

# Leading Inquiry-Based Learning

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CALIFORNIA STATE UNIVERSITY  
FULLERTON

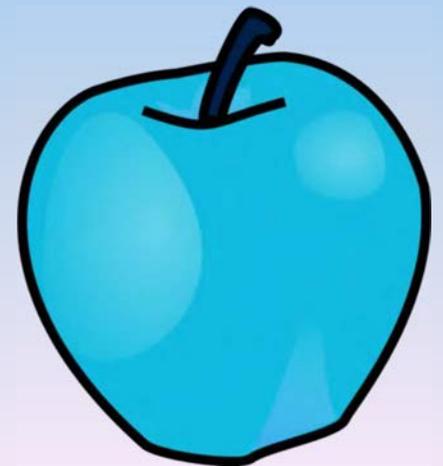
**SCHOOLSFIRST**   
FEDERAL CREDIT UNION

Center for Creativity  
and Critical Thinking

# Welcome!

- Introductions
- Our Session
  - > Traditional instruction in school
  - > Inquiry-based instruction
  - > Living an example: Science
  - > Structures and tips for leading inquiry-based Instruction
  - > Living an example: Engineering

# Traditional Instruction in Schools



# “Math and Me”

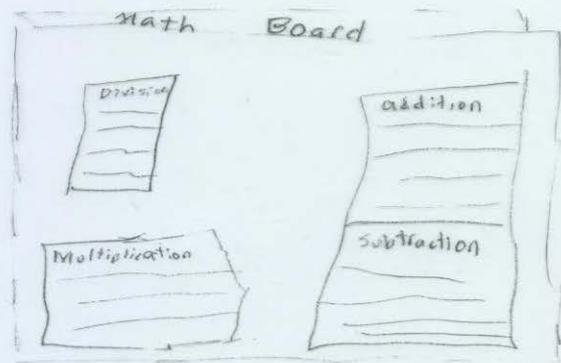
- Upper-grade students in Orange County drew pictures: “Math and Me”
- What themes do you find?
- Watch:
  - > Where they encounter math
  - > Who is with them
  - > How it is taught and learned
  - > How they know they’ve got it right
  - > What math can do for us



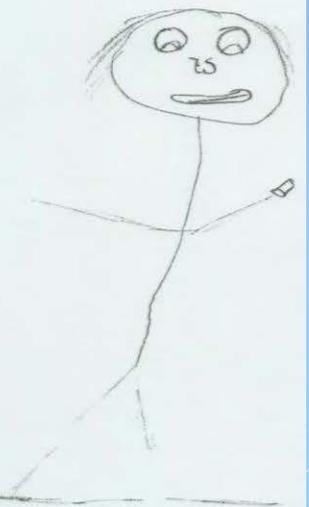
$$\frac{0}{1} \times$$

$$7 \times \square \times 6 = 42$$

|   |  |   |
|---|--|---|
|   |  | X |
| 0 |  |   |
| 0 |  | X |



10x q = 80, no, ac, yes  
12x x q = 6 & wait  
72 alright 6x q = 54  
9 in getting the hang  
of this!



MATH  
ROCKS  
+ - × ÷

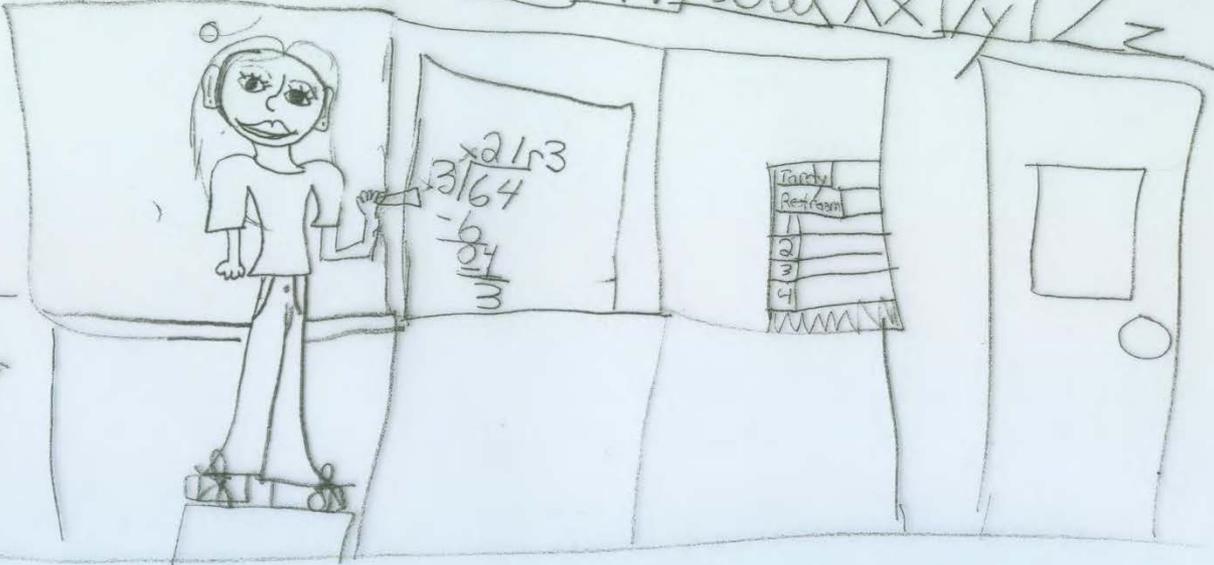
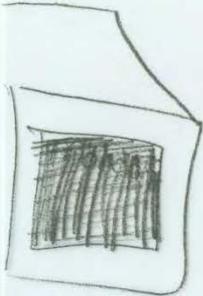
ALRIGHT!  
I'm really  
good at  
math.



