MIXING IT UP TO MAKE THE MOST OUT OF TECH-BASED TECHNIQUES FOR AT-RISK STUDENTS (AND OTHERS TOO)

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Well-designed and traditionally crafted instructionally sensitive items/tasks work for learners who:

1. Can easily and fluently navigate
   - denser language and language structures
   - 'shorthand' text in close-ended items
   - typing in responses to constructed response items that *fully and accurately* reflect what they want to say.

2. Are comfortably fluent in (non-target relevant) grade-level academic nomenclature and structures of academic discourse.

It seems that many at-risk students don't respond as well to typical methods of teaching and testing.

- There are many reasons, for instance:
  - Literacy problems
  - Lack of exposure to enough ongoing academic-related environments
  - Substantial economic problems
  - Chaotic living environments
  - Boredom and lack of meaningful successes
  - Disability or English language challenges

Ed Roeber argues that about 30-40% of US students fall in the 'at risk' category

ONPAR™

"Works for everyone, disadvantages no one", VP, Renaissance Learning.

- ONPAR is an assessment methodology that utilizes a wide range of multi-modal, multi-layered techniques to convey meaning to students AND from students.
- Properly designed, ONPAR tasks provide instructionally sensitive and instructionally supportive information.
- Numerous experimental and qualitative studies document its effectiveness.

Demonstration:

ONPAR Elementary Mathematics Testlet, Pre-Algebra

How Does the Methodology Work? Some Underpinnings from Cognition Research

1. **Narrative Elements** – Opening vignettes quickly draw students into the 'story' of an assessment task and stimulate schema, prior knowledge structures

   - Layered, multi-semiotic representations facilitate multiple cognitive connections and retrieval paths (e.g., "dual coding").

   - Integration of textual and multi-modal elements minimizes split attention and reduces processing demands

How Does It Work?
Some Underpinnings from Cognition Research

2. **Efficient** – Multimodal, interactive contextual stimuli designed to maximize richness in an efficient way

   - Tasks briefly convey a great deal of critical information to minimize processing demands and guide student focus to salient information (good ads do this…)

   - Standardized locations of screen elements (e.g., Help icons and prompts) 'prime' attention and maximize efficiency

How Does it Work: Some Underpinnings from Cognition Research

3. **Pacing –** Slow enough to engage; change enough to keep attention high

4. **Chunking –** As relevant to the target, tasks are broken into parts and sub-problems across multiple screens keeps tasks fresh and students focused and engaged.
   - This maximizes working memory capacity and processing efficiency.

How Does it Work: Some Underpinnings from Cognition Research

5. **Continuous interaction–** Maximize interaction with screen elements to keep students involved, e.g.:

   - Manipulating onscreen supports,
   - Moving screen elements to build responses
   - Using sub-tasks for the purpose of focusing attention

6. **Encourage autonomy and choices**—Students impact their experience

How Does it Work: Some Underpinnings from Cognition Research

7. **Multiple redundancies—**Across modes and screens reduce working memory demands

8. **Careful attention** to foreground and background screen elements so as not overwhelm (again, ads do this very effectively)

9. **Response Formats** – Let's take a look…

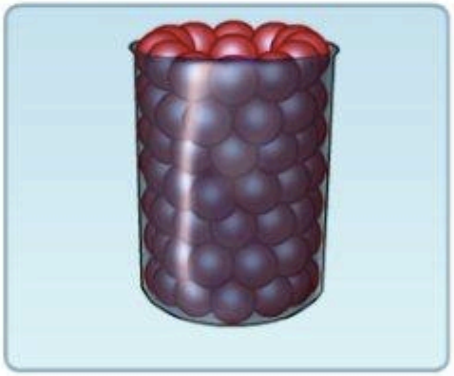
Make a shape that can fold into the prism.

?

?

Show how to estimate the number of marbles in the jar.

?

