New England Common Assessment Program

Released Items
2008

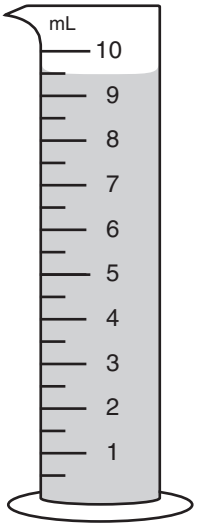
Grade 8
Science

Science

Please use the Formulas on the reference sheet to answer the question.

1 A student determined the mass of the graduated cylinder shown below before and after he added the liquid sample. He recorded his measurements in the table shown below.

Volume



Liquid Sample Data Table

Mass of cylinder and liquid	78 g
Mass of empty cylinder	60 g
Mass of liquid	?
Volume of liquid	?
Density of liquid	?

Based on the information, what are the mass (m), volume (v), and density (D) of the liquid sample?

A.	m = 138 g	v = 9.5 mL	D = 14.5 g/mL
B.	m = 18 g	v = 9.5 mL	D = 1.9 g/mL
C.	m = 60 g	v = 10 mL	D = 6.0 g/mL
D.	m = 78 g	v = 10 mL	D = 7.8 g/mL

2 What happens when water changes from a solid to a liquid to a vapor?

A. The size of the water molecules increases.

B. The size of the water molecules decreases.

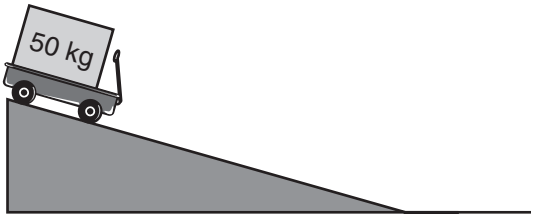
C. The motion of the water molecules increases.

D. The motion of the water molecules decreases.

3 Four identical wagons with different amounts of cargo are placed at the top of the same ramp.

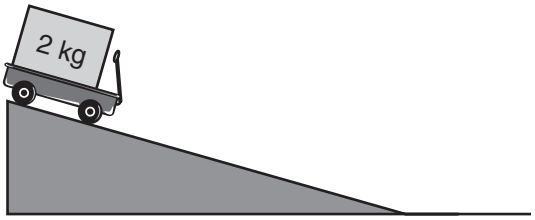
Which wagon will travel the greatest distance after leaving the ramp?

A.



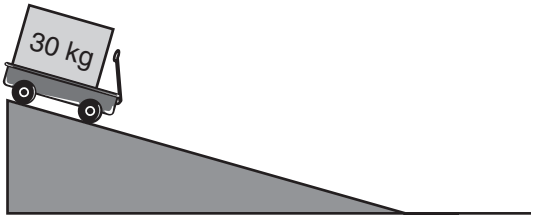
50-kg cargo

B.



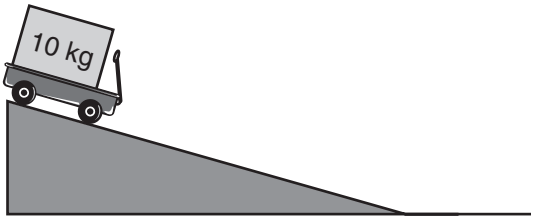
2-kg cargo

C.



30-kg cargo

D.



10-kg cargo

4 Which statement **best** describes what happens to water immediately after it evaporates?

A. Water falls to Earth as rain, snow, or sleet.

B. Water vapor condenses into clouds.

C. Water lands on Earth as surface water runoff.

D. Water vapor rises until it meets cool air.

5 Schist and quartzite are examples of metamorphic rocks. Which processes are necessary for the formation of metamorphic rocks?

A. cooling and weathering

B. cooling and pressure

C. heating and pressure

D. weathering and heating

6 Which feature is the **most** important advantage of space-based telescopes?

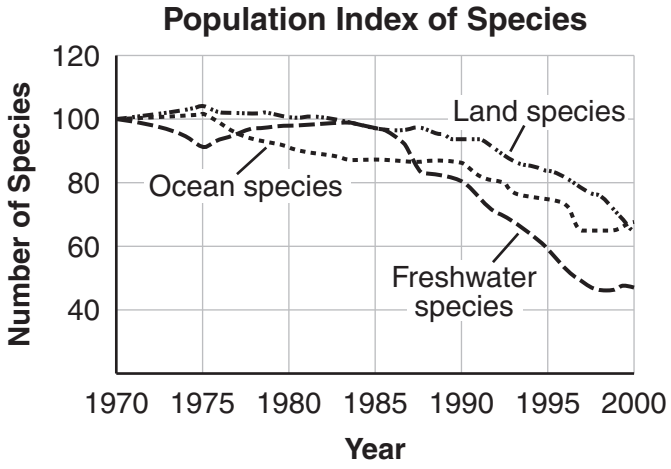
A. showing details of planets better than Earth-based telescopes

B. detecting forms of radiation Earth-based telescopes cannot detect

C. showing much less atmospheric distortion than Earth-based telescopes

D. being easier to build than Earth-based telescopes

7 In 1970, scientists selected 100 species from each of three environments—ocean, land, and freshwater. The graph below shows how many of these species still existed in the year 2000.



