TRIADS

We have 81 cards with symbols which differ by

- shape   □ △ ○
- number   one two three
- color   red green blue
- brightness   full ■ shaded ▨ empty □

$$3^4 = 81$$

We pick k cards from the stack by random.
We place them on the table face up and we look
for triads

TRIAD

is a triple of cards s.t. for every property have
the cards
- all same
- all different   values

EXAMPLE:

TRIAD

NOT A TRIAD

QUESTION:

- What is the largest k s.t. we can pick k cards
  with no triad among them?

or equivalently $\ell = k+1$

- What is the smallest ℓ s.t. we pick any ℓ cards
  and there has to be a triad among them?