Name_____ Hour_____

Force & Motion Study Guide

Goal 1 - Types of Motion

1. What are the six types of motion? Write down a simple definition for each.

2. Describe two types of motion that occur during a baseball game. Clearly describe each type of motion and explain how the objects or people involved are behaving.

3. Describe two types of motion that occur during a during the Batman ride at Six Flags. Clearly describe each type of motion and why it is considered that type of motion.

Goal 2 - Speed/Velocity/Acceleration

4. What is the definition for speed?

5. What is the definition for velocity?

6. Give an example of two objects that have the same speed but different velocities.

7. What is the equation you use to calculate for speed? time? distance? (write all three)

Word Problems: Directions for #8-11. For the following, (1) write the equation out that you are using, (2) plug in the numbers into the equation, (3) write your answer with the correct units/label, and (4) circle your final answer.

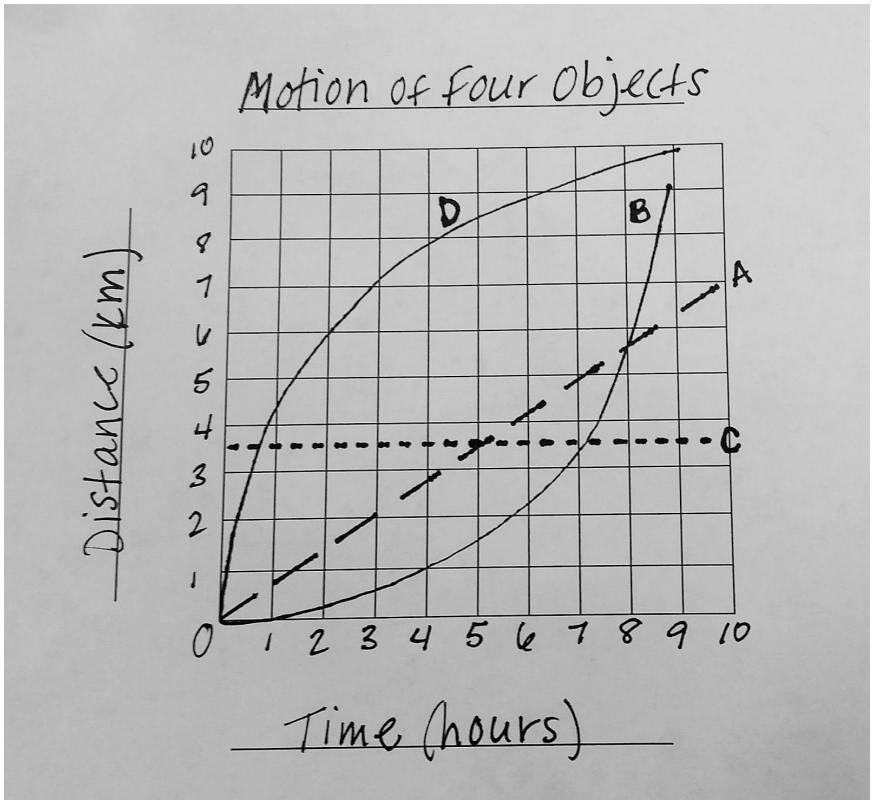
8. A train is traveling west to California. It takes 10 hours to go 950 miles. Find the train's speed. Include proper units.

9. What is the distance a train will travel if it is going a speed of 40 mph if it travels for 2.4 hours?

10. What is the time it takes a gorilla to move 100 meters if he is moving at a speed of 3.5 m/s?

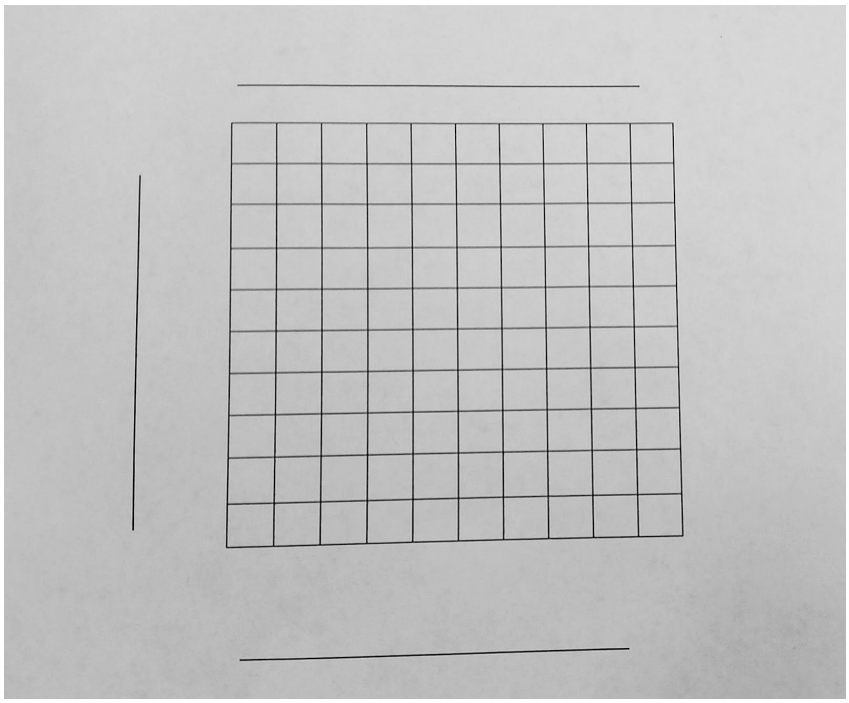
11. What is acceleration? How do you know if an object accelerated?

