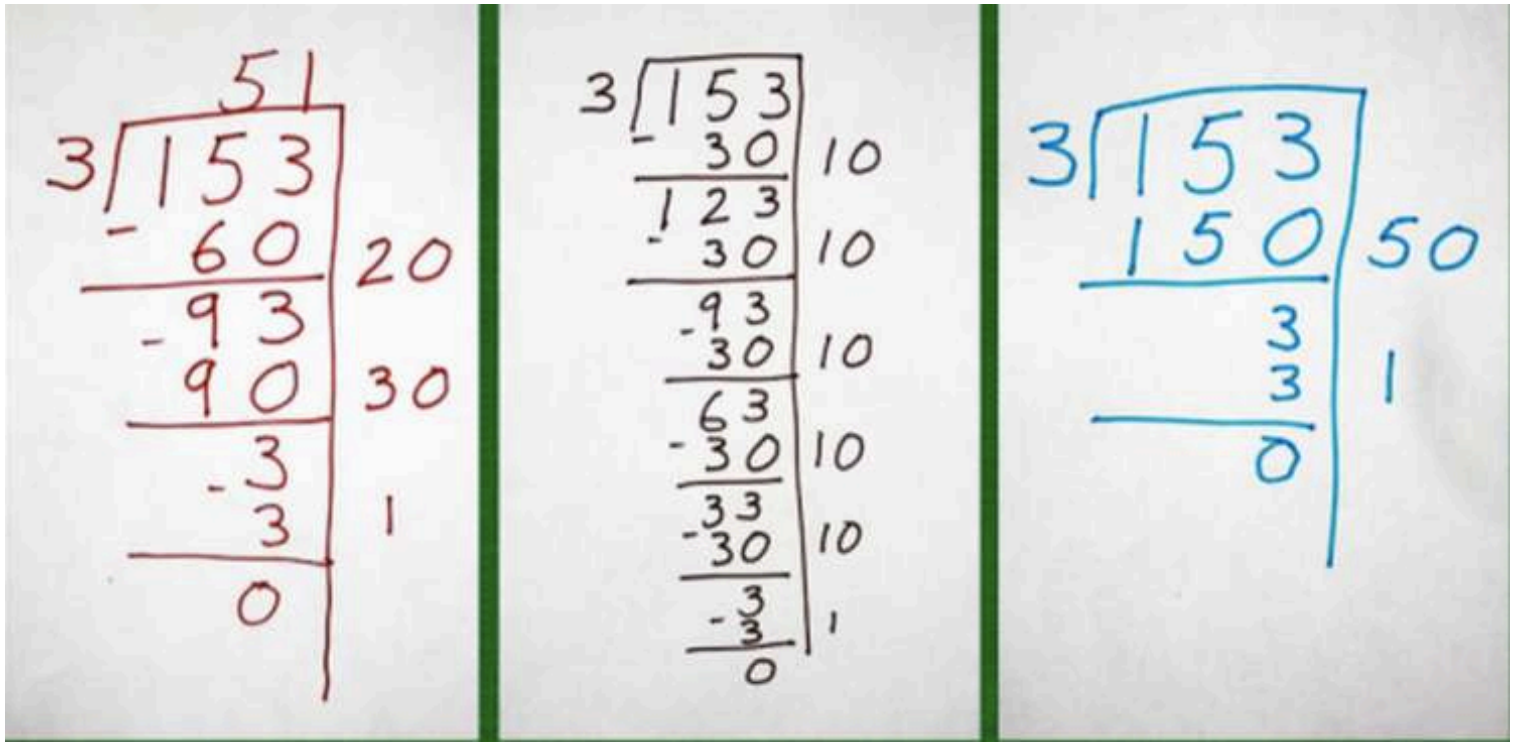
- Not just ONE correct pathway to the answer
- Can use COMFORTABLE numbers
- Students make sense of the problem – "how many groups of 9 are in 2079?

Partial Quotients





Multiple pathways to find a quotient



No Secrets Here!!!

- We will teach your child the standard algorithms, but we want students to know the "why" not just the "how"
- Students will have multiple strategies for finding solutions, and will assess the situation to find the most efficient

Thank You!

