Walking, Talking, Seeing, and Doing Math: A University Math Trail

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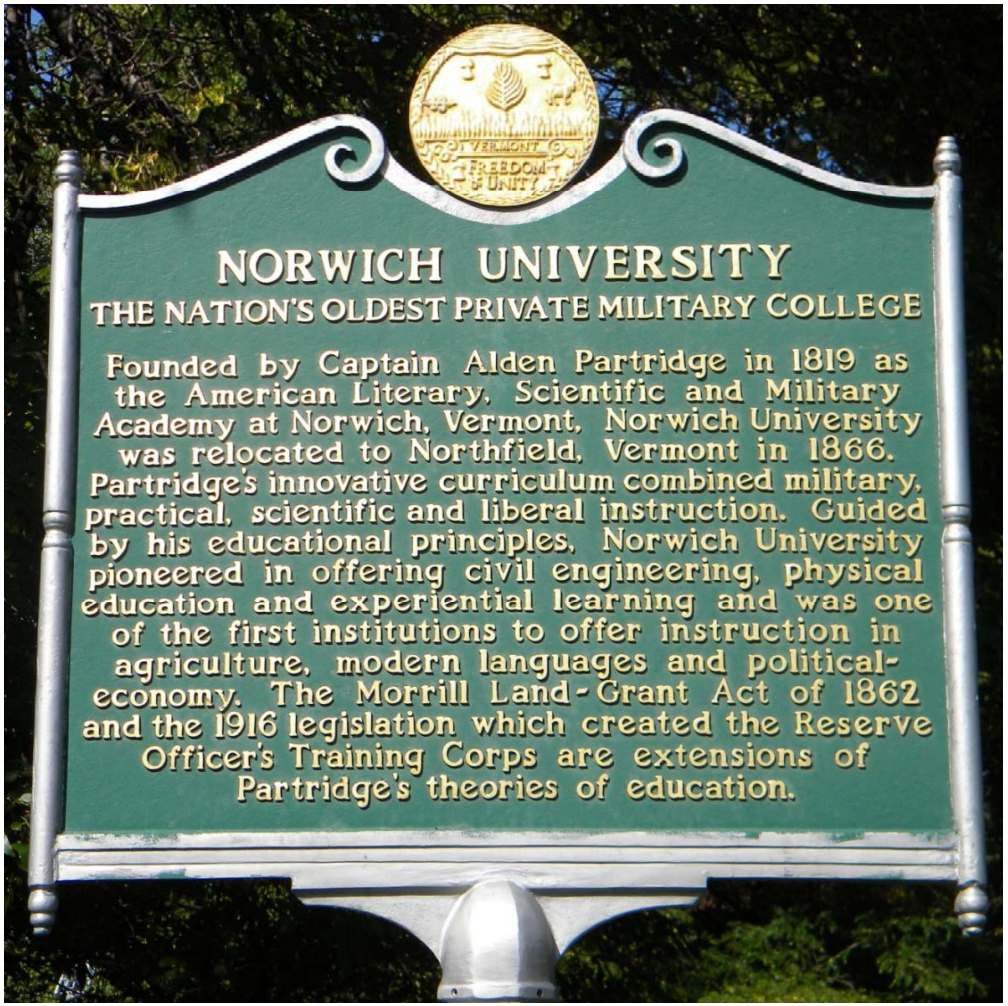


Math Trails

- A math trail is a way to promote the active learning of mathematics outside of the confines of the classroom.
- They are relevant to students of all ages, and can emphasize various mathematical content areas.
- Math trails have been developed around the world, and typically consist of a set of designated sites to visit and answer questions.
- Math trails not only emphasize content, but also mathematical habits of mind or mathematical practices such as those outlined in the Common Core State Standards for Mathematics.

A Math Trail for Teachers

Step 1: Students read Richardson's article "Designing Math Trails for the Elementary School" (TCM, 2004), and participate in the Norwich Math Trail.

Step 2: Students label tasks from the Norwich Math Trail with the appropriate Common Core State Standards in Mathematics.

Step 3: Students take and upload their own Norwich Math Trail photographs.

Step 4: Students post questions about each others' photos, including appropriate corresponding CCSSM.

Task III

Find the display with plastic cups containing snack items like trail mix, gummi worms, and yogurt pretzels.
You wish to create your own special snack mix by purchasing at least three (3) snack items, but you only have $10 to spend. Assuming no tax on food items, describe two different ways that you can spend as close to $10 as possible without going over. For each, list the items you wish to include, their cost, and your total cost for the special snack mix.

