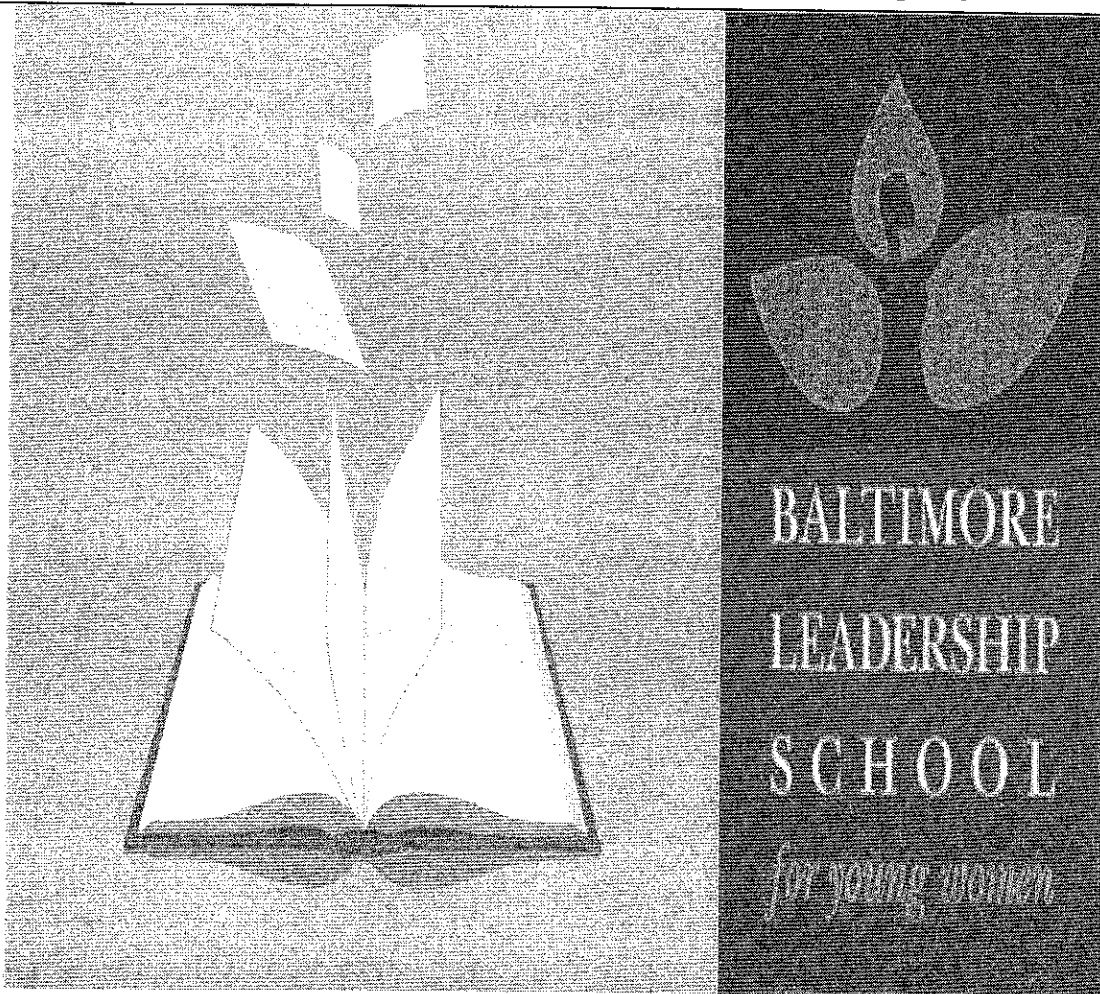


7th Grade Comprehensive Exam

STUDY GUIDE

PACKET DUE DATE: Monday, January 9, 2012



SCIENCE

TEST DATE: Tuesday, January 17, 2012

NAME: _____

COLLEGE: _____

10. What is the difference between a consumer, a producer and a decomposer? Can any survive without the other?

11. Next to each type of consumer, write what they eat:

Carnivore _____ Omnivore _____

Herbivore _____

12. Draw and label the energy pyramid. Give an example at each level. Put a star next to the level with the most energy.

How much energy is lost at each level? _____

13. Define the following words:

Symbiosis-

Commensalism-

Parasitism-

Mutualism-

Competition-

Limiting Factor-

14. In your own words, what is carrying capacity? Draw the graph.

15. What is the greenhouse effect? What does it do?

16. Explain why the ozone layer is being depleted.

17. Write the name of the correct global environmental problem to its characteristics :

a. _____ Millions of plastic bottles clogging up waterways, polluted water, and dead fish

b. _____ Chemical filled air, no green life in surrounding areas, blocking out of sun, and the Earth becoming hotter

c. _____ Millions of gallons of oil in ocean, tar balls on nearby beaches and death of birds, fish, aquatic mammals

d. _____ Cutting down thousands of trees a day, loss of habitat and loss of hundreds of species

e. _____ A species can no longer be found in large numbers the animals that feed off of that species numbers decrease, and the environment declines

18. What is the difference between a renewable and a nonrenewable resource? Give examples of each.

19. What is a fossil fuel? Why are fossil fuels harmful to the environment?

20. What are the effects of coal mining?

21. For each problem below tell how Baltimore is effected:

Smog _____

Deforestation _____

Overfishing _____

Plastic Vortex _____

22. What are the advantages and disadvantages of these alternative energies:

Solar-

Nuclear-

Hydroelectric-

23. On a separate sheet of paper answer the following essay prompt.

A. Shellfish are the main prey of walruses in the Atlantic. Walruses depend on the sea ice to hunt for shellfish. Walruses use the sea ice as places to rest when they are searching for food over long distances. They also use sea ice as a platform to access shellfish attached to shallow areas. Unfortunately, global warming is causing the sea ice to melt.

