

# SAND DOLLAR and SEA URCHIN EXPLORATION

Kingdom: Animalia

What phylum do they belong to?

Echinodermata

Class:

Echinoidea

## KEY QUESTION:

What does the STRUCTURE of these organisms tell you about how they survive, grow, behave and reproduce?

FIRST IDEAS = observation of models

→ in pencil

SECOND IDEAS = after diagramming

→ in color pencil

THIRD IDEAS = after viewing videos

→ in pencil, highlighted, POST

NEXT IDEAS = after reading text

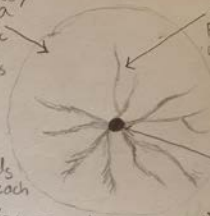
→ in pen



Hard, rigid body  
shaped like a  
flattened disc  
covered with  
short spines

5 petalloids  
(ambulacra), each  
with 2 rows  
of respiratory  
podia (feet)

Top (Aboral) side



5 branching  
Food grooves  
with tube feet,  
which push food  
into the mouth  
and are used  
to move the  
sand dollar

mouth opening  
(peristomial  
opercule)  
protected  
by spines

Bottom (oral) side

# 1<sup>st</sup> observations:

## Top

- Very small opening at the base of each
- Circular (sort of) <sup>retail</sup>
- Featherly, flowerlike star on top
- Chipped edges
- approx 1/2 covered in sand
- Small brown dots
- light/sand-colored
- Very light in weight
- Flat, but has a bulge at center

## BACK

- Flat
- Hollow, you can see throughism
- Veins (grooves); 11 large ones
- lighter color than top
- full of sand
- fewer brown dots
- rough

## Questions I have:

How does (did) it move? Did it move at all?  
What did it eat? How did it eat? What color was it? Did it have a brain? Where did it keep its brain? What is the featherly, flowery star on top? What is its purpose? What is the purpose of the 5 openings in the center of the star? What are the grooves on the back for? Why is there an opening at the center of the back? Was this there when it was alive?

## Questions others have:

How long do they live? What is the purpose of the shape? How old is it? What does it look like on the inside? Why is the top design different from the bottom.

PHYLUM: Echinodermata

FAMILY: Echinarachnius

## SAND DOLLAR TEST

Survival

It may have taken in food through the opening on the back (this is how seastars eat). Narrow shape may have assisted it in hiding between rocks.

Growth

I think sand dollars grow in both height and circumference

Behavior

I think that the grooves on the back may assist the sand dollar in movement

Reproduction

I think that sand dollars may be hermaphroditic in which case they would not need a male and female to reproduce

- What further information do you need to answer key question?

Survival

How do sand dollars take in oxygen?

Growth

Do sand dollars grow if so, in height or circumference?

Behavior

Reproduction

Are sand dollars Hermaphroditic?

Key?

WHAT DOES THE STRUCTURE TELL YOU ABOUT HOW THIS ORGANISM SURVIVES, GROWS, BEHAVES AND REPRODUCES?

3D SAND DOLLAR TEST

Survival	Growth
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Behavior

Reproduction

- What further information do you need to answer the key question?

Survival

Growth

Behavior

Reproduction

the sea floor. Moving in  
a circle. 6

assist the sand  
dollar in move-

Sand dollars are preyed upon  
by sunflower stars. Move together  
for defence. Flat sea urchins  
Purple. Maybe spikes covering  
skeleton? Tiny legs around  
edges? - tube feet move the  
sand dollar. Is it eating  
when it moves in circles?  
Radial symmetry. Endo-  
skeleton. Regeneration of  
limbs. Brainless.

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