Waggle

Principal's Coffee
Friday, April 10, 2015

Productive Struggle

Involves:

- grappling with perplexing problems
- making sense of challenging ideas

Leads to:

- understanding.
- attainable learning goals
- Worthwhile effort results.
- empowerment

Key Elements of Productive Struggle

- Motivation and persistence
- Scaffolded support
- Feedback

Desirable Difficulties

- Challenges that strengthen long term memory

Introducing Waggle!

- Smart Practice
  - Hints
  - Rewarded for effort
  - Mixed practice

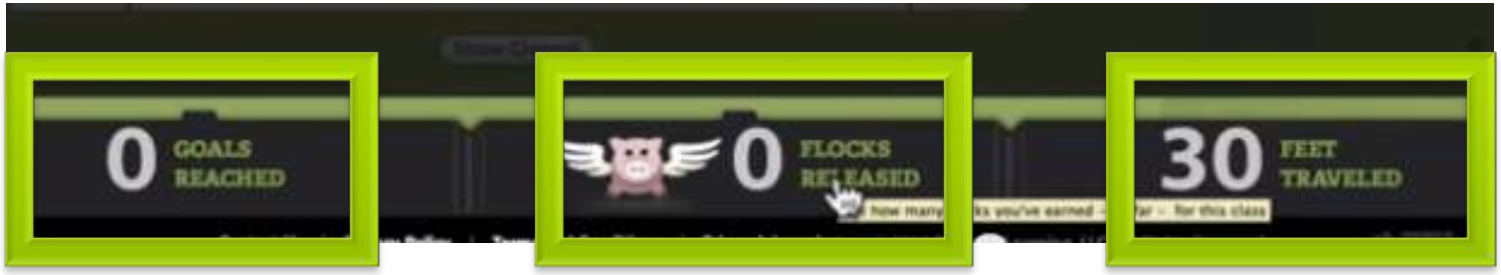
So what is "Mixed Practice"?

Kid Side…

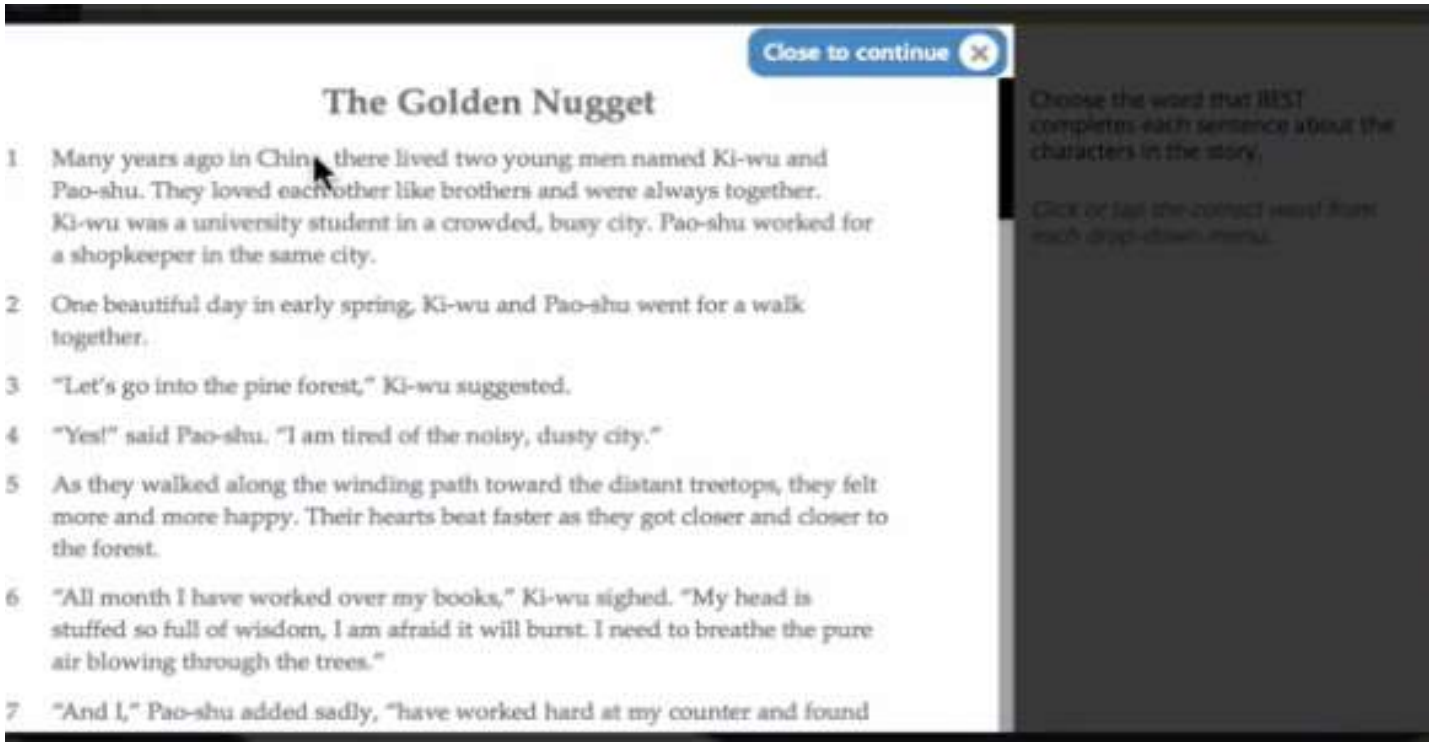
- The Lift Meter
- Skills
- Standards
- Goals

