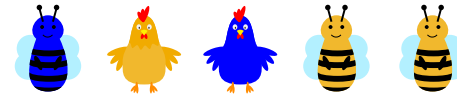


Math Club



Mr. Allee & Dr. Dave



Fairview Elementary

2026–2027

Introductions

Say your:

- Name/nickname (what you want us to call you)
- Grade
- Something in math you don't know
- Example:

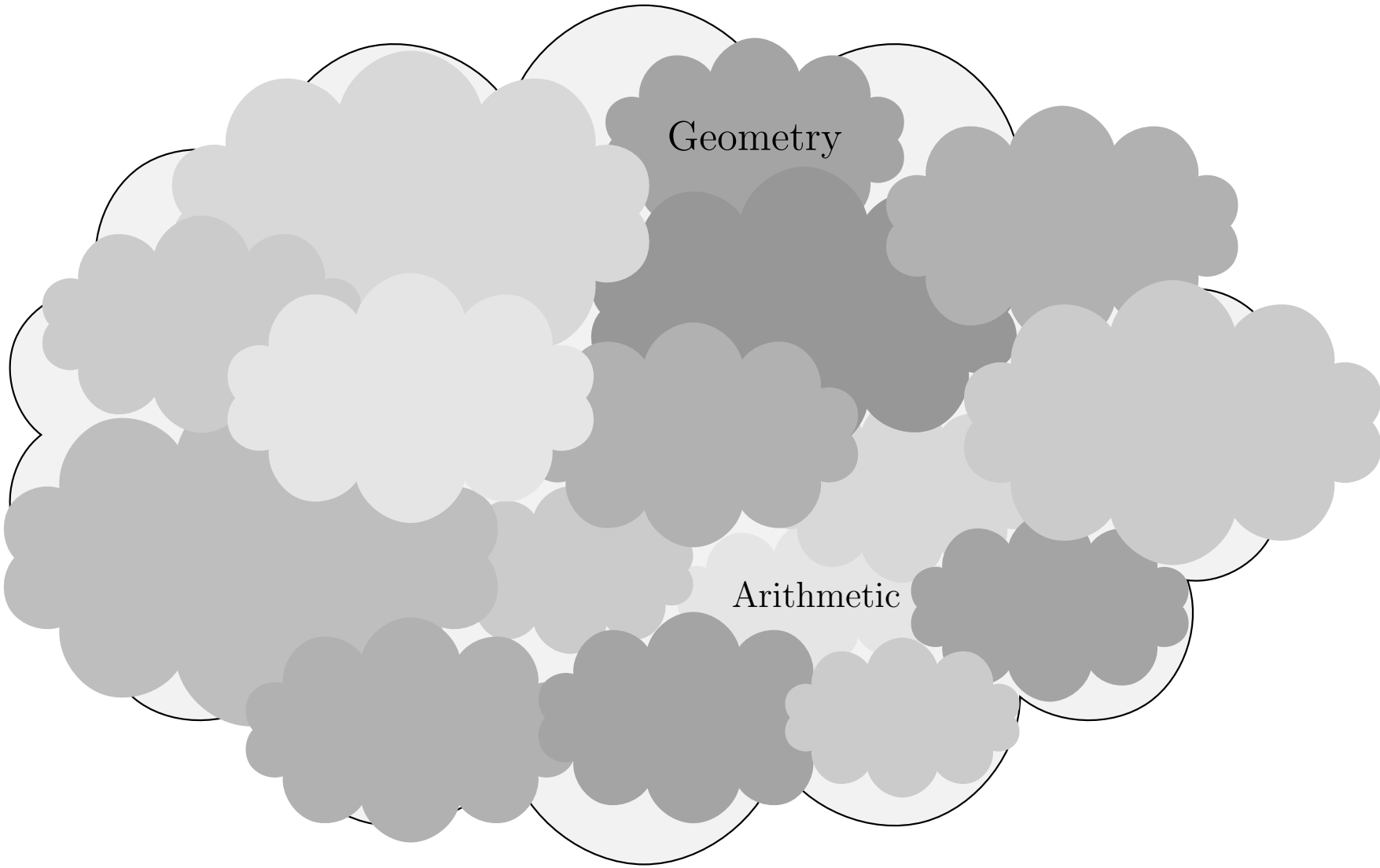
  Dr. Dave

  Grade 21+

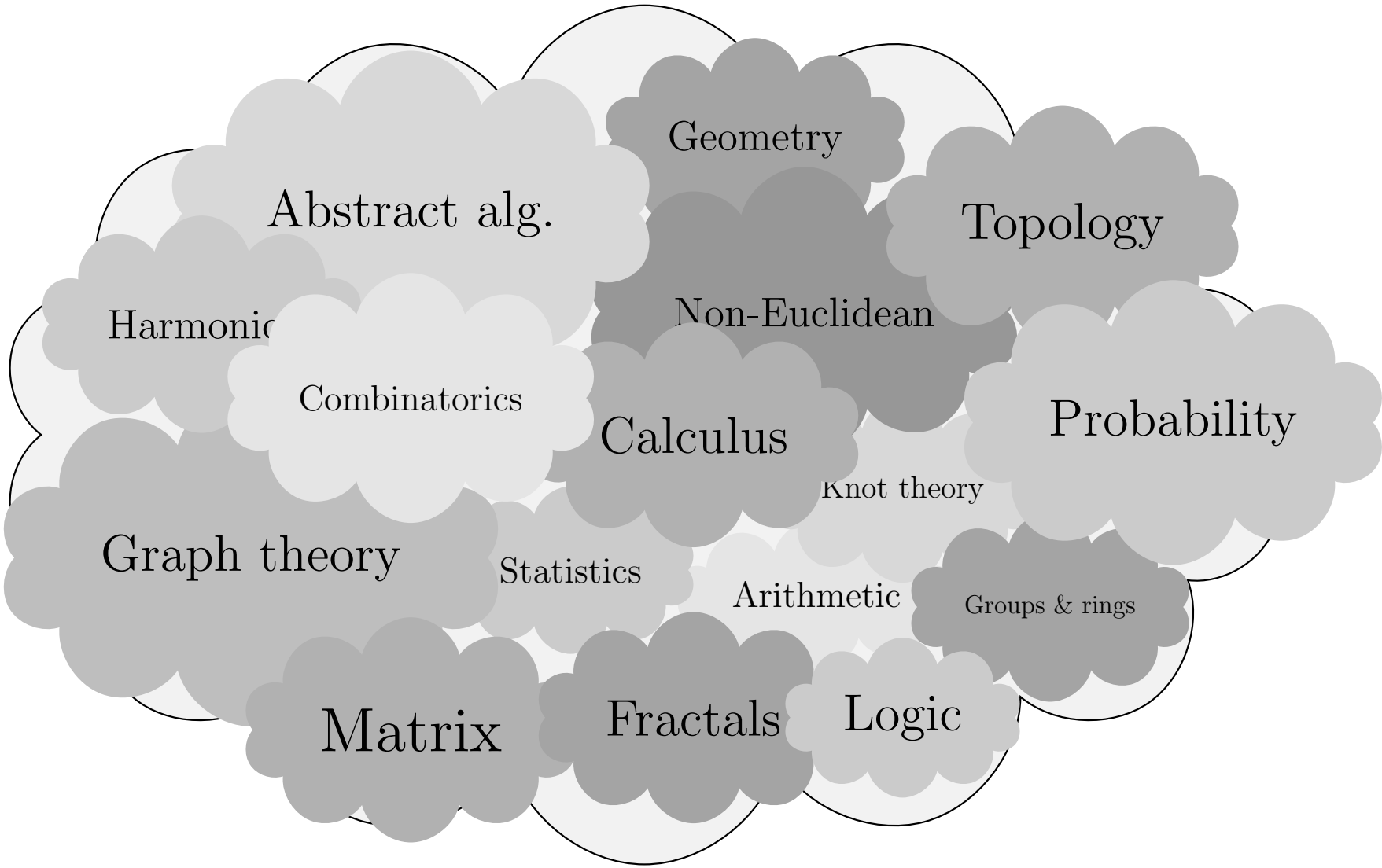
  2nd-order cone programming

What is math?

What is math?



What is math?