Find the mailbox with the highest number assigned to it.
That number is:

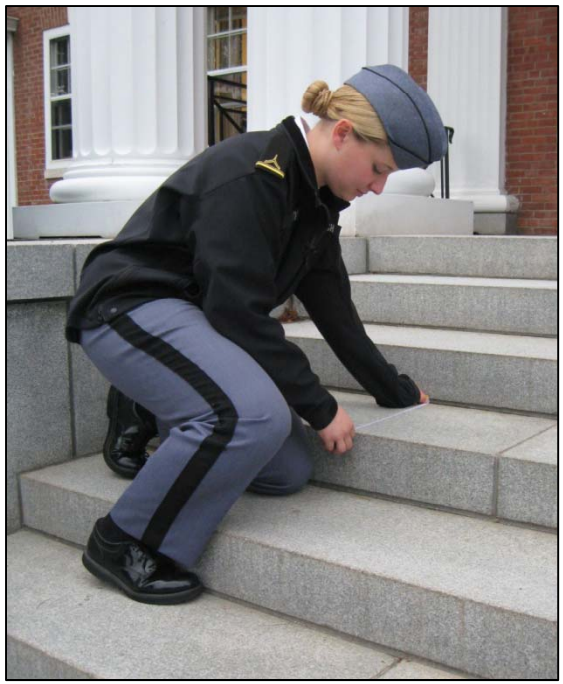
Use this number to answer the next three questions.
i. List all of the factor pairs for this number.
ii. Create a factor tree and write the prime factorization of this number, using exponents where necessary.
iii. Is this number prime or composite?

Task IV: The Mailboxes

Task VII

Go to the stairs in front of the central/main entrance of Jackman Hall.

a. What is the height of each stair step?
b. In order to be ADA compliant, the maximum allowed slope of a wheelchair ramp in existing buildings is between 1:8 and 1:10. What does this mean?



c. Would a ramp placed directly over Jackman Hall's front stairs be ADA compliant? How do you know?

Task IX

Find the dedication placard and building cornerstone.

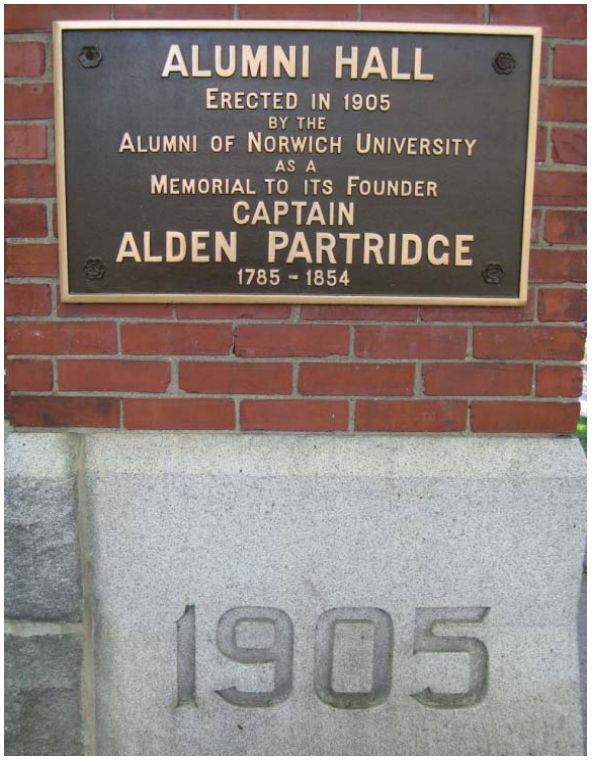
a. How old is Alumni Hall?

b. How old would Alden Partridge be if he were still alive today?

c. Complete the chart to classify the letters ALUMNI HALL by their symmetry.

How would your chart be different if lower case letters were used?

	Rotation	Vertical Line	Horizontal Line
A			
L			
U			
M			
N			
I			
H			



Task X

A semi-circle is exactly half of one circle. Are the windows on the Sullivan Museum true semi-circles? How do you know?

Task XII

a. Are the window panes squares? Determine your answer WITHOUT using a tape measure or ruler. Explain your strategy.

b. Given a 3-square by 3-square grid, how many total squares (of all sizes) are there?

Ignoring the Norwich seal, examine the text on the base of the Alden Partridge Statue.

