

Outline - of the actual circle

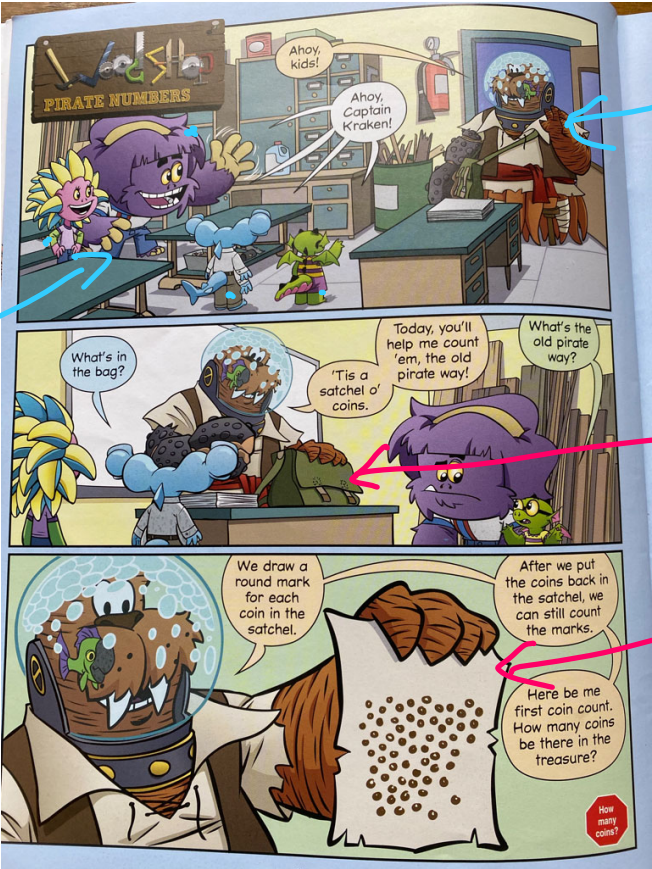
Monday, April 12, 2021 12:16 PM

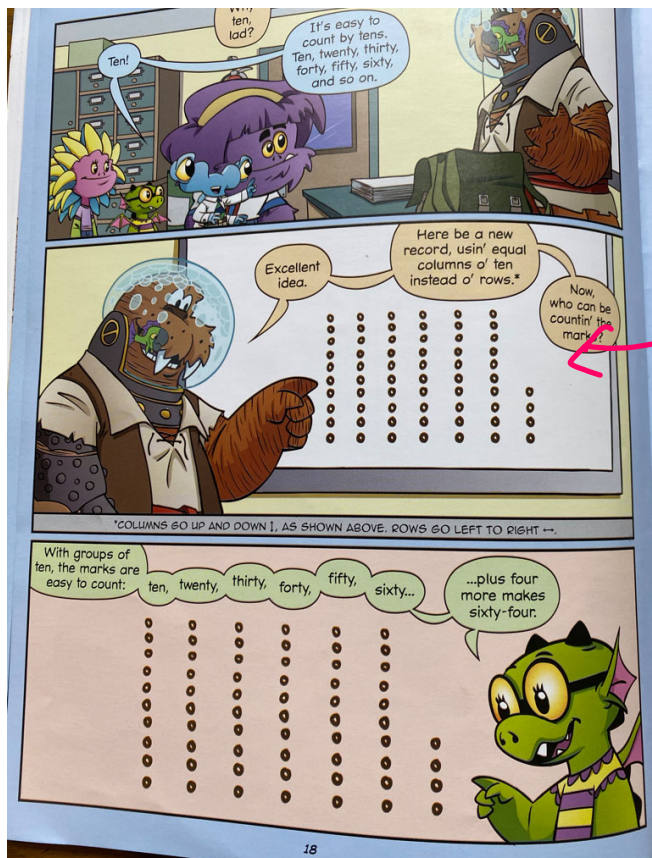
- Gratuitous advertisement For Beast Academy
- A question about trees.
- Prof. Grok's question about coins.
- More stuff
- Reflection