Welcome Page

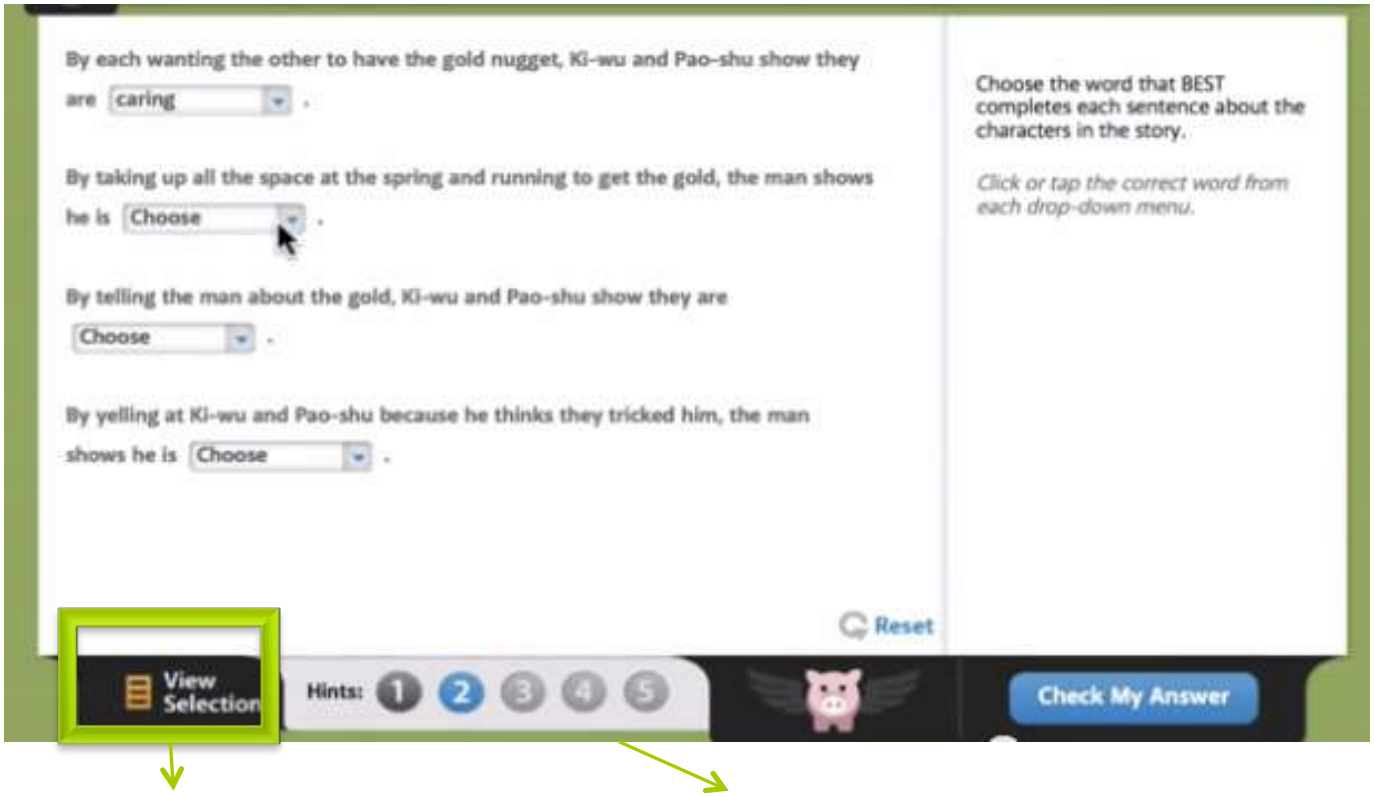
Welcome Page



Distraction-free page