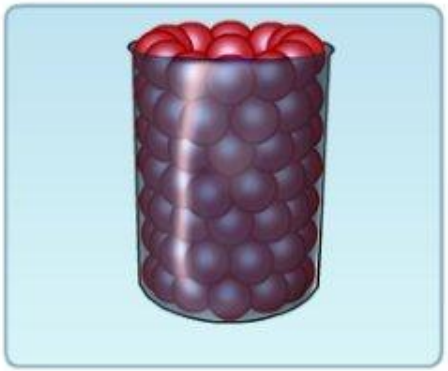


?

GO

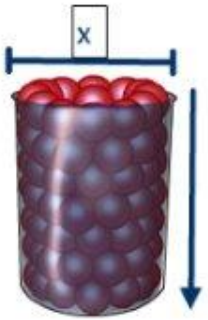
Question: 1 of 1

Show how to estimate the number of marbles in the jar.



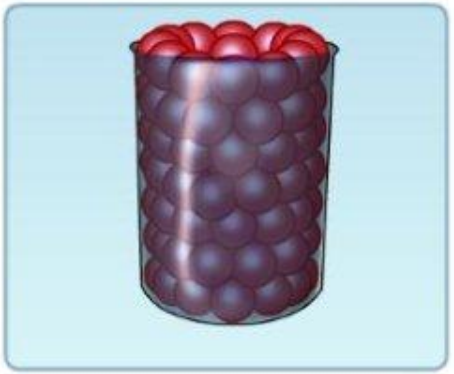
Count the number of marbles on the top of the jar, then multiply by the amount of

rows of marbles in the jar



Show how to estimate the number of marbles in the jar.

?



12 marbles per layer

6 layers

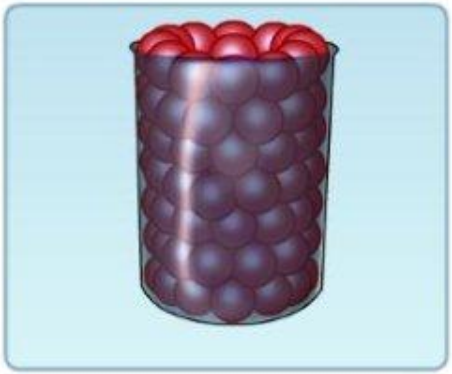
12*6 = 72

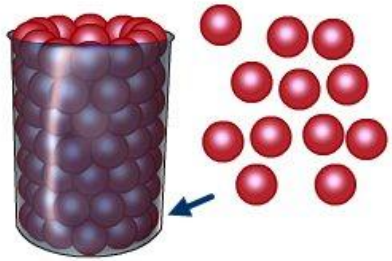
GO

Question: 1 of 1

Show how to estimate the number of marbles in the jar.

?