Geometry
Abstract alg.
Topology
Harmonic
Non-Euclidean
Combinatorics
Calculus
Probability
Knot theory
Graph theory
Statistics
Arithmetic
Groups & rings
Matrix
Fractals
Logic

Some math from Dr. Dave's research

Instead, we apply Jensen's to the greatest convex minorant of $F_\beta(\cdot)$, denoted $g(\cdot)$: $g(\cdot)$ is convex, $g(\cdot) \leq F_\beta(\cdot)$ ("minorant"), and it is weakly above any other such function ("greatest"). Conditional on $U = u$, Prop. 1 gives $F_\beta\big(F_{B|U}(q \mid U = u)\big) = F_{W|U}(q \mid U = u)$, so

$$F_W(q) = \mathrm{E}[\overbrace{F_{W|U}(q \mid U)}^{\text{use Proposition 1}}] = \mathrm{E}\big[F_\beta\big(F_{B|U}(q \mid U)\big)\big]$$
$$\overbrace{\geq}^{F_\beta(\cdot)\geq g(\cdot)} \mathrm{E}\big[g\big(F_{B|U}(q \mid U)\big)\big] \overbrace{\geq}^{\text{Jensen's}} g\big(\mathrm{E}[F_{B|U}(q \mid U)]\big) = g\big(F_B(q)\big).$$

Letting $h(\cdot)$ be the least concave majorant of $F_\beta(\cdot)$ yields a bound in the other direction: the first two equalities are the same as above, and

$$\mathrm{E}\big[F_\beta\big(F_{B|U}(q \mid U)\big)\big] \overbrace{\leq}^{F_\beta(\cdot)\leq h(\cdot)} \mathrm{E}\big[h\big(F_{B|U}(q \mid U)\big)\big]$$
$$\overbrace{\leq}^{\text{Jensen's}} h\big(\mathrm{E}[F_{B|U}(q \mid U)]\big) = h\big(F_B(q)\big).$$

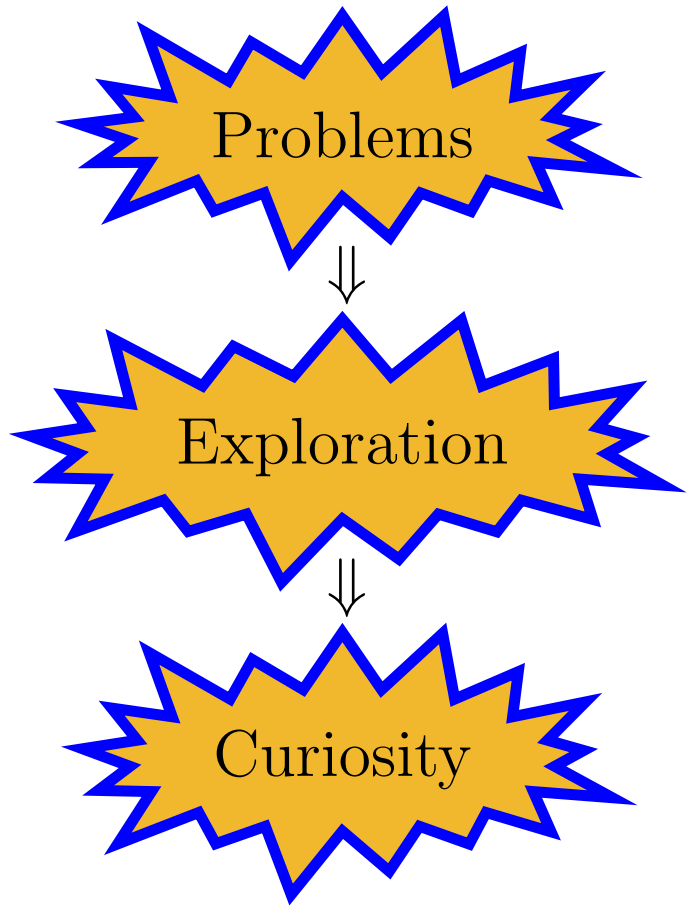
Exercises

⇓

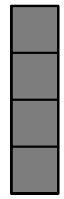
Skills

⇓

Competence

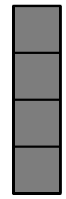


A magic trick

Instructions: cover/shade any four vertical 
or any four horizontal 

Then, Dr. Dave will immediately tell you their sum!