Which statement **best** describes the trend represented by the data?

A. The ocean species increased in number.

B. There were more ocean species than land species.

C. The populations within each freshwater species decreased.

D. The numbers of land, freshwater, and ocean species all decreased.

8 The table below shows characteristics of four different organisms.

Characteristics of Organisms

	Organisms			
Characteristics	**W**	**X**	**Y**	**Z**
Simple tissues	✓			✓
Complex tissues		✓	✓	
Offspring vary	✓		✓	✓
Offspring identical		✓		
Genetic information from two parents	✓		✓	✓
Genetic information from one parent		✓		

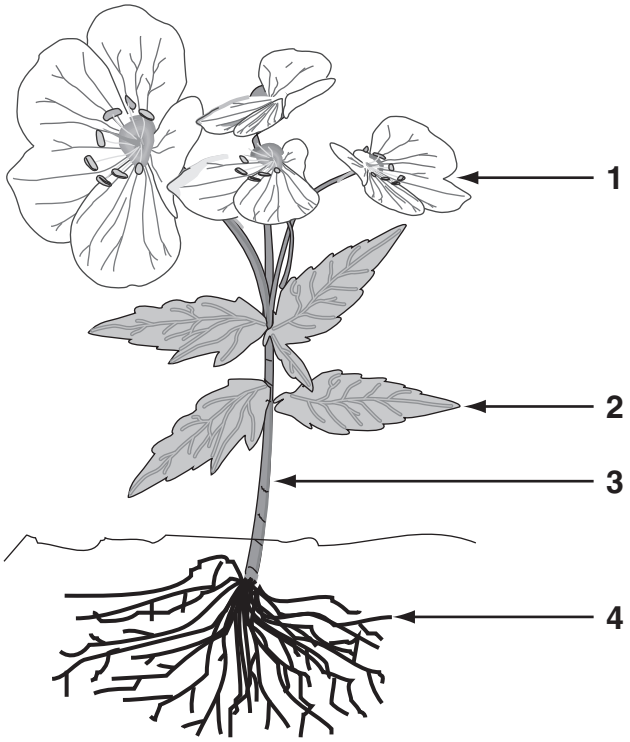
Which organism is the product of asexual reproduction?

A. Organism W
B. Organism X
C. Organism Y
D. Organism Z

9 Plants undergo both photosynthesis and respiration. Which statement correctly compares photosynthesis with respiration?

A. Photosynthesis releases stored energy, while respiration stores energy.
B. Photosynthesis stores energy, while respiration releases stored energy.
C. Neither photosynthesis nor respiration require water.
D. Both photosynthesis and respiration require sunlight.

10 The diagram below shows a flowering plant.



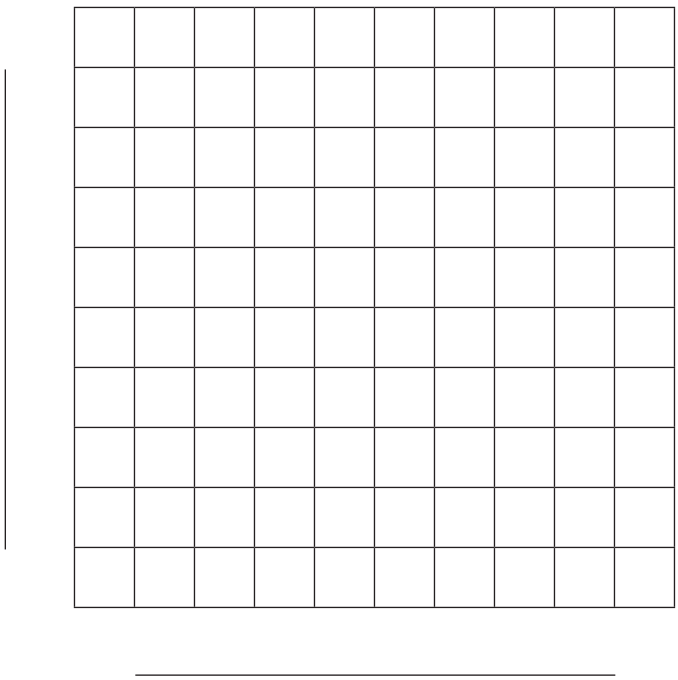
a. Identify and explain the function of **each** numbered plant organ in the diagram.

b. Explain how any **two** numbered plant organs work together to help the plant survive.