12 marbles on the bottom row

there are about 7 rows in the jar

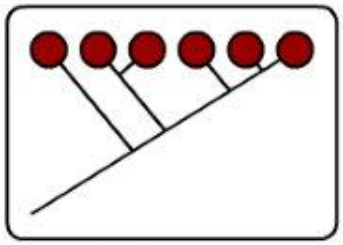
12x7=84 marbles

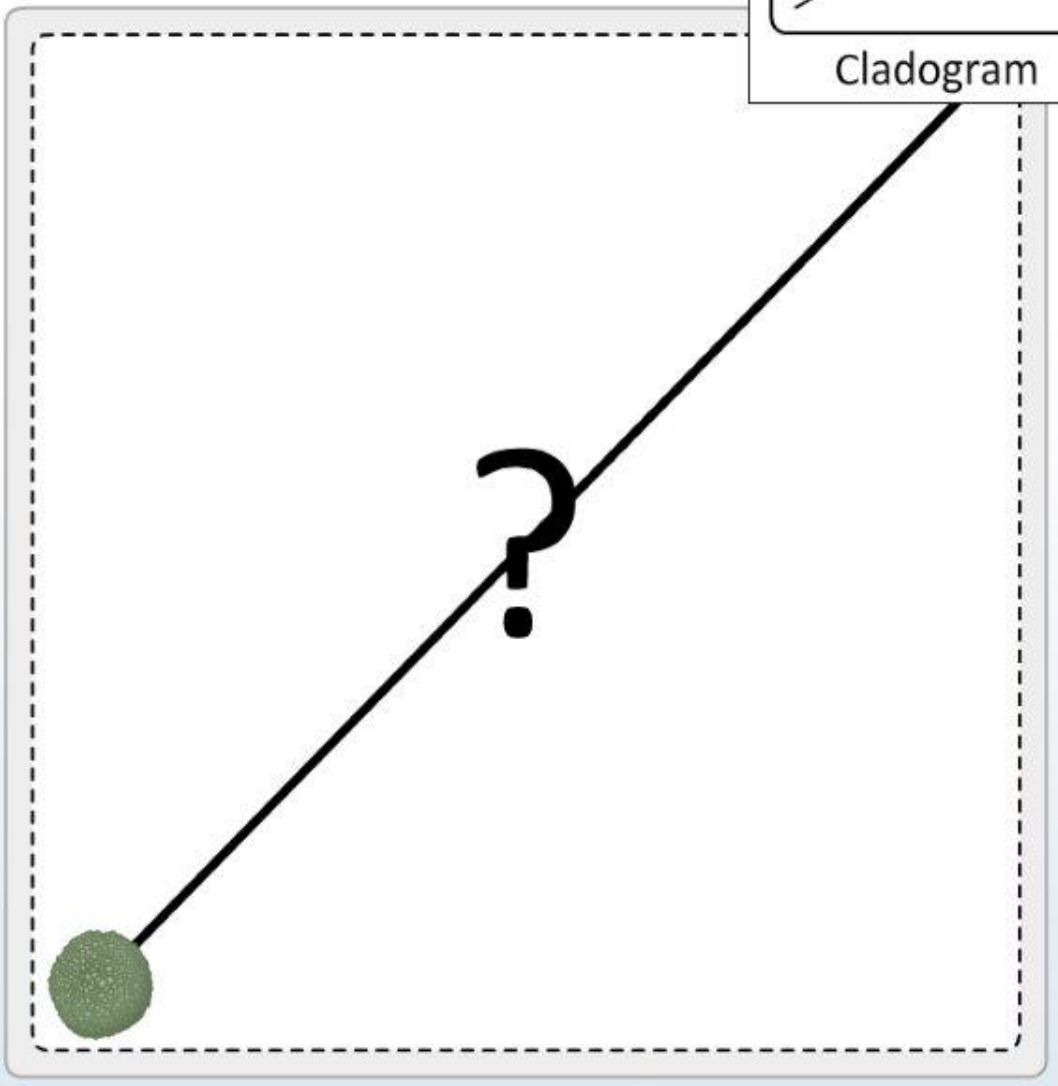
Use the amino acid differences to make a cladogram for the bacteria.

	Bacteria	Position 11	52	79
Given		W	E	K
New		V	P	R
New		V	E	R
New		W	E	R
New		V	E	R



