

Enter Your Name _____ (Optional)

DIRECTIONS
Read each question and choose the best answer. Then mark the circle next to the letter for the answer you have chosen.

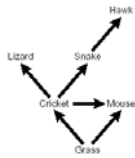
Stimulus	Average Number of Times a Planarian Moved		
	Toward	Away	No Response
Plant	16	4	3
Light	2	23	0
Rock	8	8	9
Food	25	0	0

1 These data support the hypothesis that a planarian moves away from —

- A plants
- B light
- C rocks
- D food

2 A primary function of a plant root is to —

- F release carbon dioxide
- G absorb water and minerals
- H digest organic materials
- J produce secondary growth



4 Edward Jenner helped control smallpox by developing the process of —

- F emigration
- G pasteurization
- H flagellation
- J vaccination

3 Which population would be most affected if the snakes were removed from this food web?

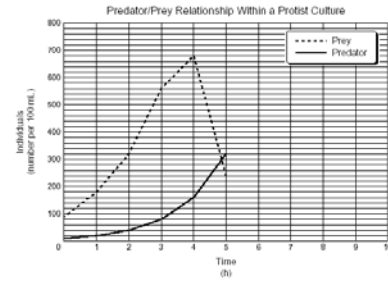
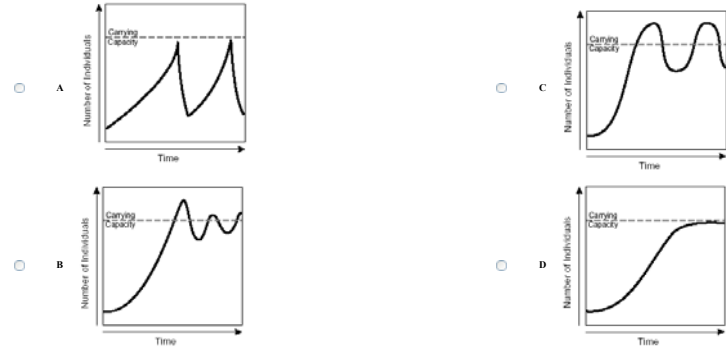
- A Grass
- B Mouse
- C Lizard
- D Hawk

Texas Lawn Fertilizer Bright 10-4-6	
Guaranteed Analysis	
Total Nitrogen (N)	10.0%
Water-insoluble nitrogen	1.6%
Nitrogen from ammonia	3.1%
Nitrogen from urea	5.5%
Available Phosphoric Acid (H ₂ PO ₄)	4.0%
Soluble Potash (K ₂ CO ₃)	6.0%
Iron (Fe)	0.2%

5 What percent of this fertilizer has compounds containing potassium (K)?

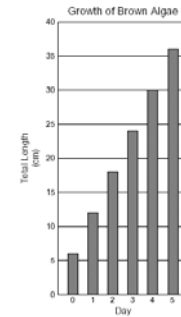
- A 0.2%
- B 4.0%
- C 6.0%
- D 10.0%

7 Which of these graphs shows the most stable population?



8 The graph shows the population relationship between a protist predator and its prey. If this relationship continues, the prey population will probably be eliminated by —

- F 6h
- G 7h
- H 8h
- J 9h



9 According to these data, what is the average growth rate for this type of brown algae?

- A 6 cm/day
- B 7 cm/day
- C 8 cm/day
- D 9 cm/day

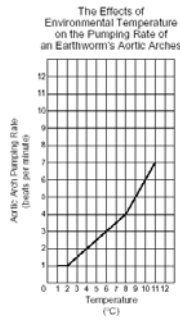
Determining Sex in Developing Sea Turtles						
Turtle Group	Clutch Size	Incubation Temperature (°C)	Available Seawater (mL)	Sand Composition	Hatching Results	
					Male (%)	Female (%)
P	100	27	1000	Quartz	0	100
Q	100	27	1000	Feldspar	0	100
R	100	29	1000	Quartz	46	54
S	100	29	1000	Feldspar	43	57
T	100	31	1000	Quartz	54	46
W	100	31	1000	Feldspar	57	43
X	100	33	1000	Quartz	100	0
Y	100	33	1000	Feldspar	100	0

10 According to this information, the sex of developing sea turtles is determined by —

- F clutch size
- G incubation temperature
- H available seawater
- J sand composition

11 Which of these researchers would be most interested in maintaining a healthy deciduous forest?

- A Biochemist
- B Sonographer
- C Toxicologist
- D Ecologist



12 The graph shows the relationship between environmental temperature and the pumping rate of an earthworm's aortic arches. If this trend continues, what will most likely be the earthworm's pumping rate at an environmental temperature of 12°C?

