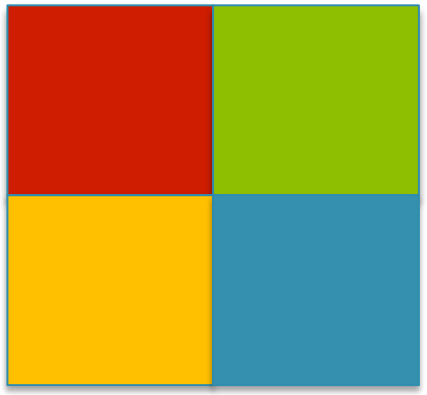
Sticky Note Mathematics

Dr. Pari Ford
University of Nebraska at Kearney

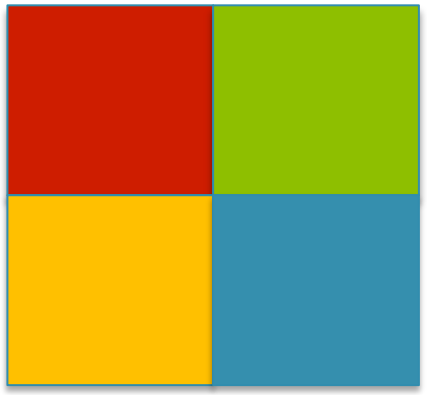
MAA MathFest 2011, Lexington

Central Nebraska MTC



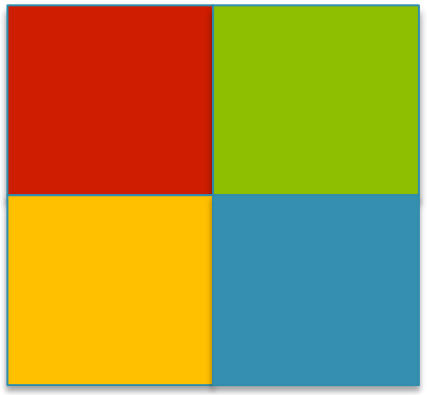
- Angela Blank
  - Middle school math teacher, Cedar Hollow School, GINW, Grand Island
- Dr. Pari Ford
  - Mathematics professor, University of Nebraska at Kearney
- Kathleen Klein
  - Middle school math teacher, Horizon Middle School, KPS, Kearney
- Jeanette Parrella
  - K-9 Mathematics coach, GIPS, Grand Island
- Dr. Jane Strawhecker
  - Teacher Education professor, University of Nebraska at Kearney

Mission Statement



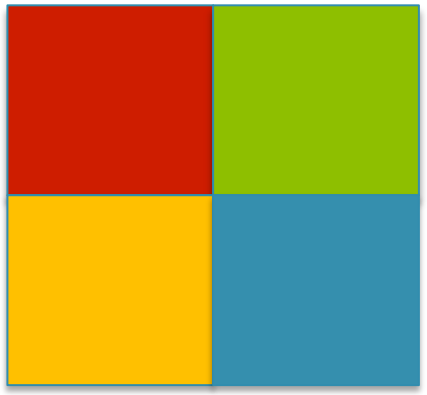
The Central Nebraska Math Teachers Circle will establish a community of problem solvers, bringing together middle school math educators and mathematicians to enhance problem solving skills and to reenergize a passion for mathematics.

CNMTC Stats



- meet 4-5 times per academic year
- Monday nights, 6-8 p.m.
- 10-12 people attend
- dinner is provided (UNK money)
- send invites by email to previous attendees and area principals

Goals for Growth



- seek other sources for funding: ask businesses to sponsor the dinners
- recruit other presenters
- co-presentations, mentoring
- postcards (Vistaprint)

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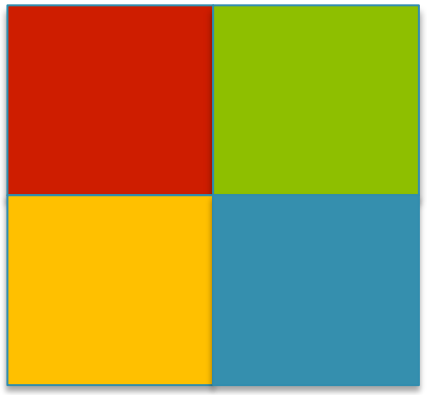


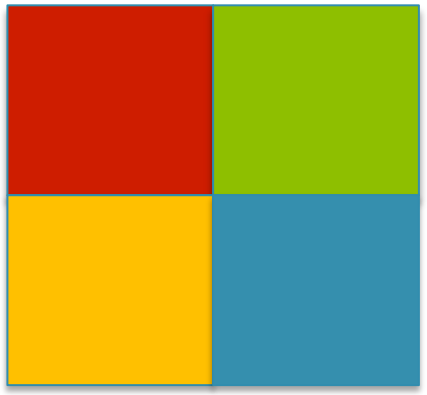
There are many uses for sticky notes in a classroom.