$48 \times 92$       $45 \times 90$   
 $300 \div 3$       $1 \times 1000$

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk  
 Ll Mm Nn Oo Pp Qq Rr Ss Tt  
 Uu Vv Ww Xx Yy Zz

Did I get  
 it correct or  
 did I get  
 it wrong?



Heather

$$\begin{array}{r}
 213 \\
 3 \overline{) 64} \\
 \underline{-64} \\
 0
 \end{array}$$

Tally  
 Restroom  
 C  
 W  
 S



# Traditional Instruction: What Do You Conclude?

- What did you find?
  - > Where they encounter math
  - > Who is with them
  - > How it is taught and learned
  - > How they know they've got it right
  - > What math can do for us
- How is science instruction similar?

# Traditional Math & Science Instruction

- Teacher “stands and delivers.”
- Students “sit and get.”
- Teacher is “sage on the stage.”
- Students learn recipes for how to get an answer, not necessarily with understanding.
- Content is divorced from context in which it is used.

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# Inquiry-based Instruction

- Students are physically and cognitively active in pursuing learning.
- Driven by a question or problem.
- Teacher is still very active, but now it as “guide on the side.”





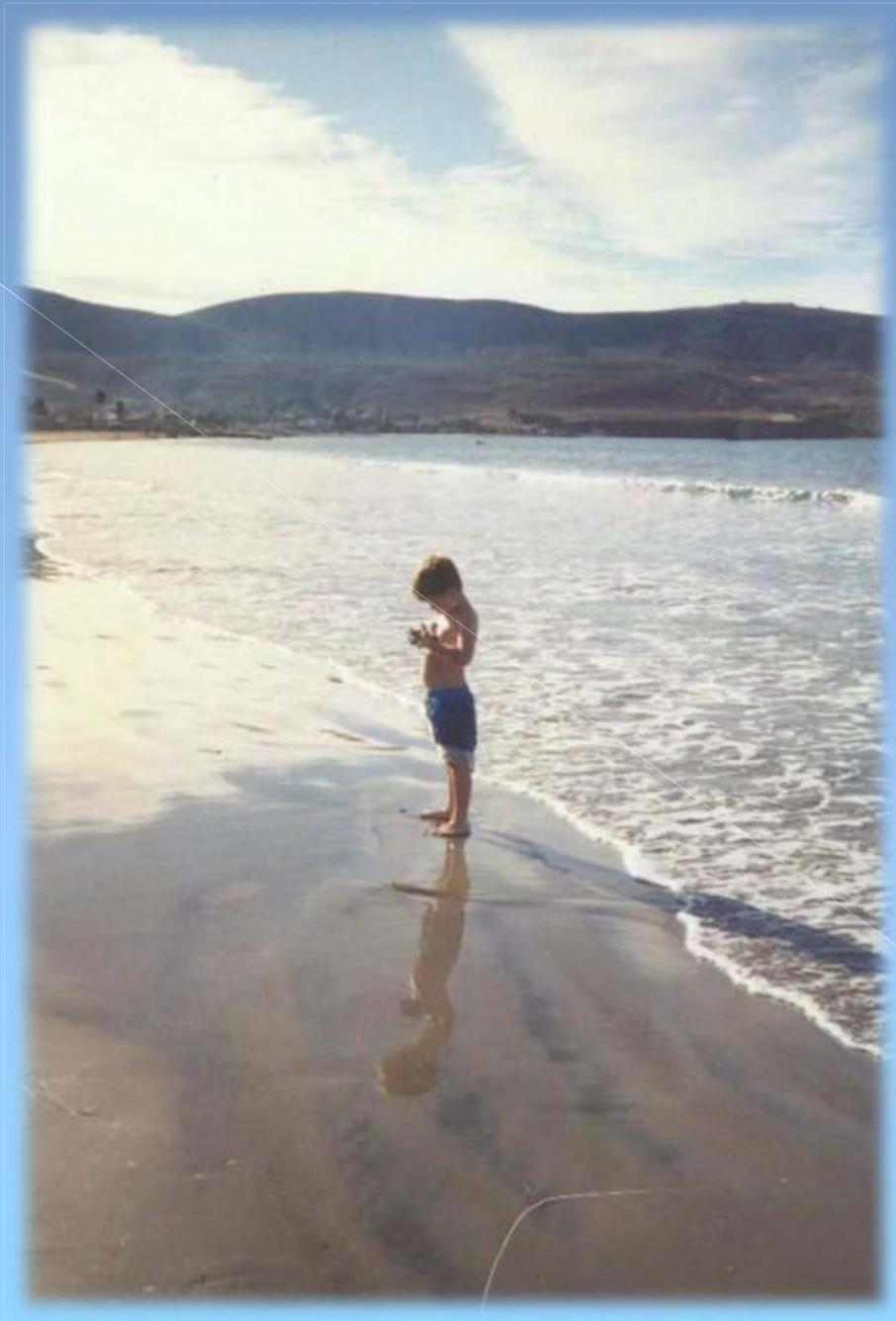
# Let's Live It!