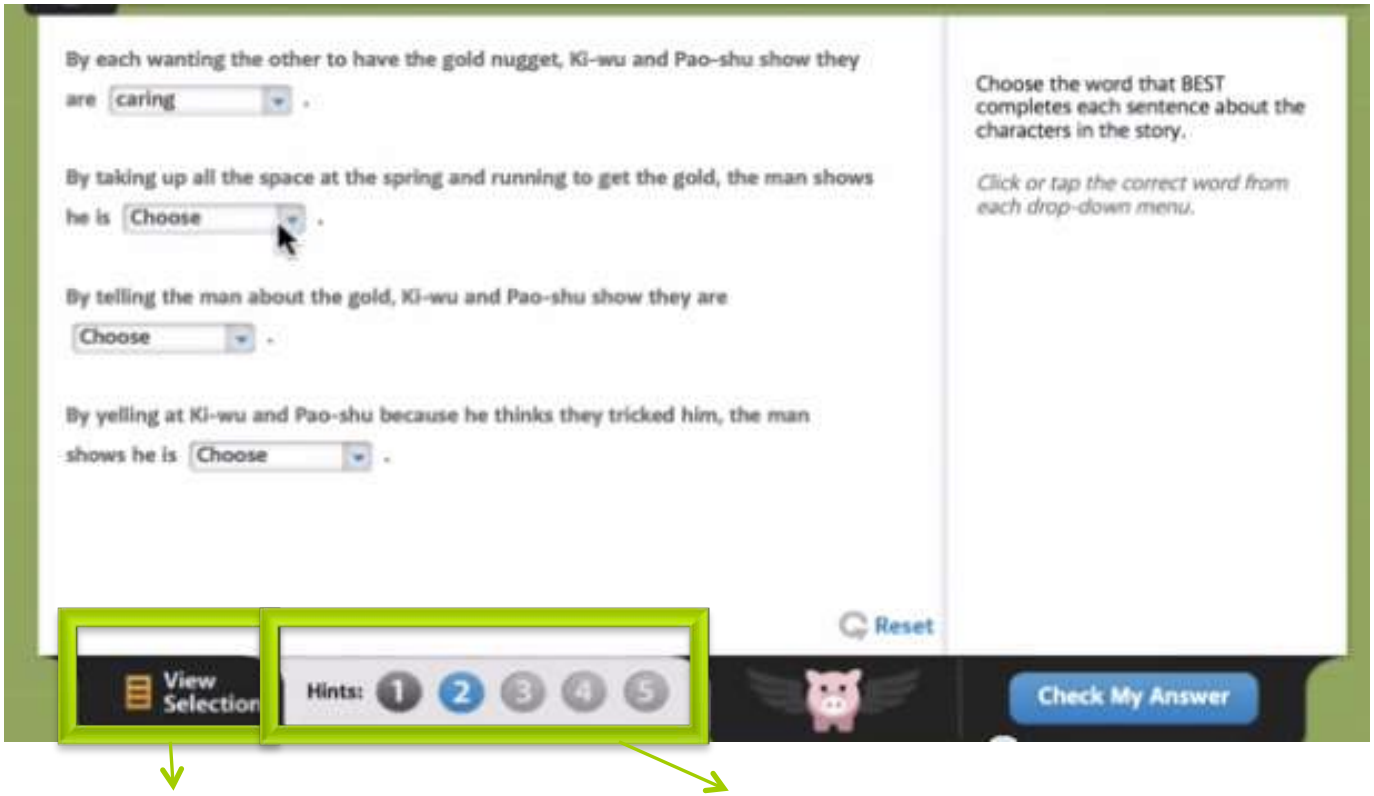


Another sample question



Look back in the text!