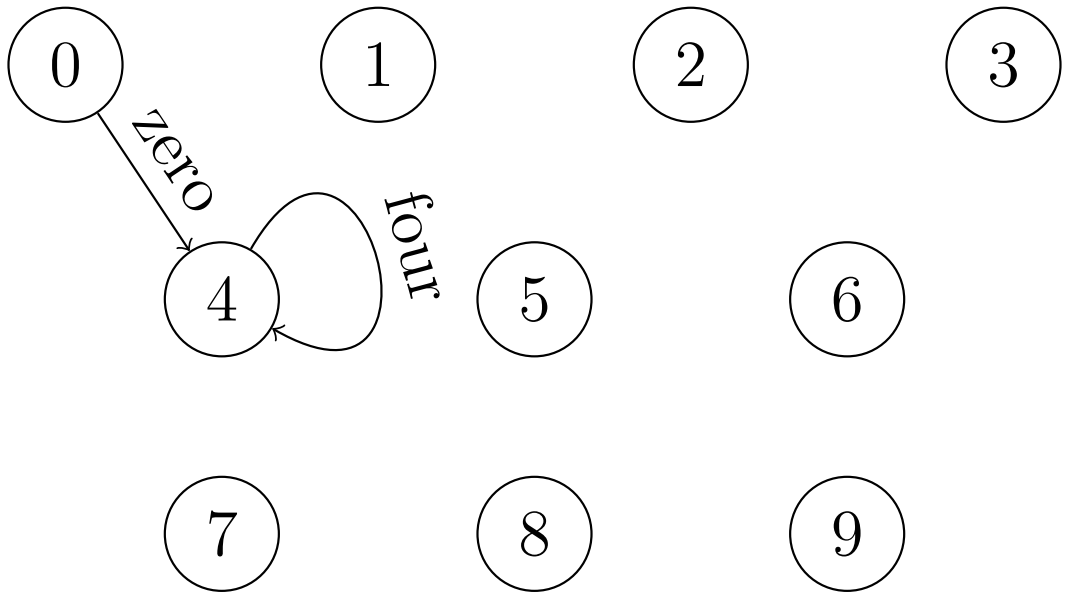
A magic trick

Cover four horizontal  or vertical 

0	3	9	1	7	0	3	9	1	7	0	3
4	5	2	8	1	4	5	2	8	1	4	5
7	6	0	4	3	7	6	0	4	3	7	6
8	4	6	2	0	8	4	6	2	0	8	4
1	2	3	5	9	1	2	3	5	9	1	2
0	3	9	1	7	0	3	9	1	7	0	3
4	5	2	8	1	4	5	2	8	1	4	5
7	6	0	4	3	7	6	0	4	3	7	6
8	4	6	2	0	8	4	6	2	0	8	4
1	2	3	5	9	1	2	3	5	9	1	2
0	3	9	1	7	0	3	9	1	7	0	3
4	5	2	8	1	4	5	2	8	1	4	5

Number spelling chains

Instructions: 1) pick a number, 2) spell it, 3) count the number of letters, 4) draw an arrow from the first number to its number of letters, 5) repeat...

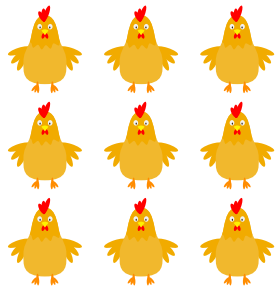


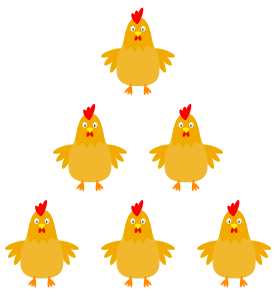
What's the longest chain you can make?

Do they always end on 4???

A square triangle?

Imagine you have some, uh, chickens: 

For certain numbers of chickens, you can arrange them into a square, like 

For others, you can arrange them into a triangle, like 

$\Longrightarrow$ Is there any number of chickens that you can arrange into both a square and a triangle??