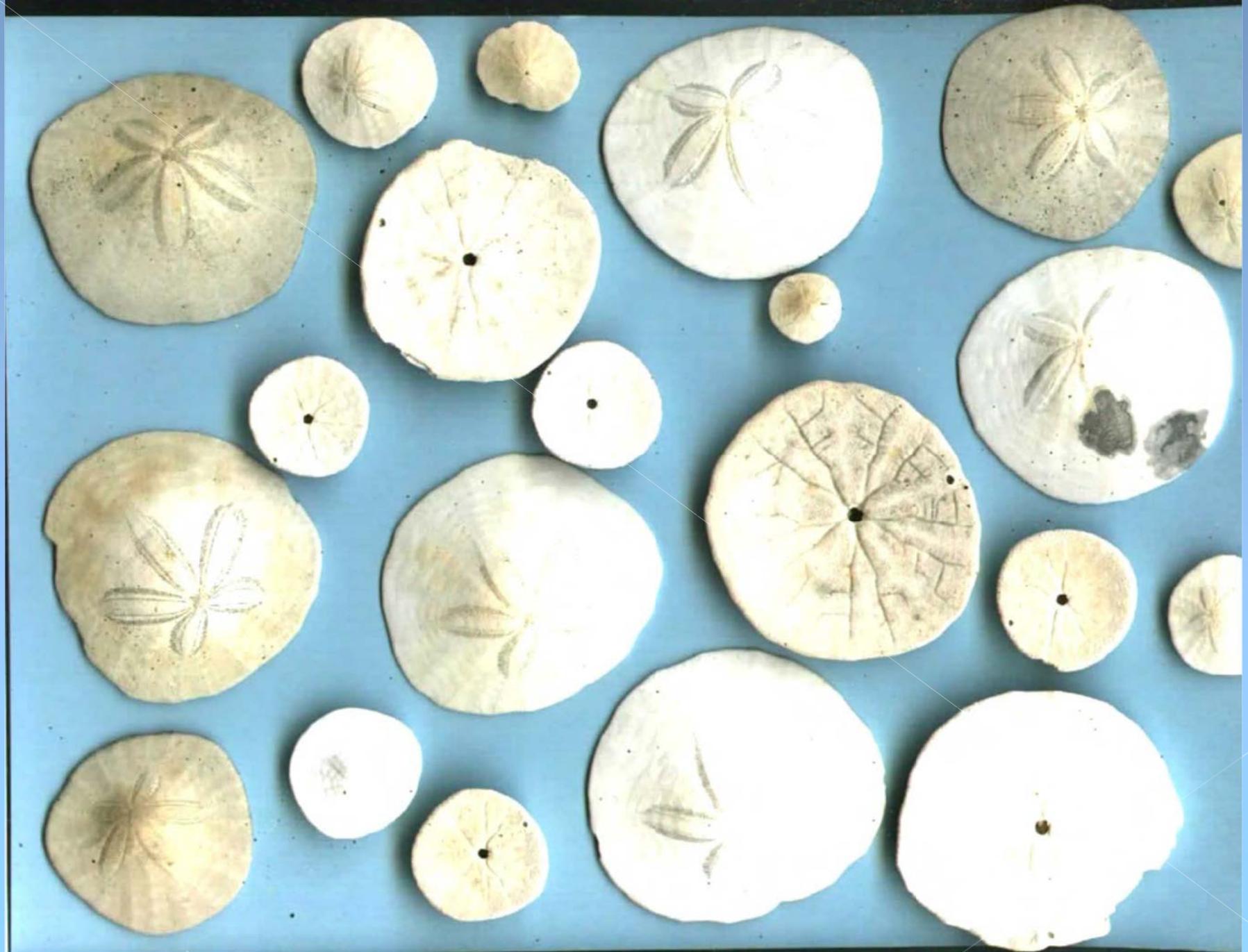
Science Example

# La Playa Dorado

Andrea's Birthday Story

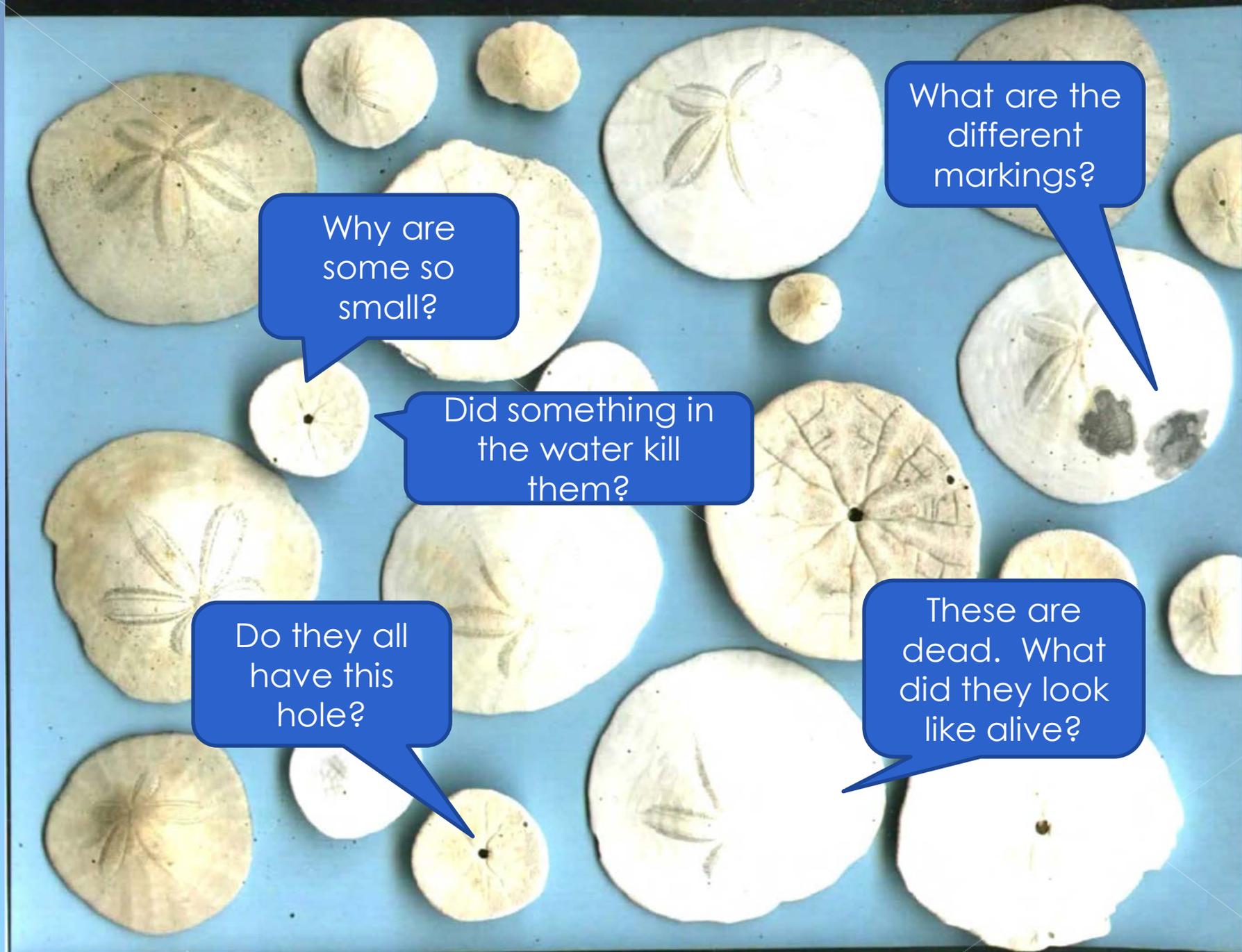






*"There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle."*

*--A. Einstein*



Why are some so small?

What are the different markings?

Did something in the water kill them?

Do they all have this hole?

These are dead. What did they look like alive?