Explain how the disappearance of the sea ice might affect walruses and shellfish differently. Be sure to:

- explain how the feeding habitats of walruses may change
- explain how the populations of walruses and shellfish may change

Part II: Cells

1. What are the 5 characteristics of living things?

1.

2.

3.

4.

5.

2. Complete the following statement about Urey and Miller's experiment:

_____ + _____ = _____

3. Is it better to be unicellular or multicellular? Why?

4. List the Living Levels of Organization of living things from SMALLEST to LARGEST:

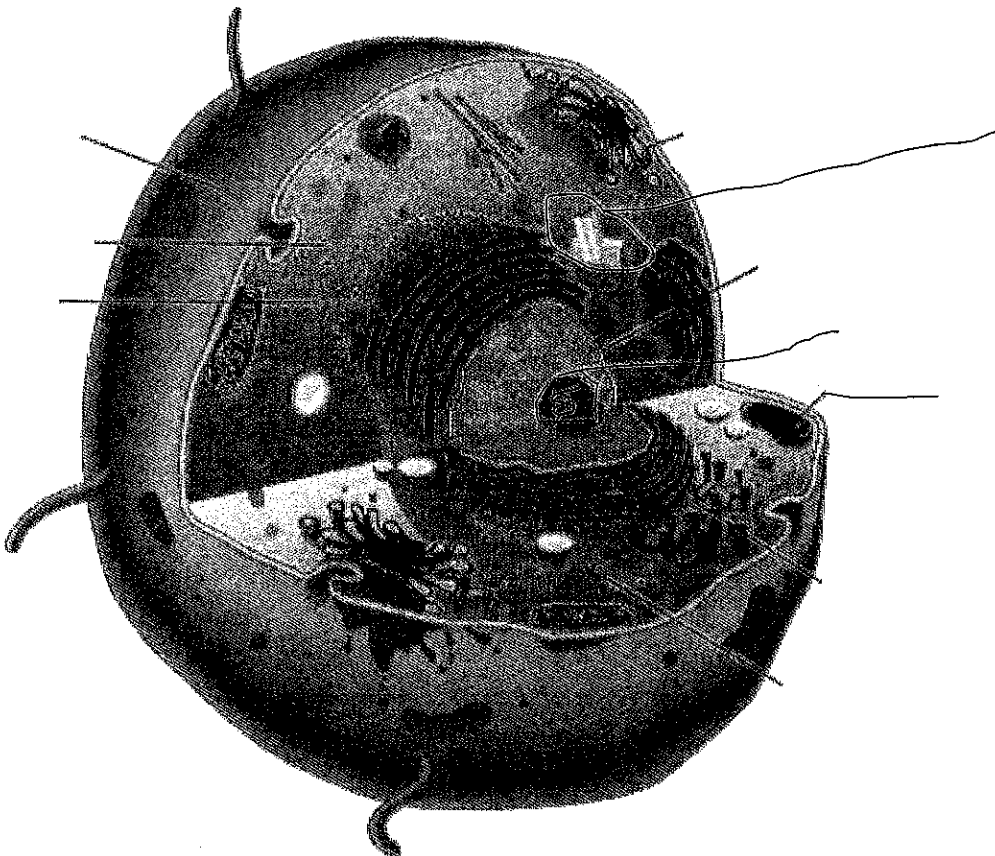
1. _____ 2. _____

3. _____ 4. _____

5. _____

5. Who are the three scientists that helped determine the Cell Theory?

6. Label the organelles below.



7. What are the two MAIN differences between a prokaryote and a eukaryote?

8. What are the three parts of the Cell Theory?

1.

2.

3.

9. Put the function next to each organelle:

Organelle	Function
Nucleus	
Centriole	
Cell Membrane	
Mitochondria	
Golgi Apparatus	
Cytoplasm	
Endoplasmic Reticulum (ER)	

10. What are endocytosis and exocytosis? Draw them! (Think IN and OUT)

11. Draw and label the 4 phases of mitosis:

What is the product of mitosis? Why is this important for the body?

Part III: Genetics

1. Draw and label the 8 phases of meiosis.

What is the product of meiosis? How is this important to genetics?

2. What are inherited characteristics? Give two examples.

3. In goats, long hair is dominant to short hair. If an individual has one gene for long hair and one gene for short hair, what will be the length of its hair?

- a) long
- b) medium
- c) short
- d) no hair at all

4. In humans, brown eyes are dominant to blue eyes. In order for an individual to have blue eyes, which of the following statements must be true?