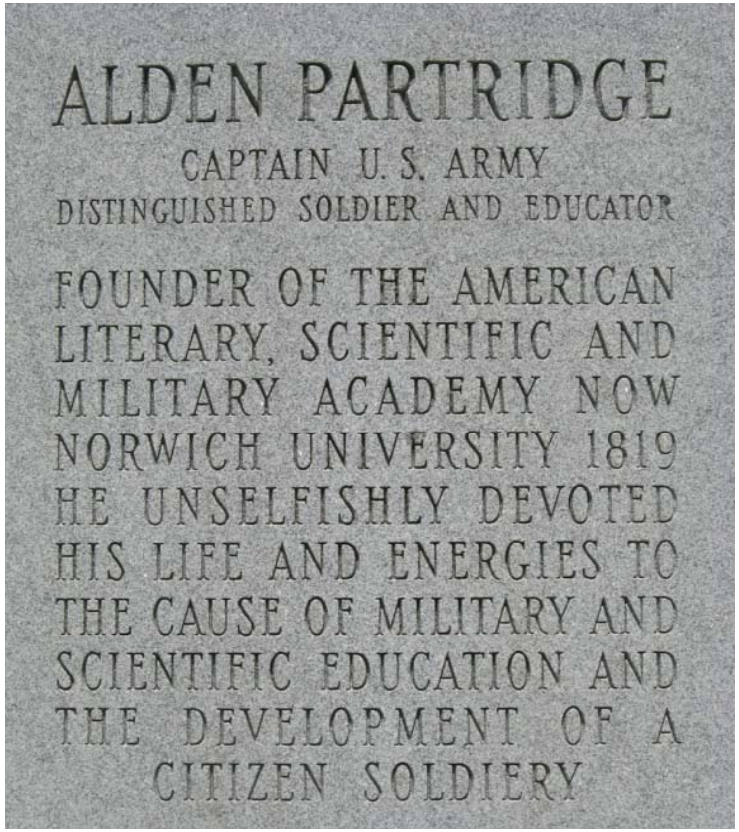
a. How many total letters are there (include repeats)?

b. How many of these letters are vowels (a,e,i,o,u)?

c. If all of the letters in this text were placed in a hat (repeats allowed), what is the probability of drawing a vowel? List your answer as a fraction, and as a decimal.

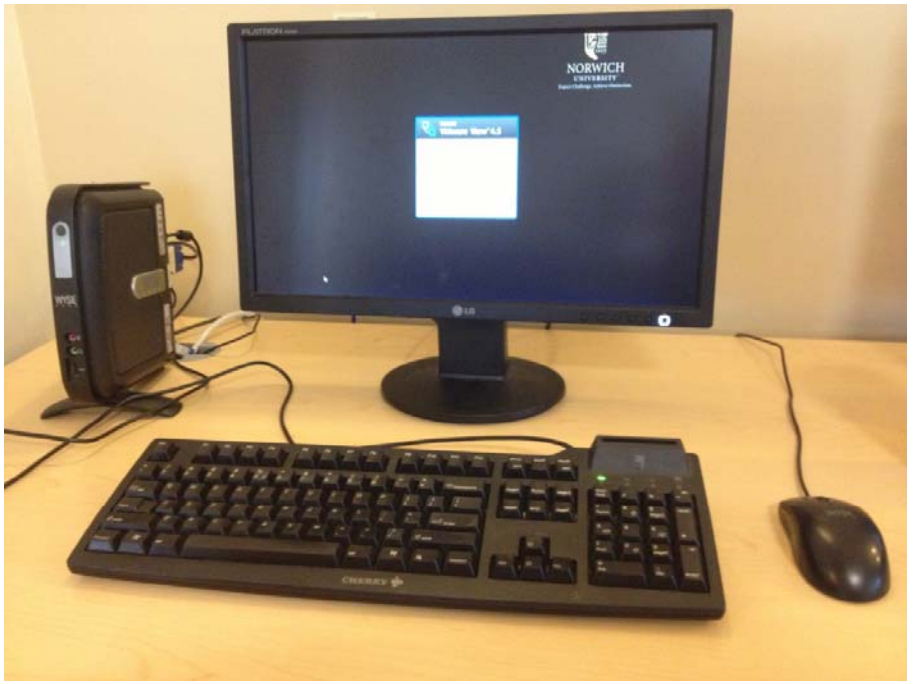
d. In addition to the letters, there are four digits on the base of the statue (1819). Add 4 to your answer in part a., this total is how many characters are etched into the base of the statue. What percent of the characters etched into the base of the Alden Partridge Statue are digits?

Task XV



Student-generated Photo & Questions

1. On the right side of the key board, the number keys, How many of the little squares can we fit in that area? How many of the rectangles can we fit in that area?
3rd grade: Measurement and Data
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
5.Recognize area as an attribute of plane figures and understand concepts of area measurement.



2. If the desk is 4 feet wide and the top of the desk is 3 feet from the outlet, how long should the cord of the keyboard be in order to allow for the location of the keyboard to be exactly in the middle of the desk?

1st Grade: Operations and Algebraic Thinking
1. "Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions"

Student-generated Photo & Question

If each rung is 4 inches tall, with a one inch gap in between each, how tall is the tower? There are 80 rungs starting directly at the ground (no gap between the first rung and ground). write your answer in feet.

answer: 33 1/4 ft

4.MD

1. Know relative sizes of measurement units within one system of units including km, m, cm; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement , express measurement equivalents in a two-column table.

A Math Trail for Teachers, Parents, & Students

In other words,
"So What?"

- Studying/reading about other math trails inspired many of my own questions
- It's healthy for everyone– students, teachers, and parents– to look at the world through a mathematical lens
- A math trail at your school can get parents involved with mathematics in a non-threatening atmosphere
- Exploring the CCSSM by evaluating or creating a Math Trail can be a productive, non textbook driven professional development activity

Select Math Trail References

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