Cladogram



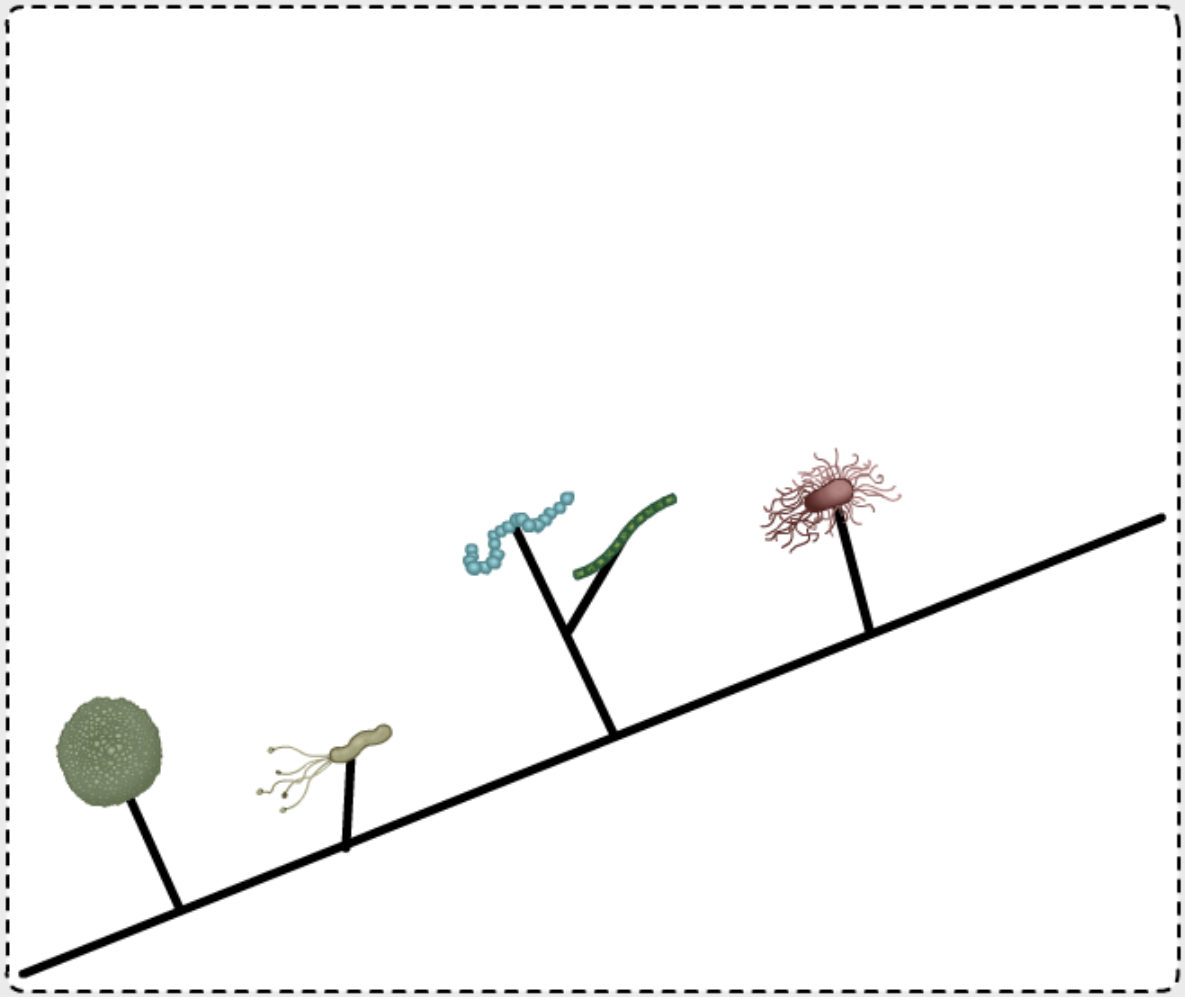


Scene: 01 of 01

Thank you

Use the amino acid differences to make a cladogram for the bacteria.

	Bacteria	Position 11	52	79
Known		W	E	K
New		V	P	R
		V	E	R
		W	E	R
		V	E	R



Question: 1 of 1 | Scene: 4 of 4

English

Draw the Lewis structures for H_2O, CO_2 and CH_4.

?

H C O

– I

= II

≡ III

· : ∴

H_2O	CO_2	CH_4
?	?	?

English

Draw the Lewis structures for H_2O, CO_2 and CH_4.

?

H C O

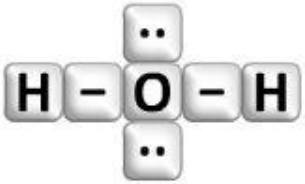
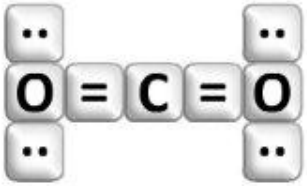
– I

= II

≡ III

. : ..