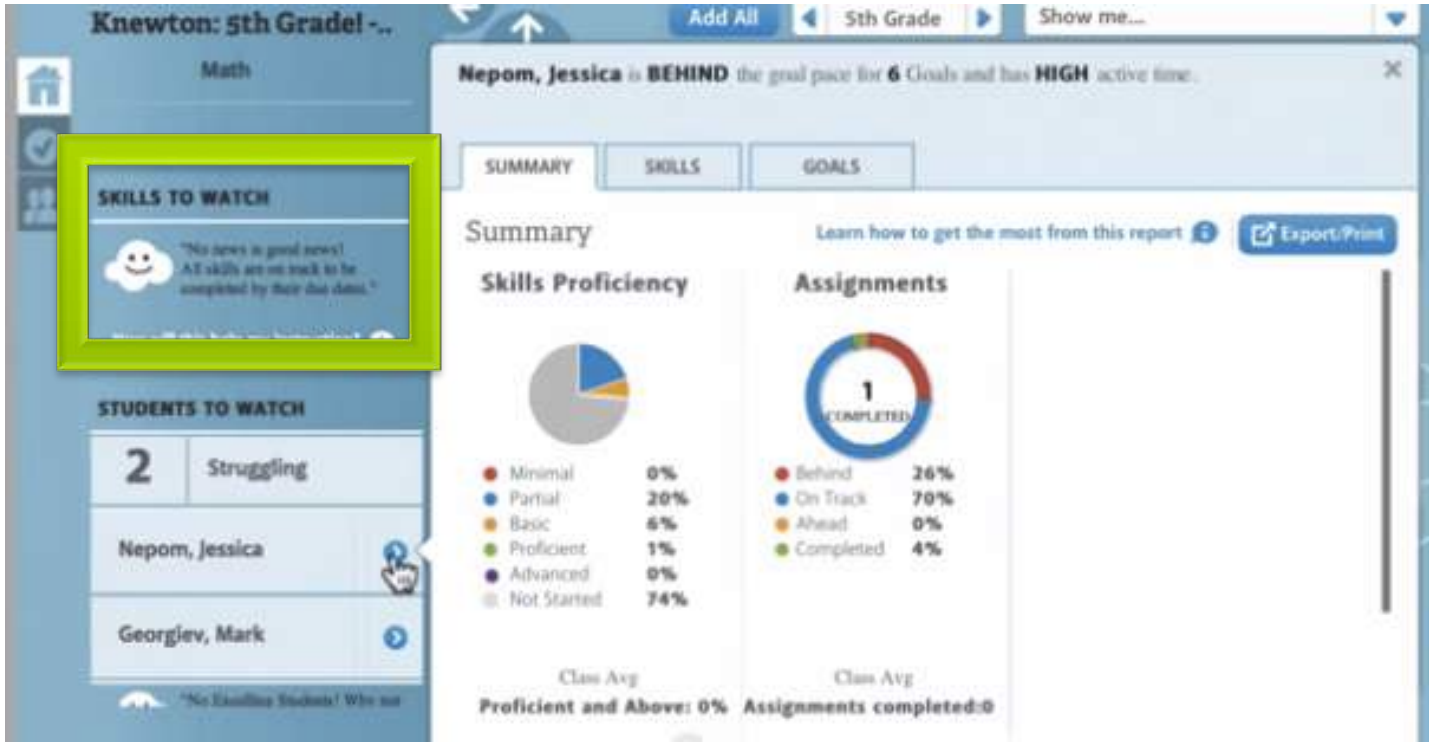
Another sample question



Look back in the text!

Hints are available throughout the process.