- F 7 beats per minute
- G 8 beats per minute
- H 9 beats per minute
- J 10 beats per minute

Q Nutrition Facts
Serving Size: 1 Sandwich
Servings Per Container: 1

Amount Per Serving

Calories 30	Calories from Fat 15
% Daily Value	
Total Fat 3g	6%
Saturated Fat 1.5g	3%
Cholesterol 50mg	10%
Sodium 200mg	4%
Total Carbohydrate 5g	1%
Dietary Fiber 1g	2%
Sugar 1g	
Protein 2g	
Vitamin A 2%	Vitamin C 5%
Calcium 4%	Iron 2%

S Nutrition Facts
Serving Size: 1 Sandwich
Servings Per Container: 1

Amount Per Serving

Calories 10	Calories from Fat 5
% Daily Value	
Total Fat 1g	2%
Saturated Fat 0.5g	1%
Cholesterol 10mg	2%
Sodium 50mg	1%
Total Carbohydrate 10g	2%
Dietary Fiber 2g	4%
Sugar 10g	
Protein 5g	
Vitamin A 5%	Vitamin C 10%
Calcium 2%	Iron 2%

R Nutrition Facts
Serving Size: 1 Sandwich
Servings Per Container: 1

Amount Per Serving

Calories 100	Calories from Fat 50
% Daily Value	
Total Fat 10g	20%
Saturated Fat 2.5g	5%
Cholesterol 50mg	10%
Sodium 100mg	2%
Total Carbohydrate 10g	2%
Dietary Fiber 5mg	1%
Sugar 5g	
Protein 20g	
Vitamin A 1%	Vitamin C 10%
Calcium 2%	Iron 2%

T Nutrition Facts
Serving Size: 1 Sandwich
Servings Per Container: 1

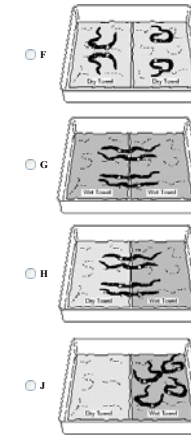
Amount Per Serving

Calories 100	Calories from Fat 50
% Daily Value	
Total Fat 10g	20%
Saturated Fat 2.5g	5%
Cholesterol 50mg	10%
Sodium 100mg	2%
Total Carbohydrate 10g	2%
Dietary Fiber 5mg	1%
Sugar 5g	
Protein 20g	
Vitamin A 1%	Vitamin C 10%
Calcium 2%	Iron 2%

13 People with heart conditions are often required to limit their salt intake. According to these labels, which food should a person on a low-salt diet choose?

- A Q
- B R
- C S
- D T

14 Which of these experimental setups would be the first step in determining whether earthworms choose a wet environment or a dry environment?



- F
- G
- H
- J

15 Which organelle has the most control over a cell's functions?

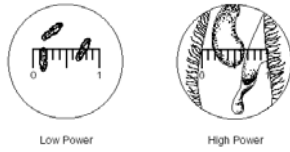
- A Cell membrane
- B Ribosomes
- C Nucleus
- D Vacuole

16 Low availability of which element could be a limiting factor in a plant community?

- F Nitrogen
- G Argon
- H Mercury
- J Sodium

17 Mitosis is most important for a kitten's —

- A vision
- B respiration
- C growth
- D metabolism



18 The pictures show the fields of view during low and high magnifications. How much greater is the high-power magnification than the low-power magnification?

- F >1
- G >5
- H >10
- J >20

19 Which group is most responsible for the recycling of atoms within the environment?

- A Autotrophs
- B Consumers
- C Phototrophs
- D Decomposers

ACETONE

Danger!

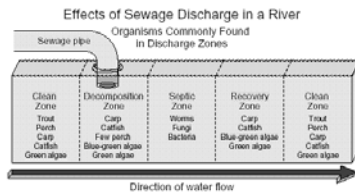
Extremely flammable. Harmful if swallowed or inhaled. Causes irritation.

