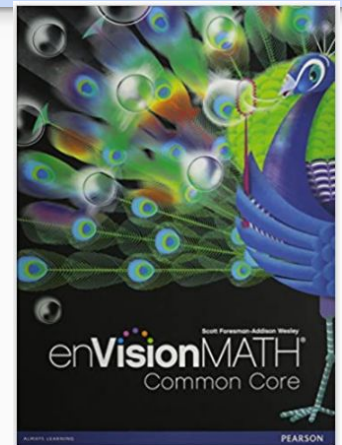# Math at Lane

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Annie Pumphrey, K-5 Mathematics Coordinator & Coach
anne_pumphrey@bedfordps.org

Current Mathematics Programs
Elementary Math in Bedford

- Savvas (Pearson) EnVision

  2012 edition at <mark>Lane</mark> grades 3-5

- Math Learning Center Bridges & Number Corner

  2nd edition (2017) at <mark>Davis</mark> grades K-2

Why do we need a new text?

- 2012 version of EnVision is not aligned to MA Frameworks

- Students transitioning between programs 2nd to 3rd and again 5th to 6th is not ideal

- Align and streamline mathematics language, instructional practices, and approach for K-5 students.

Process for Decision

- Initial plan (Fall/Winter 2020)
- Pandemic struck (March 2020)
- Need for an aligned program exists at Lane, Davis is currently aligned and math program meets needs.
- Conversation with grade level leaders, Lane administration, and district administrators led to the proposal to move to a staggered adoption of Bridges at Lane over the next 3 years.

Why Bridges?

- Strong focus on conceptual understanding

- Aligned Intervention Component - supports all learners

- Built in differentiated "Work Place" games to support a workshop model structure and differentiation

- Supports skills necessary for MCAS success

Emphasis on Conceptual Understanding over Rote Skills

- The curriculum focuses on developing students' deep understandings of mathematical concepts, proficiency with key skills, and ability to solve complex and novel problems.
- Bridges blends direct instruction, structured investigation, and open exploration.
- Supplementing rote skills is easier than supplementing lessons to build conceptual understanding.

Aligned Intervention Component
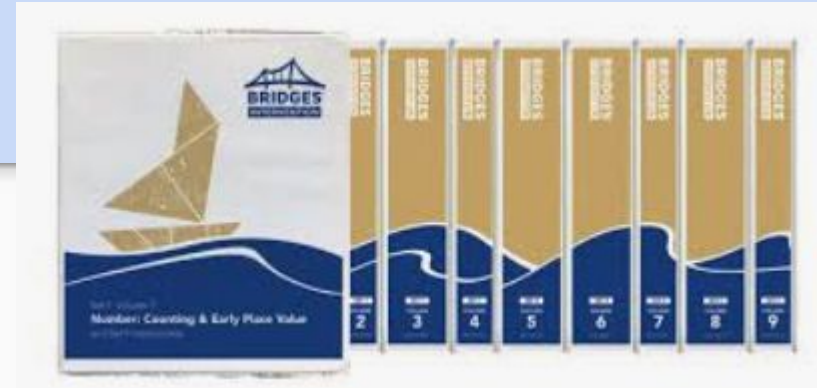
- Robust intervention component focused on major content K-5
  - Lessons and assessments (including progress monitoring)
- Aligned with standards & core instructional program
  - Similar mathematical models, language, structure
- Currently at both schools

Games & Workshop Opportunities Built into Program

- Supports building a love of math

- Differentiated - including key "look for" cues for adults

Assessment & Differentiation

Here are some quick observational assessments you can make as students begin to play this game on their own. Use the results to differentiate as needed.