Teacher monitoring



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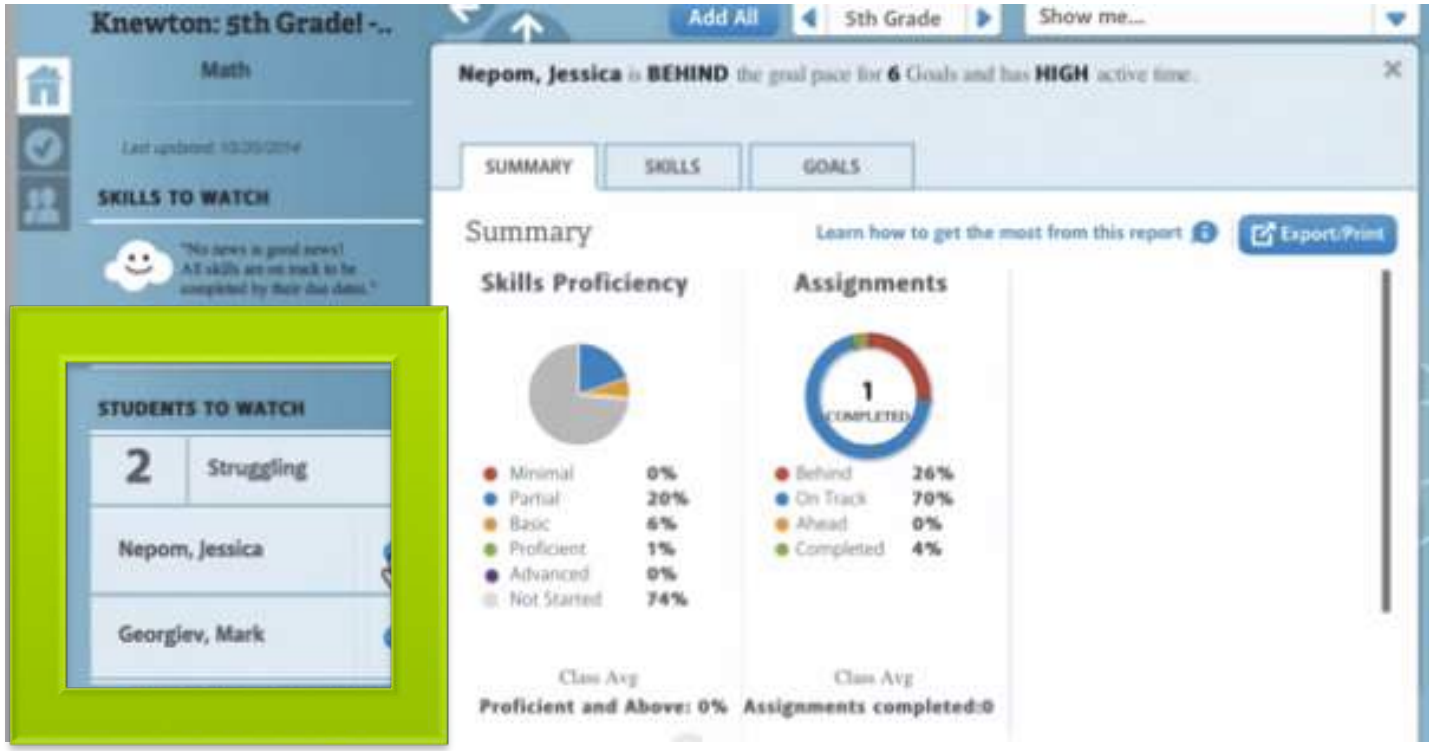