Keep away from heat, sparks, and flames. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Keep in tightly closed container. Use with adequate ventilation. Wash skin thoroughly after handling.

Hazard Symbol 	Consult MSDS for further health and safety information.	Hazard Rating
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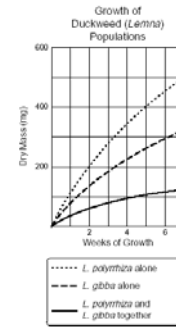
20 According to the hazard rating, this material is very —

- F corrosive
- G caustic
- H combustible
- J carcinogenic



21 The diagram shows the range of organisms found within certain sections of a river in an industrial area. Which section of the river most likely has the **LOWEST** level of dissolved oxygen?

- A Decomposition zone
- B Septic zone
- C Recovery zone
- D Clean zone



22 The graph shows the results of experiments with two species of duckweed, *L. polyrrhiza* and *L. gibba*. Which of these best explains why growth is **LESS** when the two species are grown together?

- F They attract more herbivores.
- G One grows faster than the other.
- H They compete for the same resources.
- J One stimulates the growth of the other.



23 The picture shows an angiosperm structure. Which of these gymnosperm structures has a similar function?

- A Pine needle
- B Pine root
- C Poincone
- D Pine seed

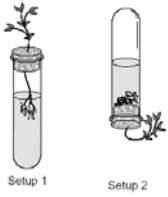
25 The colorful petals of a flower benefit a plant by —

- A absorbing radiant energy
- B attracting insect pollinators
- C protecting it from predators
- D catching windblown pollen

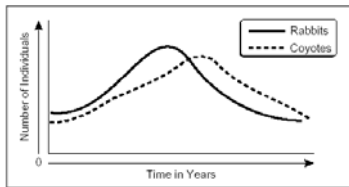


26 The picture shows the fruit of the plant commonly called the beggar-tick. The spines on the tip of the fruit help in its dispersal by allowing the fruit to be —

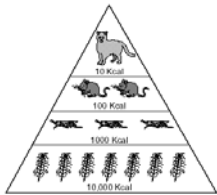
- F blown by the wind
- G carried on water
- H attached to animals
- J eaten by birds



- 27 Which question is this apparatus most likely designed to answer?
- A Does atmospheric pressure affect transpiration?
 - B Does gravity affect the direction of plant growth?
 - C Does turgor pressure affect the absorption of water?
 - D Does absorbed light increase the environmental temperature?



- 28 This graph shows the average number of rabbits and coyotes in an area over time. Which conclusion is best supported by these data?
- F The rabbit population obtains energy by consuming young plants.
 - G The coyote population is influenced by the available number of rabbits.
 - H The number of rabbits will decrease during summer months.
 - J The number of coyotes will be greater than the number of rabbits within a ten-year period.



- 29 In this food pyramid, how much energy is available as the energy is passed from one trophic level to another?
- A 1%
 - B 10%
 - C 25%
 - D 50%

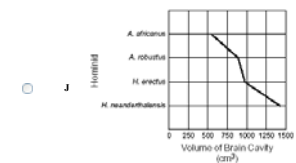
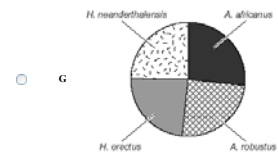
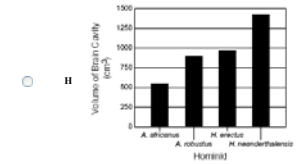
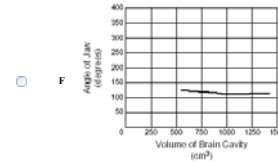
- 30 A chemical spill was thought to be responsible for a large fish kill in a river. Which person would most likely determine whether the fish died from being exposed to the chemicals?
- F Toxicologist
 - G Virologist
 - H Physiologist
 - J Botanist

- 31 The human body uses carbohydrates as a —
- A source of energy
 - B material for muscle production
 - C carrier of oxygen
 - D coenzyme of metabolism

Some Cranium Characteristics of Selected Early Hominids

Hominid	Angle of Jaw (degrees)	Volume of Brain Cavity (cm ³)	Presence of Browridge
<i>A. africanus</i>	125	545	Yes
<i>A. robustus</i>	116	890	Yes
<i>H. erectus</i>	111	975	Yes
<i>H. neanderthalensis</i>	114	1425	Yes

- 32 The chart shows a few characteristics of craniums from selected early hominids. Which of these graphs best shows the relationship between the brain cavities of these craniums?