<https://beastacademy.com/about>

Pirate Math

Monday, March 1, 2021 2:13 PM







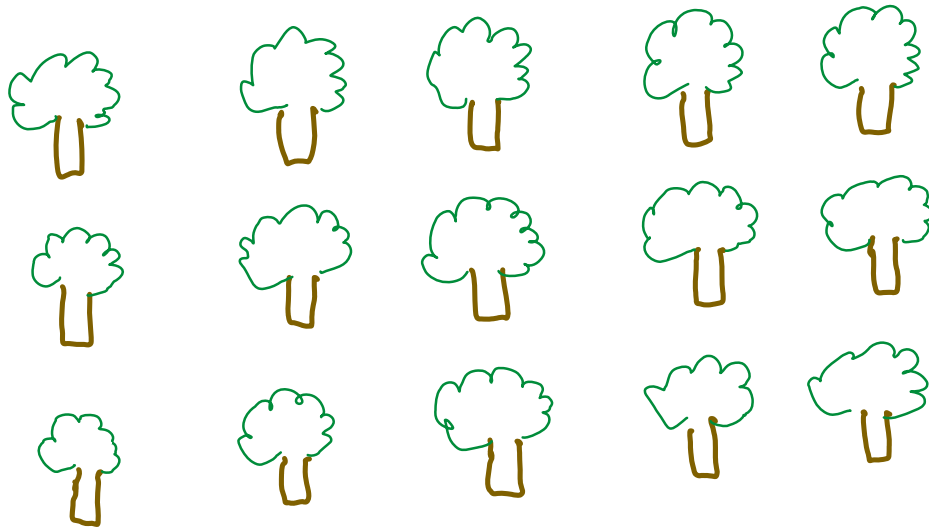




A question about trees

Wednesday, August 3, 2022 11:46 AM

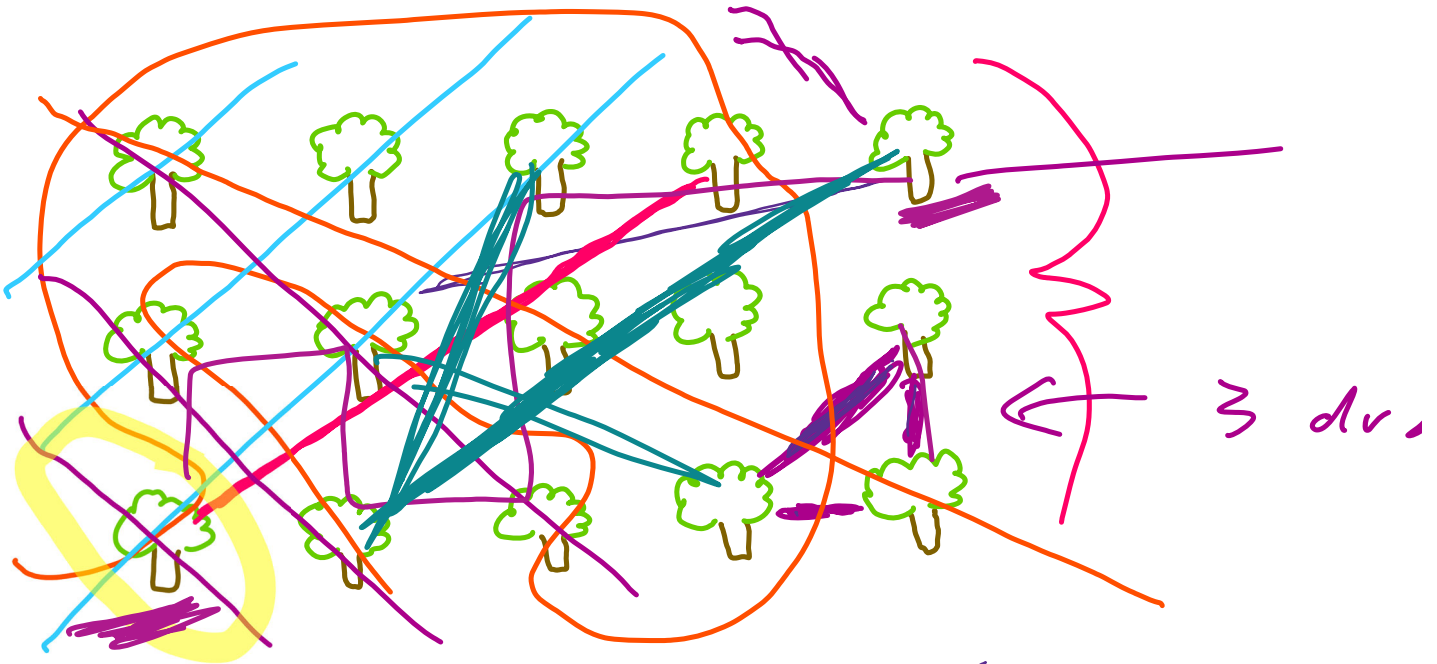
Q: How many lines of trees are there?



