1: Motion

Worksheet B: Interpreting Motion Graphs

Name_____

AP/Inquiry Physics

ANSWER QUESTIONS 1 AND 2 IN COMPLETE SENTENCES

1.   What does the slope of a distance vs. time graph indicate about an object's motion?

_____

2.   What does the slope of a speed vs. time graph indicate about an object's motion?

_____

Questions 3 - 8 refer to the following generic graph shapes. Write the letter corresponding to the appropriate graph in the blank at the left of each question.

A   B   C   D   E
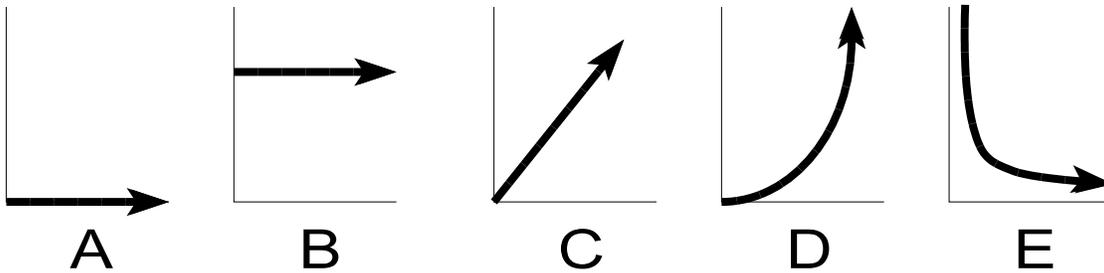
_____   3.   Which shape fits a **distance** vs. time graph of an object moving at constant (non-zero) speed?

_____   4.   Which shape fits a **speed** vs. time graph of an object moving at constant (non-zero) speed?

_____   5.   Which *two* shapes fit a **distance** vs. time graph of a motionless object?

_____   6.   Which shape fits a **speed** vs. time graph of a motionless object?

_____   7.   Which shape fits a **distance** vs. time graph of an object that is speeding up at a steady rate?

_____   8.   Which shape fits a **speed** vs. time graph of an object that is speeding up at a steady rate?

_____   9.   Which of the following units is equivalent to (meters per second) per second?
           a)   m   b)   m/s   c) m/s^2 d) m/s^3

_____   10.   Which of the following units correspond to the slope of a distance vs. time graph?
   a)   m   b)   s   c)   m/s   d) m/s^2

_____   11.   Which of the following units correspond to the slope of a speed vs. time graph?
           a)   m/s   b)   m•s   c) m/s^2 d) m^2/s^2

CONTINUED...

The table below gives distance and time data for a moving object. Pay attention to how the **time intervals** are changing as the distance rises in 20 m increments.

| Distance (m)	Time (s)
0	0
20	4.5
40	6.3
60	7.7
80	8.9
100	10

_____   12.   Which of the following **distance** vs. time graphs corresponds to the table data?

a)   b)   c)   d)
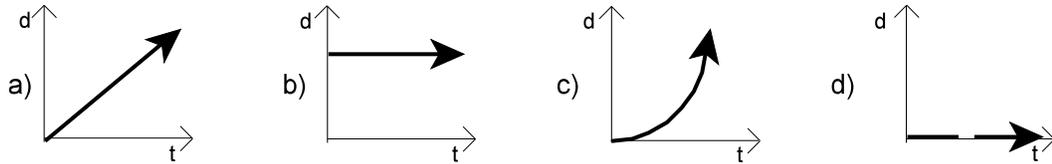
_____   13.   Which of the following descriptions matches the graph you selected in question 12?
  a)   A motionless object.
  b)   An object moving at a constant speed.
  c)   An object undergoing constant, positive acceleration.
  d)   An object undergoing constant, negative acceleration.

_____   14.   Which of the following **speed** vs. time graphs corresponds to the table data?

a)   b)   c)   d)
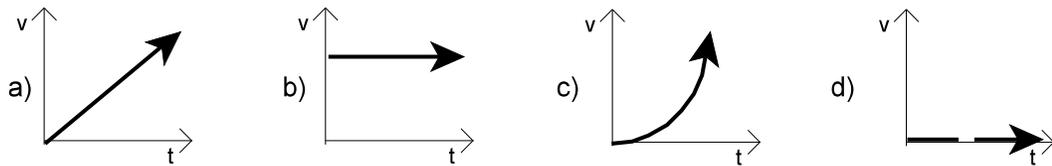
_____   15.   Which of the following descriptions matches the graph you selected in question 14?
  a)   A motionless object.
  b)   An object moving at a constant speed.
  c)   An object undergoing constant, positive acceleration.
  d)   An object undergoing constant, negative acceleration.

BEWARE: If your answers to questions 13 and 15 are different from each other, you are claiming that the same object can have two distinct motions simultaneously. Ask yourself, "Is that reasonable?"

16.   A woman walks away from a starting point in a straight line.
      A distance vs. time graph for her motion is shown at right.
  a.   Describe the woman's motion between 0 and 2 seconds.

      _____

      _____

  b.   Fill out the table below. You do not *have* to show your work.

Time Interval	Woman's Speed (m/s)
2 to 4 seconds	_____
4 to 6 seconds	_____
6 to 8 seconds	_____