::

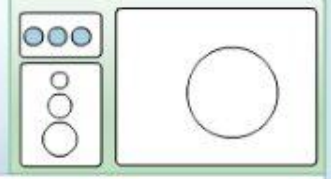
H_2O	CO_2	CH_4
		

Question: 1 of 1

Scene: 2 of 3

English

Make a Bohr model of a helium atom.



Particles

Orbits

?

Explain your answer.

salt

sand

water

filter

absorbs

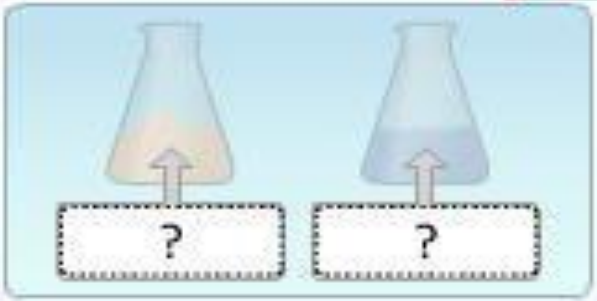
does not absorb

dissolves in

does not dissolve in

floats in

sinks in



Because

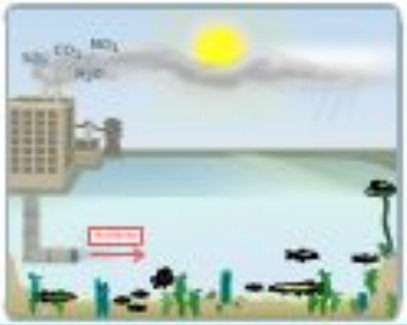
? ? ?

and

? ? ?

Question: 1 of 1

How does the power plant affect the lake ecosystem?



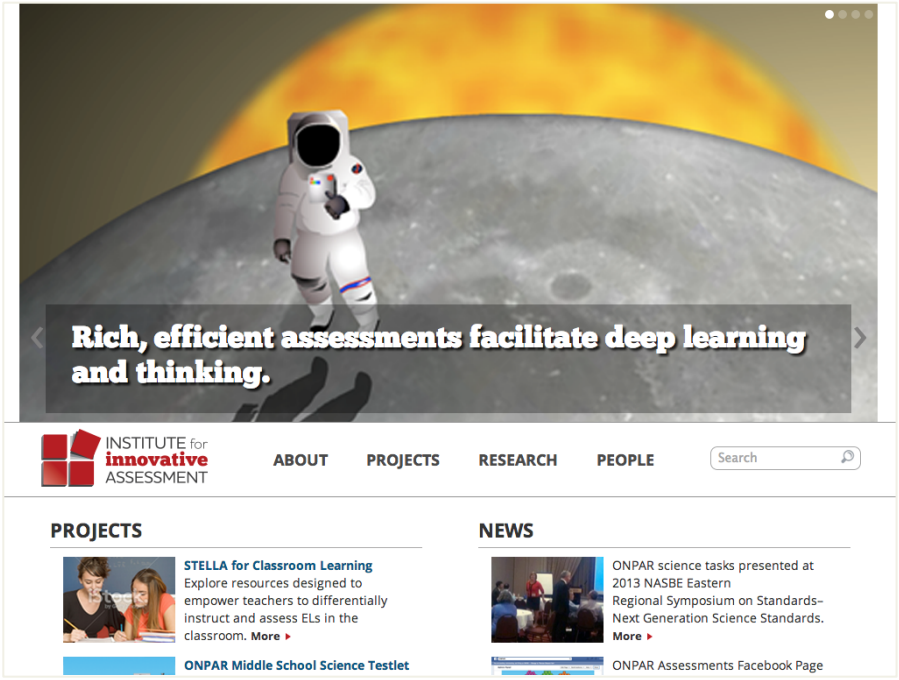
algae
O_2 air
acid water
O_2 water
CO_2 air
CO_2 water
air
water

causes
causes
causes
causes
causes

Question: 1 of 1

For More Information…

http://iiassessment.wceruw.org/



http://www.onpar.us/