



53
52
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

My initials:		
FIRST	MIDDLE	LAST
A	A	A
B	B	B
C	C	C
D	D	D
E	E	E
F	F	F
G	G	G
H	H	H
I	I	I
J	J	J
K	K	K
L	L	L
M	M	M
N	N	N
O	O	O
P	P	P
Q	Q	Q
R	R	R
S	S	S
T	T	T
U	U	U
V	V	V
W	W	W
X	X	X
Y	Y	Y
Z	Z	Z

I am a:

Girl

Boy

I was born in:

MONTH BORN
<input type="radio"/> January
<input type="radio"/> February
<input type="radio"/> March
<input type="radio"/> April
<input type="radio"/> May
<input type="radio"/> June
<input type="radio"/> July
<input type="radio"/> August
<input type="radio"/> September
<input type="radio"/> October
<input type="radio"/> November
<input type="radio"/> December

Today the date is:

MONTH	DAY	YEAR
<input type="radio"/> January		<input type="radio"/> 2010
<input type="radio"/> February		<input type="radio"/> 2011
<input type="radio"/> March	0	<input type="radio"/> 2012
<input type="radio"/> April	1	<input type="radio"/> 2013
<input type="radio"/> May	2	<input type="radio"/> 2014
<input type="radio"/> June	3	<input type="radio"/> 2015
<input type="radio"/> July	4	<input type="radio"/> 2016
<input type="radio"/> August	5	<input type="radio"/> 2017
<input type="radio"/> September	6	<input type="radio"/> 2018
<input type="radio"/> October	7	<input type="radio"/> 2019
<input type="radio"/> November	8	<input type="radio"/> 2020
<input type="radio"/> December	9	

Marking Instructions

- Use a No. 2 pencil or a blue or black ink pen only.
- Do not use pens with ink that soaks through the paper.
- Make solid marks that fill the response completely.
- Make no stray marks on this form.

CORRECT: ●

INCORRECT: ☒ ☓ ☉ ☪

For each question below, fill in the bubble for the **BEST** answer.

1. Which of these is something that membranes do in nature?

- A They help living things to find water.
- B They keep animals warm when it's cold out.
- C They protect plants and animals from predators.
- D They keep harmful things out of animals' bodies.

2. A salamander is an amphibian. How does a salamander get water?

- A Through its skin
- B Through its gills
- C Through its lungs
- D All of the above



3. A company is designing a new kind of airplane that can soar a long way without fuel. How would a bioengineer help?

- A He would fix the new airplane engines when they break.
- B He would design the airplanes so they don't pollute the air.
- C He would study birds and fish to get ideas for the new kind of airplane.
- D He would NOT help a company to design a new kind of airplane.

4. Which of the following is an example of a membrane?

- A Skin
- B Ears
- C Eyes
- D Mouth

5. What does a habitat provide for an animal or plant?

- A Air
- B Food
- C Shelter
- D All of the above

PLEASE DO NOT WRITE IN THIS AREA



[SERIAL]

53
52
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

6. Which is true?

- A Both plants and animals have membranes inside them.
- B Plants have membranes inside them, but animals do not.
- C Animals have membranes inside them, but plants do not.
- D Neither plants nor animals have membranes inside them.

7. Some types of trees are able to survive the heat of a forest fire. Which of these structures would BEST help a tree to survive a fire?

- A Thick bark
- B Thick trunk
- C Large leaves
- D Shallow roots

8. Choose the BEST answer. Bioengineers:

- A Take care of sick people and animals.
- B Fix engines so they don't pollute the air.
- C Study nature to get ideas for how to solve problems.
- D Design technologies that don't hurt the environment.

9. The pictures below show the change in the fur of an arctic hare from summer to winter.



Which of the following statements BEST describes how this change helps arctic hares?

- A It lowers their body temperature.
- B It protects their eyes from sunlight.
- C It helps them move on slippery ice.
- D It makes them less visible to predators.

10. Rose plants have sharp thorns on their stems. How do thorns help rose plants to survive?

- A Thorns protect the plant from harm.
- B Thorns help the plant to get moisture.
- C Thorns anchor the plant in the ground.
- D Thorns support the stems and branches.

11. For his or her job, a bioengineer might:

- A Fix boat engines.
- B Take care of sick animals.
- C Clean up pollution in a lake.
- D Study nature to get ideas for new technologies.

12. Cloth is like a membrane because:

- A It is made of fibers.
- B It is used to make clothing for people.
- C Only certain things can pass through it.
- D Cloth is NOT like a membrane.

13. The leaves of some plants have tiny slippery bumps so that water runs off them quickly, washing away dirt. Studying the leaves of these plants MOST LIKELY would help someone to design:

- A A raincoat.
- B Grass leaves.
- C A wash cloth.
- D A dishwasher.

Question 7: adapted from MCAS 2007 STE Assessment -- Grade 5.
Question 9: from MCAS 2008 STE Assessment -- Grade 5.
Question 10: from MCAS 2005 STE Assessment -- Grade 5.