- a) the individual has two dominant genes
- b) the individual has one dominant and one recessive gene
- c) the individual has two recessive genes
- d) the individual's genes underwent a mutation

5. What is the difference between genotype and phenotype?

- a) Genotype is the combination of genes for one or more specific traits and phenotype is an individual's appearance or physical expression of a gene.
- b) Genotype an individual's appearance or physical expression of a gene and phenotype is a combination of genes for one or more specific traits.
- c) Genotype is one of the alternate forms of a gene that governs a characteristic and phenotype is the set of genetic instructions passed from parent to offspring.
- d) Genotype is the set of genetic instructions passed from parent to offspring and phenotype is one of the alternate forms of a gene that governs a characteristic and phenotype

6. In pea plants, purple flowers are dominant to white flowers. Which of the following correctly demonstrates the a correct relationship between genotype and phenotype?

- a) PP → white flower
- b) Pp → white flower
- c) Pp → purple flower
- d) pp → purple flower

7. In pea plants, yellow seeds are dominant to green seeds. Using the punnet square below, calculate the probability of that an offspring will have yellow seeds.

	Y	y
Y		
y		

- a) 0%
- b) 25%
- c) 50%
- d) 75%

8. Adajah flipped a coin 20 times. Following the experiment, she put the following chart into her science journal

# of Flips	Experimental Results	
	# heads	# tails
20	5	15

Which of the following correctly indicates the expected probability and experimental ratios of Adajah's experiment

a) **Expected Probability:** $\frac{1}{2}$ flips will result in heads and $\frac{1}{2}$ of the flips will result in tails

Experimental ratio: 1:3 ratio of heads to tails

b) **Expected Probability:** $\frac{1}{4}$ of the flips will result in heads and $\frac{3}{4}$ of the flips will result in tails

Experimental ratio: 1:1 ratio of heads to tails

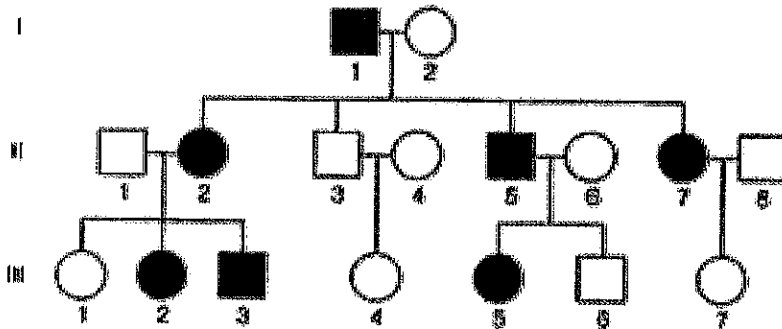
c) **Expected Probability:** 1:3 ratio of heads to tails

Experimental ratio: $\frac{1}{2}$ flips will result in heads and $\frac{1}{2}$ of the flips will result in tails

d) **Expected Probability:** 1:1 ratio of heads to tails

Experimental ratio: $\frac{2}{7}$ of the flips will result in heads and $\frac{5}{7}$ of the flips will result in tails

Use the pedigree below to answer questions 9 and 10.



9. How many affected females are there in generation II? _____

10. How many offspring do the parents in generation I have? _____

11. Why was King Henry VIII wrong to kill his wives? (Be specific!)

12. Baldness is a sex-linked disease. Cross a normal male with a carrier female. CIRCLE the offspring with the disease. (You must do a Punnett Square)

13. In polar bears, long hair (L) is dominant to short hair (l). Cross a long hair polar bear (Ll) with a long hair polar bear (Ll). Write the probability of long: short haired polar bears. (You must do a Punnett square)

14. What is genetic engineering?

Name 1 pro and 1 con of this process:

Part IV: Lab Connections

1. Write the problem, hypothesis, and variables for the purpose below:
 - a. Purpose: To find out if sunlight makes plants grow taller.
 - b. Problem:
 - c. Hypothesis:
 - d. Independent Variable:
 - e. Dependent Variable:
 - f. Control:
2. What does MAD stand for?
3. What is the difference between a purpose and a problem?
4. What is the difference between an independent and dependent variable?
5. Make a line graph about Carbon Dioxide Levels using this data:
 - X axis: Years
 - Y axis: Level of carbon dioxide
 - Year 1975- Level 330
 - 1980- 340
 - 1985-345
 - 1990-350
 - 1995-355
 - 2000-360
 - 2005 -365

Part V: Henrietta Lacks

1. Why was Henrietta Lacks considered a second-class citizen?
2. Henrietta has carcinoma in her cervix. Please explain what this means.
3. What time period did Henrietta live in? Describe what her life was like during this time.
4. “By the next morning they’d doubled. Mary divided the content of each tube into two, giving them room to grow, and within twenty-four hours, they’d doubled again.” What process is Henrietta’s cells undergoing right now? Why is the rate so astonishing?
5. The doctors did not tell Henrietta that her surgery and radium treatment would leave her infertile. It is noted in her medical chart that she would not go through the treatment if she knew this. Why do you think Henrietta said this? What does this tell us about her character?