If you see that…	Differentiate	Example
A student is struggling to add the three numbers.	SUPPORT Have the student draw just three cards rather than five to limit the possible combinations. Postpone finding the difference (the score) until the student is more confident.	
A student is struggling to find the three best cards to choose.	SUPPORT Encourage the student to just choose any three cards and add them, then choose a second set of three cards and add them. The student can compare the two choices, choose the best one, and allow the next player to have a turn.	"Don't spend too long trying to find the best three cards. Let's try a few. What do you get when you add these three numbers? And how about these three? Which is closer to 20? Why do you think these three sum to a number closer to 20?"
A student is struggling to find the difference between his sum and 20.	SUPPORT Use the number rack to model the sum. The difference between the sum and 20 will be the leftover beads.	"Your sum is 17. Can you show me that on the number rack? Is there anything you know about the number rack that would help you be able to find the difference easily?"
A student is quite proficient at finding combinations that come close to 20.	CHALLENGE Pair students working at roughly the same level, and invite them to play one of the game variations.	
A student is commenting on how frequently a player is finding a sum of exactly 20.	CHALLENGE Prompt students to investigate the likelihood of getting a sum of exactly 20 using wild cards. Invite them to talk with you and other students about their thinking.	"If you have one wild card, can you always get a sum of exactly 20, and therefore a score of 0? Will two wild cards ensure a score of 0? Will three wild cards ensure a score of 0?"

English-Language Learners Use the following adaptations to support the ELL students in your classroom.

- Play the game with ELL students yourself. As you play, use gestures, drawings, and written numbers to help them understand the directions. Write equations to help them see the mathematics in the game.
- Pair each ELL student with a supportive partner (an English-speaking student or another ELL student with more command of English) who can offer support and explain the instructions while they play.
- Once ELL students understand how to play the game, let them play in their native language, if possible.
- Explain the terms *target, sum* and *score.* Illustrate the term *target* by drawing a picture of one. Talk about the target of 20 as the goal in the center and the sum as the attempt to hit the goal. The score is how close to the goal the player gets.

- Math Forums provide the opportunity for students to delve deeply into problems & share how they attack a problem.

River Trail Plans

Becky likes to canoe and hike. There is a new trail that spans 30 kilometers along a nearby river for people to enjoy. Becky wants to canoe down the river along the trail. Becky looked up information about the trail so she would know where she was as she paddled down the river. She learned that the trail has the following features:

- city parks at the halfway point and at the end of the trail
- campsites every $\frac{1}{3}$ of the trail
- inner tube rental stations every $\frac{1}{4}$ of the trail
- shuttle bus stops every $\frac{1}{5}$ of the trail
- picnic areas every $\frac{1}{6}$ of the trail
- water and bathroom rest areas every $\frac{1}{12}$ of the trail
- kilometer markers every $\frac{1}{15}$ of the trail

1 Create a poster to show the following landmarks along the trail. Create a symbol for each feature and include it in a key on your poster. Label both the fractional amount of the trail and the kilometers.

- city parks
- campsites
- inner tube rental stations

2 One day while canoeing down the river, Becky noticed a jogger on the trail at one of the water and bathroom rest areas. He called out to her and asked, "Do you know how far I've come from the start of the trail?" Becky knows she has already passed the second picnic area and is at the rest area right after that. Mark your poster to help solve these problems.

a How many kilometers from the beginning of the trail is the jogger?

b What fractional amount of the trail is he from the beginning?

3 During the first week, Becky canoed down $\frac{5}{12}$ of the section of river before she got out. During the second week, she made it $\frac{9}{15}$ of the trail length. How much farther did she go the second week? Write your answer both in kilometers and as a fraction of the trail. Use the information on your poster to help solve this problem.

Reasons for Staggered Implementation

- Minimal disruption/transition for students

- Support for teachers and students will be maximized by one grade level shifting to the new product each year.
  - Professional development from publisher is included each year.

Who Else Uses Bridges?

- Local districts similar to Bedford:
  - Buckingham, Browne, and Nichols K-5
  - Sudbury K-5
  - Acton (Blanchard School, 2-5)

Adjustments for COVID & Remote Learning

- Created guides for each unit to address Spring closure and shift to hybrid or remote models.
- Increased online online & digital platforms
  - Interactive manipulatives
  - Google Slides for Intervention Lessons
  - Digital Work Place Games for students
  - Increased Interactive Resources
  - Increased Digital Access for Building Staff for free

Cost Breakdown

- Teaching materials: $1,500 per classroom (print & digital access)

- Workbooks: $5.40 per student

- Quote for 3rd Grade 2021-22 implementation: $15,801.75

Questions? What did I forget?

Contact information:

Annie Pumphrey
anne_pumphrey@bedfordps.org
Davis: 781-275-6804 x 4924
Lane: (781) 275-7606 x4892