14. A tuna is an ocean fish that eats small, fast-moving fish that other fish can't catch.

Which of the following structures MOST helps a tuna to catch small, fast fish?

- Large fins
- Small gills
- Sharp teeth
- Tough scales



15. A window screen is like a membrane because:

- It is human-made.
- It can be made out of metal or plastic.
- Some things can go through and others can not.
- A window screen is NOT like a membrane.

16. A bioengineer is MOST LIKELY to help design a technology that:

- Will protect the environment.
- Will help to protect animals and people.
- Will be used outdoors in a natural place.
- Works in the same way as something in nature.

17. A squid is an animal that lives in the ocean. It pumps a stream of water out of its body, causing it to move quickly.

Which of the following moves in a way MOST similar to the squid?

- A bus
- A train
- A rocket
- A helicopter

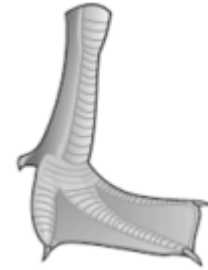


Question 14: adapted from MCAS 2009 STE Assessment -- Grade 5.

18. The picture below shows the foot of a kind of bird.

What kind of habitat is this bird MOST LIKELY to live in?

- Desert
- Meadow
- Freshwater lake
- Tropical rain forest



19. Lizards use the sticky pads on their feet to hang on to trees. Observing lizard feet MOST LIKELY would help someone to design:

- Stronger glue.
- Faster running shoes.
- More comfortable hiking shoes.
- Observing lizard feet would NOT help with a design.

20. Someone wants to design a faster boat. To look at the way nature might solve the problem, one of the BEST things for her to study is:

- Bees entering their hives.
- Fishes swimming in the sea.
- Seaweed floating in the ocean.
- She would NOT study things in nature.

21. What in nature MOST LIKELY gave people the idea to design a parachute?

- A goose flying long distances
- A cat jumping down from a fence
- A leaf falling gently through the air
- A hot air balloon moving slowly through the air





Question 17: adapted from MCAS 2009 STE Assessment -- Grade 5.

Question 18: adapted from MCAS 2007 STE Assessment -- Grade 5.

53
52
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1


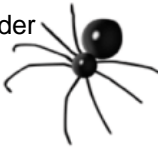


53
52
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

22. Which of these is designed to do the same sort of thing as a natural membrane?



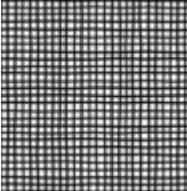

<input type="radio"/> (A) Bowl 	<input checked="" type="radio"/> (C) Tea bag 
<input type="radio"/> (B) Cardboard 	<input type="radio"/> (D) Aluminum foil 

23. Which of these is designed to do the same sort of thing as a crab shell?



<input type="radio"/> (A) Pliers 	<input type="radio"/> (C) Spider 
<input type="radio"/> (B) Straw hat 	<input checked="" type="radio"/> (D) Suit of armor 

24. Students want to design a model membrane that lets water drip through slowly. Which of these materials would be BEST to choose for designing the membrane?

<input checked="" type="radio"/> (A) A sponge 	<input type="radio"/> (C) Cheese cloth 
<input type="radio"/> (B) Metal screen 	<input type="radio"/> (D) A sheet of plastic 

25. A man is helping to design a very fast train. To get ideas, he is MOST LIKELY to study:

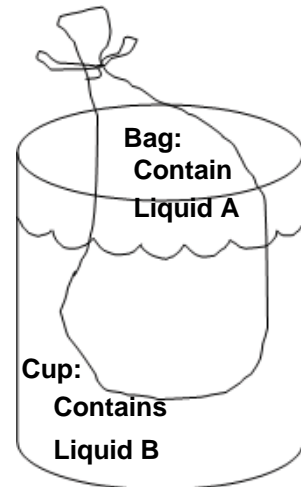
- (A) Engines used in very fast cars.
- (B) Fuel used for rockets that fly into space.
- (C) Birds that fly and dive quickly through the air.
- (D) Trains that pull lots of heavy stuff for a long distance.

In the picture, Liquid A and Liquid B are both clear liquids, like water. However, if they are mixed together, the liquid mixture becomes purple.

A student puts Liquid A in a clear plastic bag and Liquid B in a cup. He puts the bag into the cup. After an hour, the liquid in the cup turns purple, but the liquid in the bag stays clear.

26. What MUST be happening?

- (A) Liquid A can pass through the plastic bag but Liquid B cannot.
- (B) Liquid B can pass through the plastic bag but Liquid A cannot.
- (C) There must be a hole in the bag so that Liquid A and Liquid B can mix.
- (D) Liquid A and Liquid B can both pass through the plastic bag to mix together.



27. In this experiment, which is the model membrane?

- (A) The cup
- (B) Liquid A
- (C) The plastic bag
- (D) There is no model membrane in this experiment

PLEASE DO NOT WRITE IN THIS AREA



[SERIAL]