A question about trees - after an actual circle.

Monday, April 12, 2021 2:01 PM

Q: How many lines of trees are there?



First observation: Question is a

- 1) Line is a row of 5 trees: 3
- 2) Segment joining adjacent trees
- 3) Straight line joining any 2 trees.
- 4) Curved lines look at what order intersect trees?
- 5) Need 3 trees for a line? including 0
- 6) Horizontal, vertical and diagonal 45°
- 7) Snaking paths through all the trees? Or

- 8) Paths going north/east from bot left
- 9) Any way to connect 2 trees ✓
- $$= 14 + 13 + 12 \dots 3 + 2 + 1 = 15$$
- "Random tree answer"

Orchard planting 9

Sylvester ~ late 1800s.

- Plant n trees
- How many lines of 2 trees

$\begin{matrix} \rightarrow & 11 & 3 \\ \rightarrow & 11 & 4 \end{matrix}$

Ben Green, Terry Tao, 2012 answered in most cases, but no specific

$$\left[\frac{n(n-3)}{6} \right] + 1$$

What is the most lines γ

$$\frac{1}{3} \binom{n}{2}$$

lines with 2

$$\frac{n(n-1)}{6}$$



Sylvester's theorem: All

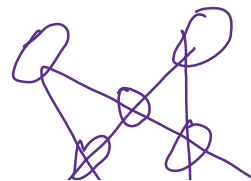
Kelly $\leftarrow$ proofs

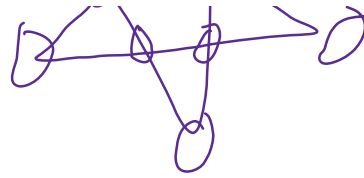
Prof Grok's question

Thursday, February 25, 2021 9:31 AM

Q: Use 10 coins to make 5 r.
4 coins each. Then you will
where to find your professor

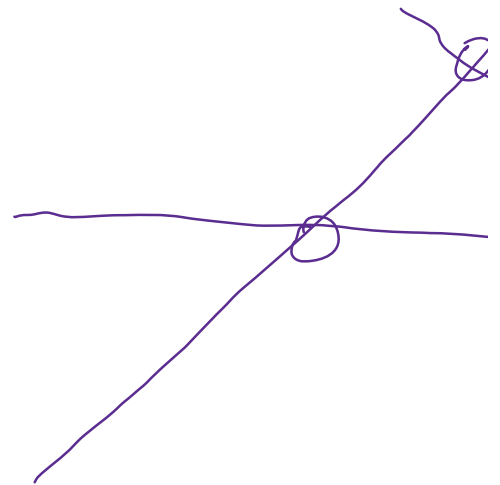
Method 1: Epiphany!





Method 2: work up from small cases

Coins	lines of 4
1	0
2	1
3	0
4	1
5	1
6	1
7	2
8	2



$$\begin{array}{c|c} 0 & \\ 9 & 3 \\ 10 & \end{array}$$

$$\begin{array}{c|c} & 7 \\ 5 & \end{array}$$

Different answers? Classify? They

Reflection

Sunday, February 28, 2021 11:13 AM

what insights did you have into

Math

Problem
Solving

Teaching

Geometry!

- Open ended / lets you try everything
- Approach from new angle
- Pattern recognition

- Positive attitude
- Encourage / don't give up
- Breakout groups / check in
- Hints are good motivator.
- Key is stretching... was it good for zoom? ←
- Language is important.
- Models

Productive Struggle