Science 10

Exam Review: Physics

1. Define the following terms:

Average speed	Certainty rule	Precision rule	Instantaneous speed
Constant speed	Distance	Acceleration	Average acceleration
Constant acceleration	Time		

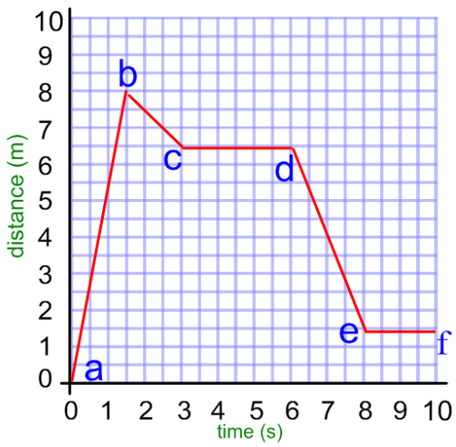
2. State the number of significant digits in each of the following values:

a. 10.2 km
b. 0.02 m
c. 5.0 cm
d. 307.0 km
e. 0.5060 m
f. $50,000

3. Evaluate each of the following using either the certainty or the precision rules for significant figures.

a. 17.5 mL + 95mL + 8.25mL
b. 0.2cm + 23.91cm + 0.62cm
c. 72.5 min ÷ 60min
d. 465km ÷ 5.21h
e. 13.63 h – 0.5h
f. 22.4 h x 0.1 h

4. Use the following graph to answer the questions below:

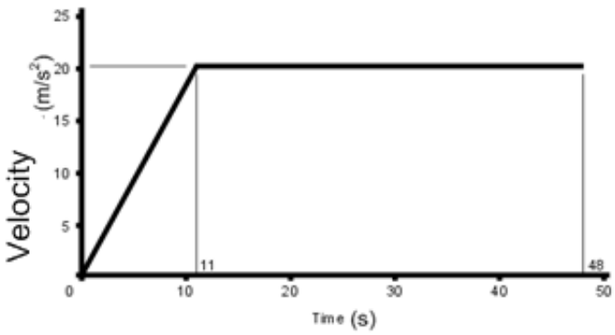


a) What is the average speed between:

i) a and b ii) b and c iii) c and d iv) d and e

b) Which line shows the greatest speed?

5. Use the following graph to answer the questions below:

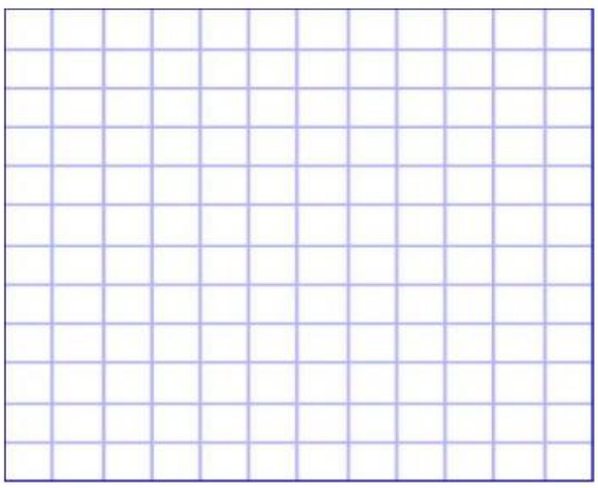


a. What is the acceleration between:
   i. 0 seconds and 11 seconds
   ii. 11 seconds and 48 seconds

b. Determine the total distance travelled from 0 seconds to 48 seconds.

6. A truck travels a constant speed of 30m/s for 3 seconds and then stops for 5 seconds at a stop sign.
   a. Complete the given table.
   b. Sketch the distance-time graph for this data.

Distance (m)	Time (s)
0	0
	1
	2
	3
	4
	5
	6
	7
	8



7. Sketch a graph to represent the following.
   a. Speed- time graph with uniform negative acceleration b. Speed-time graph with no acceleration

Using the following formulas solve each of the following:

$$a = \frac{v_2 - v_1}{t_2 - t_1} \qquad t = \frac{v_2 - v_1}{a} \qquad v_1 = v_2 - at \qquad d = vt$$

$$v_2 = v_1 + at$$

$$v = \frac{d_2 - d_1}{t_2 - t_1} \qquad t = \frac{d}{v}$$

8. If it takes 0.99s for an air bag to stop a person, what is the acceleration of a person moving at 15m/s and coming to a complete stop in that time?

9. If two hikers walk the trans-Canada trail for 6.0h and covered 31km, what is their average speed for the day?

10. Mary walked for 2.1h at a speed of 3.6km/h. What distance did Mary travel?

11. In the final leg of a round the world trip a balloon flew for 18h at an average of 210km/h. How far did it travel?

12. A car travels a distance of 143m at an average speed of 95 km/h. How long did the trip take?

13. Joe is accelerating from rest at a rate of 1.5m/s^2 for 10.0 sec. What is the final speed reached by Joe?

14. A train is accelerating at a rate of 2m/s^2. If its initial speed is 20m/s and it travels for 30 seconds what is its final velocity?

15. While pulling a barge, a tugboat accelerates at 0.11 m/s^2 to produce a 5.0 m/s change in speed of the barge. How long did this take?

16. The NASA Space Shuttle touches down on a runway and begins accelerating at a speed of -8.80 m/s^2. It comes to a stop after 40 s on the runway. What was its speed when it hit the runway?

17. A runner achieves a velocity of 12.20 m/s; 10.0 sec after he begins calculate his acceleration.

18. It takes Johnny 0.30 hour to drive to school. His route is 20.0 km long. What is Johnny's average speed on his drive to school?