**KINEMATICS WORKSHEET 1**

1. Answer True or False to the following statements:
   1. An ice-skater gliding across the ice at a constant speed of 15 m/s is undergoing uniformly accelerated motion.
   2. A car travels from Sydney to Brisbane obeying all the road rules and traffic light signals. This journey is an example of uniformly accelerated motion.
   3. A satellite is in orbit around the Earth. This is an example of rectilinear motion.
   4. All rectilinear motion is uniformly accelerated motion.
   5. A cricket ball dropped from a height of 1m falls to the ground. Ignoring air resistance, the cricket ball’s motion is an example of uniformly accelerated motion.
   6. A marble is placed at the top of a smooth metal ramp inclined at 450 to the horizontal ground. The marble is released and rolls down the ramp without slipping. The marble’s motion is not an example of uniformly accelerated motion.
   7. The first man on the moon, Neil Armstrong, dropped a feather and a hammer from a set height. They fell to the ground and hit the moon’s surface at the same time. The feather and the hammer both experienced uniformly accelerated motion.
2. An athlete runs 200 m by running 100 m in a straight line and then turning around and running 100m back to the start point.
   1. What distance does the athlete cover?
   2. What is the athlete’s displacement upon completing the run?
3. If the athlete in question 2 above completes her run in 30 seconds, calculate:
   1. Her average speed;
   2. Her average velocity.
4. A bus travels 50 km north, then 150 km south and then 50 km north in 2.5 hours. For this bus, calculate:
   1. Total distance covered;
   2. Total displacement;
   3. Average speed;
   4. Average velocity.
5. A truck applies its brakes and decreases its velocity uniformly from 20 m/s east to 10 m/s east in 1.5 s. Determine the average acceleration of the truck over this time period.
6. A train travels 450 km to the south at an average velocity of 50 km/h south. How long did it take the train to cover this distance?
7. **Extension Question:** A train travels from one station to the next at 100 km/h and returns at 150 km/h. Compare the train’s average speed and average velocity. (Hint: The average speed is not 125 km/h.)

**ANSWERS:**

1. a. T b. F c. F d. F e. T f. F g. T
2. a. 200 m b. 0 m
3. a. 6.7 m/s b. 0 m/s
4. a. 250 km b. -50 km or 50 km south c. 100 km/h  
   d. -20 km/h or 20 km/h south
5. -6.6 m/s2 or 6.6 m/s2 west
6. 9 h
7. Average speed = 120 km/h – if you did not get this answer, please check pdf solution provided on Module 1 webpage.  
   Average velocity = 0 km/h