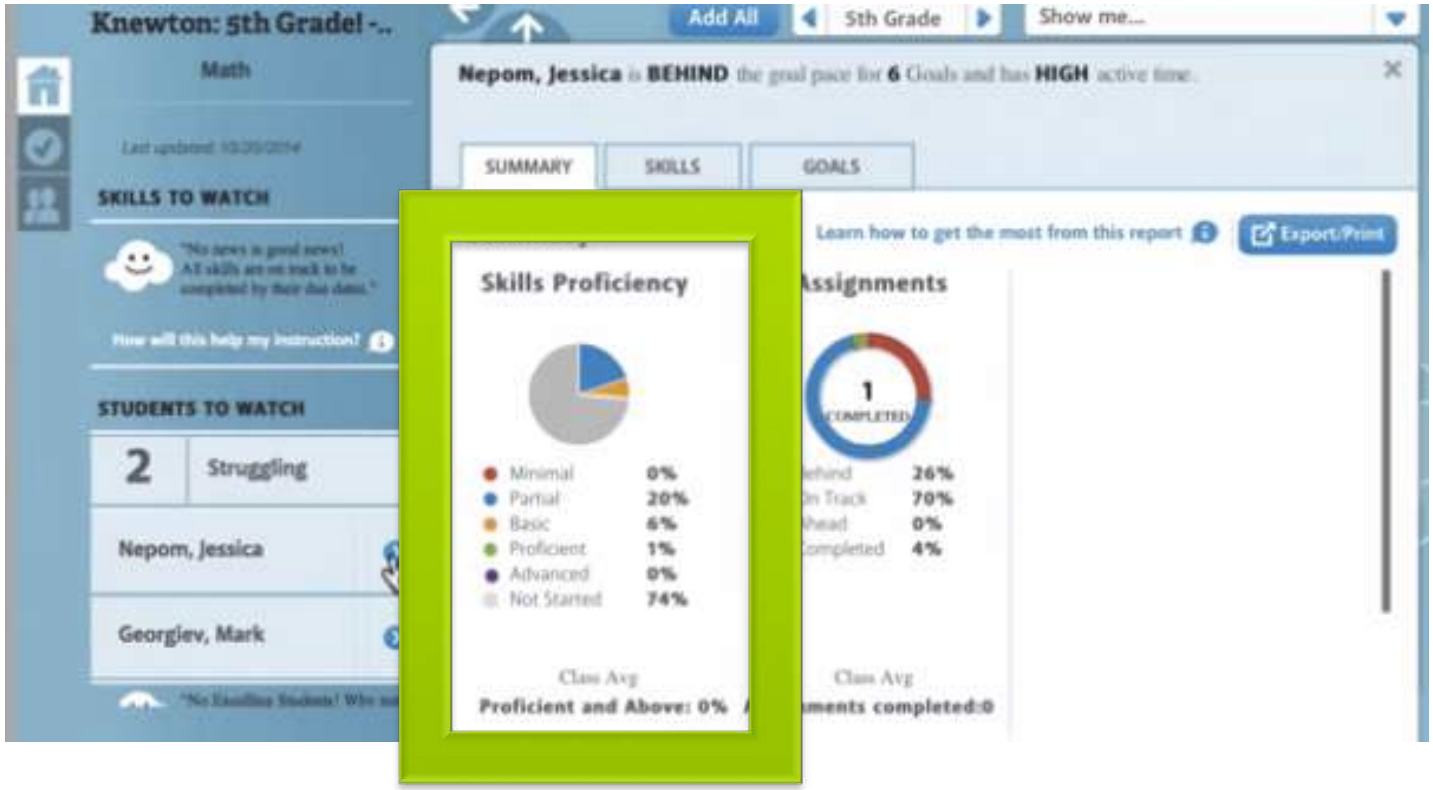
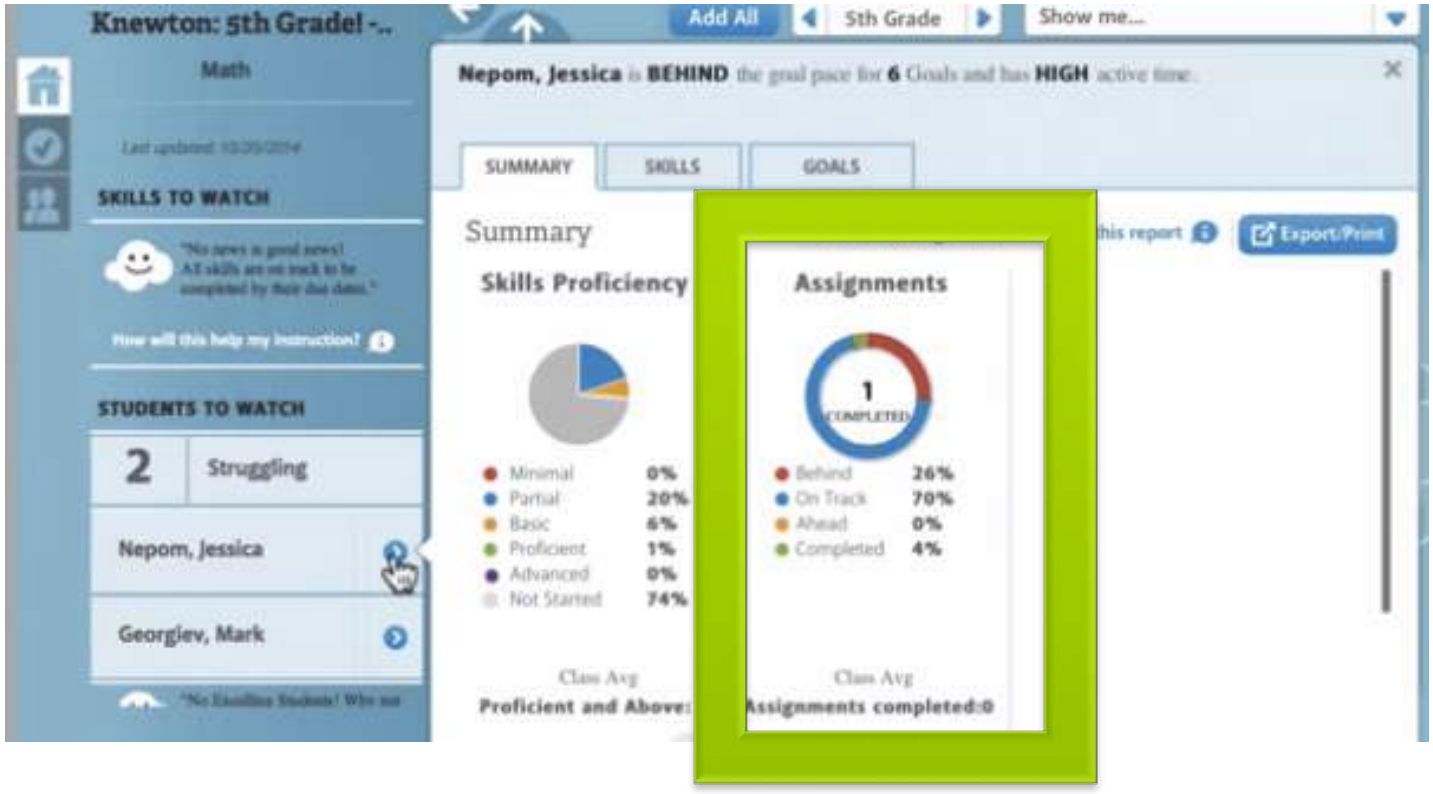