12. Look at the graph below, write what each line represents on the lines below, A-D.



Goal 3 - Interpreting/Graphing Speed & Motion Events

13. Graph the average speed of the following boats on the blank graph to the right of the data table. Include an accurate title, labels with units, and a key.



Average Speed of Water-Motor Vehicles

Boats	**Distance (m)**	**Time (s)**
Paddle Boat	5	5
Speed Boat	45	1
Jet Ski	60	4
Pontoon Boat	80	4

Directions: Answer questions 13-15 using the average speed graph of different boats you just completed.

14. Which boat went the fastest on average? How do you know?

15. Which boat went the slowest on average?

16. Calculate the speed for each boat. Include correct units.

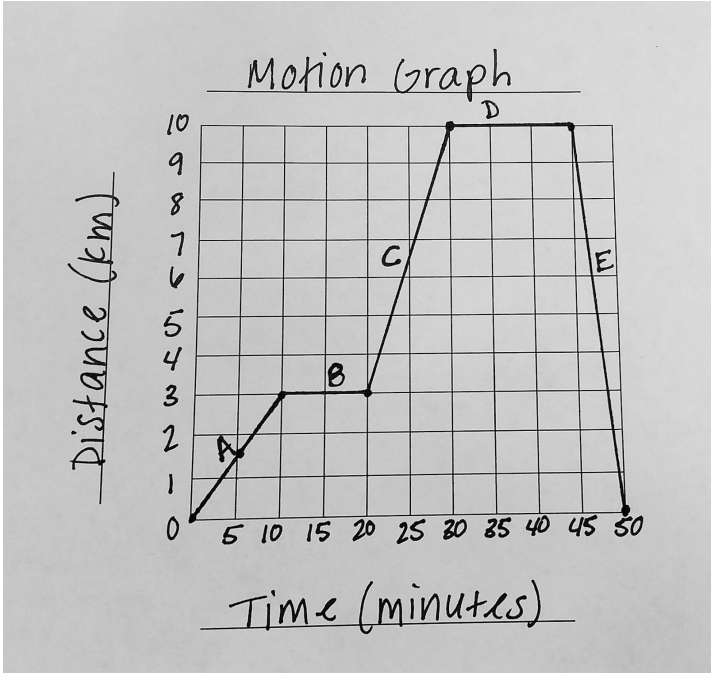
Paddle Boat _____

Speed Boat _____

Jet Ski _____

Pontoon Boat _____

Directions: Use the graph below to answer questions 16-20.



17. Which of the following best describes the motion graph above? _____
    a. Billy leaves his house to go to the gas station. He turns right onto Big Bend. After traveling for 10 minutes he gradually begins traveling uphill. He stops to enjoy the beauty at the top then speeds back down the hill towards home.
    b. Billy leaves his house to go to the gas station, stops to get gas, then drives 7 km to the library where he returns a book and looks for a few new ones, and then he returns home.
    c. Billy drives his car at a constant 0.3 km/min for 10 min. He gets hungry so he decides to stop for a burger. After he gets done eating he drives past Grant's Farm to see the animals. A stray buffalo catches his eye so he stops his car. He helps walk the buffalo back to Grant's farm which takes Billy further away from his starting location.
    d. Billy jogs 10 km in 3 min, then stops to rest for 10 min. Then he runs 10 km in 7 min. He needs to rest for 15 min. Once he is rested up he travels the 10 km back to his home.

18. Which line(s) represents no movement at all? _____

19. Which line represents the fastest speed? _____

20. Which lines represents the slowest speed? _____

21. Which line represents an object go backwards towards it's starting location? _____

Goal 4 - Forces

22. What is a force?

23. What are the units for force?

24. What instrument did we use in class to measure force?

25. What are contact forces? What are the five types of contact forces?

26. What are non-contact forces? What are the three types of non-contact forces?

27. How does friction affect the force required to move an object?

Goal 5 - Gravity Basics

28. Explain the gravitational force of attraction that exists between objects.

29. An object's _____ is a measure of the gravitational force of a planet/moon acting on that object.

30. If it were possible for you to stand on all the planets in our solar system, which planet would you weigh the most on? WHY?

Goal 6 - Newton's Laws

State each law and give an example of this law in action.

1st Law -

2nd Law -

3rd Law -