

Name \_\_\_\_\_ Date \_\_\_\_\_ Hour \_\_\_\_\_

### **Directed Reading - Gravity: A Force of Attraction pages 20-25**

1. The force of attraction between two objects that is due to their masses is the force of \_\_\_\_\_.
2. Why do astronauts on the moon bounce when they walk? \_\_\_\_\_  
\_\_\_\_\_
3. As mass becomes greater, what happens to the force of gravity? \_\_\_\_\_  
\_\_\_\_\_

### **The Effects of Gravity on Matter**

4. Does all matter experience gravity? Explain your answer. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. The force that pulls you toward your pencil is the force of \_\_\_\_\_.
6. Since all objects are attracted toward each other because of gravity, why can't you see the objects moving toward each other? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. How are objects around you affected by the mass of Earth? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### **Newton and the Study of Gravity**

8. What were the two questions that Sir Isaac Newton realized were actually two parts of the same question? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. What connection did Newton make between the moon and a falling apple? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
10. Newton summarized his ideas about gravity in a law now called \_\_\_\_\_.

### **The Law of Universal Gravitation**

11. Newton's law of universal gravitation involves the relationships between all of the following EXCEPT  
a. Distance                      b. Mass                      c. heat                      d. gravitational force
12. Which would be greater, the gravitational force between two feathers or two bowling balls, assuming the distance between them is equal? Explain your answer. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

13. What happens to the gravitational force when two objects are moved away from each other? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
14. Why is a cat easier to pick up than an elephant? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
15. Why doesn't the sun's gravitational force pull you off Earth? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
16. What would happen to Earth and other planets in the solar system without the sun's gravitational force?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Weight as a Measure of Gravitational Force**

17. The measure of the amount of matter in an object is the \_\_\_\_\_ of the object.
18. The measure of Earth's gravitational force on an object is the object's \_\_\_\_\_.
19. When gravitational force changes, \_\_\_\_\_ changes to the same degree.

**Identify each of the following statements as describing mass or weight.**

- \_\_\_\_\_ 20. Different on the moon than on Earth
- \_\_\_\_\_ 21. Expressed in newtons
- \_\_\_\_\_ 22. Expressed in kilograms
- \_\_\_\_\_ 23. A measure of gravitational force
- \_\_\_\_\_ 24. A value that does not change
- \_\_\_\_\_ 25. The amount of matter in an object