Grade 8 Inquiry Task

Directions: Students should perform work in the Task Booklet before answering questions 11 through 17.

11 Use the data you collected to make a graph that shows the relationship between the average height of the sand and the elapsed time. Be sure to clearly label each axis and include a title.



Analyzing and Using Your Results

Directions: Use the data from your investigation to answer questions 12 and 13.

12 Use your data to describe what happened to the sand in the investigation.

For 10 Million Years:

For 20 Million Years:

For 30 Million Years:

13 a. Look at your prediction on page 4 of your Task Booklet. Did the results of your investigation support your prediction about what would happen to the sand when the Eurasian and Indian Plates moved toward each other?

Yes ☐

No ☐

b. Explain how your data and observations did or did not support your prediction.

Extending the Investigation

Directions: Use what you observed in your investigation and what you know about plate movement to answer questions 14 through 17.

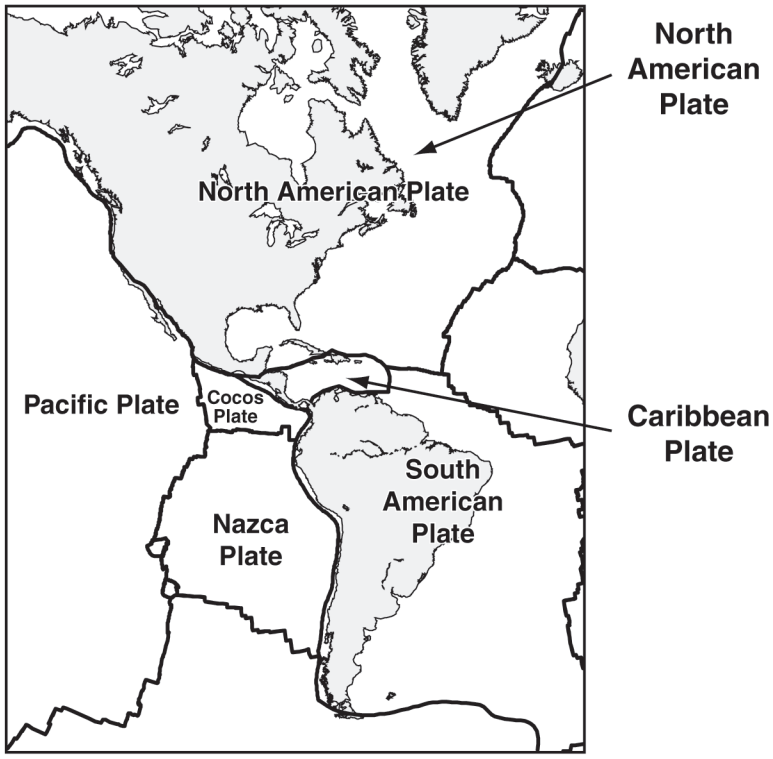
14 a. Describe **two** ways this model represents actual Earth processes.

b. Describe **two** ways the model is different from actual Earth processes.

15 Explain why it is necessary to use models to study the interactions between the plates in Earth's crust.

16 The science class learned that Earth's plates can interact in many ways. Describe how you could use a model to investigate another type of interaction between the plates. (Remember: Scientists think plates can move away from, over, under, and next to one another.)

⓱ Use what you observed in this investigation and what you know about plate movements to predict what would happen over millions of years if the Caribbean Plate and North American Plate were to collide.



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Grade 8 Science Released Item Information

Released Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Big Idea[1]	INQ	SAE, MAS	INQ, POC	SAE	INQ, POC	NOS	INQ, SAE	POC	SAE	SAE, FAF	INQ	INQ	INQ	INQ	INQ	INQ	INQ
Assessment Target	PS1.1	PS1.4	PS3.8	ESS1.2	ESS1.5	ESS2.7	LS1.1	LS1.3	LS2.6	LS1.2	INQ3.8	INQ3.7	INQ4.12	INQ2.6	INQ2.6	INQ4.13	INQ4.13
Depth of Knowledge Code	2	1	2	2	1	2	3	2	2	2	2	2	3	2	2	3	3
Item Type[2]	MC	MC	MC	MC	MC	MC	MC	MC	MC	CR	CR	CR	SA	SA	SA	CR	CR
Answer Key	B	C	A	D	C	C	D	B	B								
Total Possible Points	1	1	1	1	1	1	1	1	1	4	3	3	2	2	2	3	3

[1]Big Idea: NOS = Nature of Science, SAE = Systems and Energy, MAS = Models and Scale, POC = Patterns of Change, FAF = Form and Function, INQ = Scientific Inquiry

[2]Item Type: MC = Multiple Choice, CR = Constructed Response, SA = Short Answer