

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

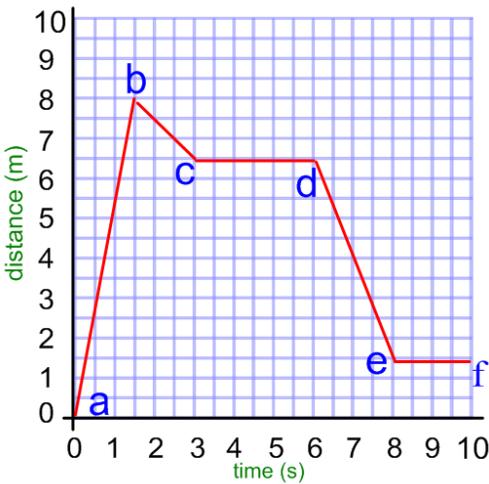
3. Round each of the following to four significant digits

- | | | |
|--------------|---------------|---------------|
| a. 0.0045629 | d. 0.00023678 | g. 48.8945 |
| b. 25.3740 | e. 306.54 | h. 0.00506540 |
| c. 10008.8 | f. 30009.9 | |

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

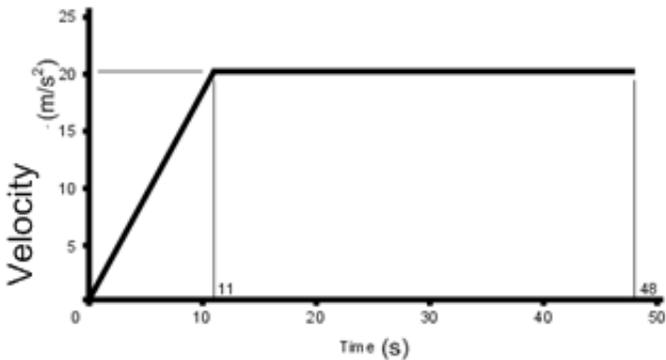
- | | | |
|----------------------------|-----------------------------|---------------------|
| a. 17.5 mL + 95mL + 8.25mL | b. 0.2cm + 23.91cm + 0.62cm | c. 72.5 min ÷ 60min |
| d. 465km ÷ 5.21h | e. 13.63 h – 0.5h | f. 22.4 h x 0.1 h |

5. 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?

6. 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.

7. 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



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

Using the following formulas solve each of the following:

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

$$v_2 = v_1 + at$$

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

- 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?
- If two hikers walk the trans-Canada trail for 6.0h and covered 31km, what is their average speed for the day?
- Mary walked for 2.1h at a speed of 3.6km/h. What distance did Mary travel?
- 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?
- A car travels a distance of 143m at an average speed of 95 km/h. How long did the trip take?
- 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?
- 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?
- 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?
- 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?
- A runner achieves a velocity of 12.20 m/s; 10.0 sec after he begins calculate his acceleration.
- 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?
- A bottle nosed dolphin is cruising along and then accelerates at 0.50m/s^2 to reach a final speed of 9.7 m/s after 15s. What was the initial speed of the dolphin?
- In 1997, *Thrust SSC*, the world's fastest jet-engine car, traveled 715m at an average speed of 325m/s. The length of time it took in minutes was?
- Starting from rest if your acceleration is 4.5m/s^2 how fast are you travelling after 4 seconds?
- A car increases its acceleration from 0 to 80km/h in 30 seconds its acceleration is?