- 33 True plants always contain each of these organs EXCEPT —
- A roots
 - B stems
 - C leaves
 - D flowers

- 34 Which technology contributed most to the development of the cell theory?
- F Organic stains
 - G Compound microscopes
 - H Heat-resistant glassware
 - J Adjustable gas burners

- 35 An inheritable mutation may occur if an organism has a change in its —
- A appendages
 - B internal organs
 - C DNA structure
 - D ATP production rates

Respiration Rate of a Growing Yeast Culture

Time (min)	Number of Bubbles per Minute
0	0
1	7
2	10
3	14
4	19
5	24
6	31
7	39
8	48
9	58
10	??

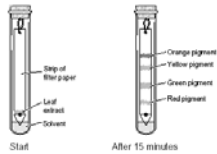
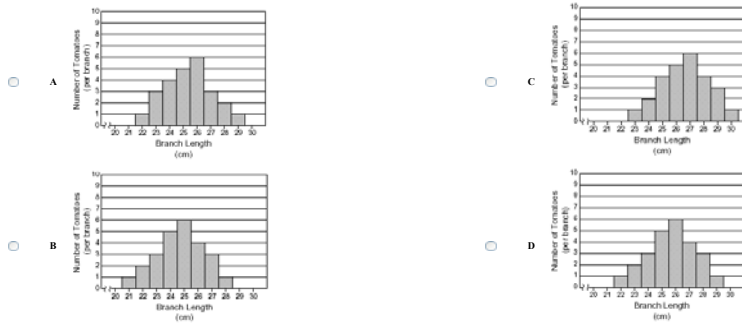
- 36 The chart shows the results of growing a yeast culture in a 10% fructose solution. The number of bubbles produced each minute was used as an indication of the yeast respiration rate. If all other factors remain constant, after 10 minutes the respiration rate will most likely be —

- F 61 bubbles per minute
- G 64 bubbles per minute
- H 69 bubbles per minute
- J 78 bubbles per minute

Does the Length of a Tomato Plant Branch Affect Productivity?

Branch Length (cm)	Number of Tomatoes (per branch)
22	1
23	2
24	3
25	5
26	6
27	4
28	3
29	1

37 The chart shows the number of tomatoes produced by branches of different lengths. Which graph best represents these data?

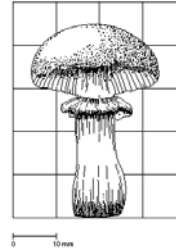


38 The pictures show the results of the chromatography of a leaf extract. Which statement is best supported by the results of this investigation?

- F This leaf contains more than five pigments.
- G This leaf has more yellow pigment than green pigment.
- H This leaf contains at least four different pigments.
- J This leaf's green pigment is less dense than the yellow pigment.

40 Which relationship is represented when a hyena eats a rodent that it has caught?

- F Scavenger/carrion
- G Herbivore/consumer
- H Predator/prey
- J Host/parasite



39 What is the approximate height of this mushroom?

- A 45 mm
- B 49 mm
- C 53 mm
- D 57 mm



41 Which series of bases will complete this strand of DNA?

- A CCTGAT
- B ACTGGC
- C GTAGGC
- D TCAGGG

Sunflower Blossoms in a Meadow

Day	Time	Closed Buds (%)	Open Blossoms (%)
1	6:00 A.M.	100	0
	12:00 NOON	85	15
	6:00 P.M.	70	30
2	6:00 A.M.	55	45
	12:00 NOON	40	60
	6:00 P.M.	25	??

42 The chart shows the periodic increases in the percent of open sunflower blossoms found in a meadow. If this trend continues, what percent of the sunflowers will have open blossoms by 6:00 P.M. on the second day?

- F 70%
- G 75%
- H 85%
- J 90%

You have reached the end of the test. To score the test, click on the "Score Test" button. To clear your answers and begin the test again, click on the "Reset" button. The scoring of the test will take a minimum of 10 seconds.

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