- Exit surveys
- Histograms
- Math Jeopardy
- Algebra Tiles

My favorite size for a sticky note is the

3 in. by 3 in.

Sticky Note Mathematics

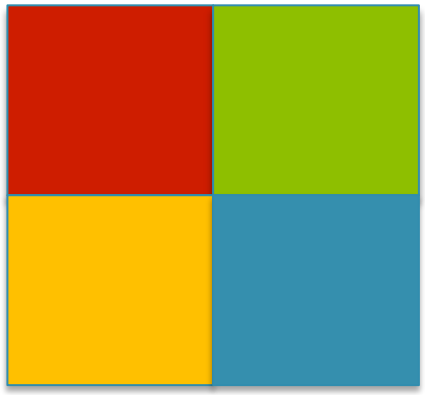


Take a stack of 3 in. by 3 in. sticky notes.

Create a large square using any number of sticky notes you choose.

- Your large square should be created with no gaps or overlaps of sticky notes.
- Repeat for different numbers of sticky notes.
- Create a table recording the number of sticky notes and the associated edge length of the large square.

Number of Sticky Notes	Edge Length of the Large Square
1	1
4	2
9	3
16	4

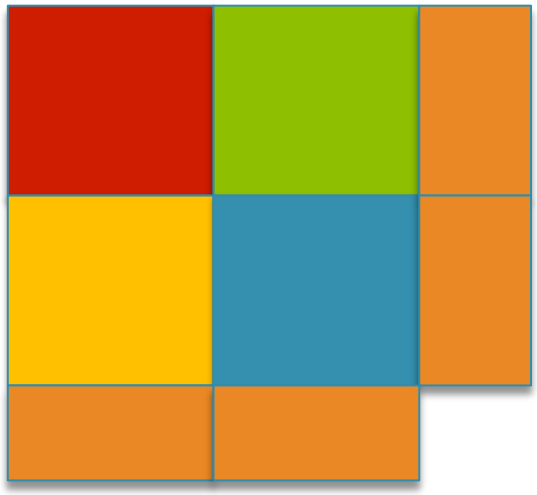


What is the connection between the dimension of the number of sticky notes and the edge length of the large square?

- The edge length of the large square multiplied by itself is the number of sticky notes.
- The square root of the number of sticky notes is the edge length of the large square.
- Both of these relationships are correct.

Create a large square using 5 sticky notes

Your large square should be created with no gaps or overlaps of sticky notes.



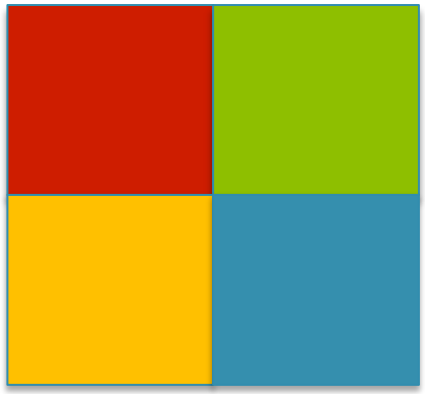
This is almost a square.

$$\sqrt{5} \approx 2.25$$

Using a similar strategy we can estimate the square root of whole numbers (and some nice fractions).

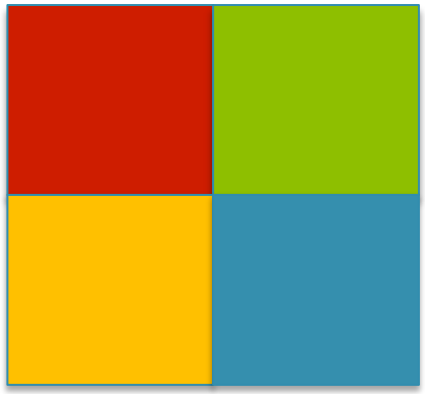
Estimating the square root of a number that is one less than a perfect square requires an alternate strategy.

- To estimate sqrt(15), start with a 4 by 4 square and remove equal parts from the top and right side).



One question that came up was, “can we use this strategy to estimate the square root of a quadratic polynomial (algebra tiles)?”

- It is not as clear how to split the sticky notes when the quadratic polynomial is not a perfect square.
- We can use the ideas from the activity to factor quadratic and linear polynomials.



- Talking to a colleague last night about sqrt(5), we arranged the 5 sticky notes in a different way to create a large square. The edge length is “exactly” sqrt(5).

Central Nebraska Math Teachers' Circle

Thank You!

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