Teacher monitoring



Teacher monitoring



Common Core State Standards

Each standard is broken down into skills

SKILL
Use relative adverbs **L.4.1.a**
Use adjectives **L.4.1.d**
Use modal auxiliaries **L.4.1.c**
Use relative pronouns **L.4.1.a**
Use future progressive tense verbs **L.4.1.b**
Use prepositional phrases

So what is Countryside saying? The bad…

- "Directions are hard to understand."
- "I have trouble logging in at home."
- "The computer is freezing."
- Waggle logs me out."

So what is Countryside saying? The good…

- "Set up is fun but we can still learn."
- "Learning literacy moves the cloud and boosts your confidence."
- "Enjoy that you can learn and it's enjoyable!"
- "We like the flocks!"
- "Can't wait to play the games at home."
- "It helps us learn."

PARCC

- PARCC is designed to assess student learning of the Common Core State Standards at each grade level K-8
- It will most likely replace MCAS for ELA and Math in 2016 for grade 3-8
- 11 of the elementary schools are taking the assessments online

Structure of PARCC

	When?	English Language Arts	Mathematics
Performance-Based Assessment	Mid-March through Early April	Writing effectively Analyzing text	Solving multi-step problems Using abstract reasonsing
End-of-Year Assessment	Early- to Mid-May	Reading Comprehension	Understanding major grade-level math concepts

What does PARCC look like?

- There are online practice tests