Motion Practice Problems  
(Speed, Velocity & Acceleration)  
Name: ________________  
Date: ________________  
Core: ________________

\[
\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad \text{Acceleration} = \frac{\text{Final Speed} - \text{Initial Speed}}{\text{Time}}
\]

*SHOW YOUR WORK & INCLUDE UNITS IN YOUR ANSWERS!*

1) A family takes a car trip heading northeast from Durham, NC to Washington D.C. They travel for 4 hours and cover 360 km.
   
a. What is the family’s average speed?  
   \( \text{(show your work!)} \)

b. What is the family’s average velocity?  
   ________________________________

2) After school, your teacher went for a jog on Cornwallis Road. She ran for 30 minutes at a speed of 150 m/min. How far did she run?  
   \( \text{(show your work!)} \)

3) Mr. Sawyer goes on a long bike ride in the country. He rides his bike 35 km at a speed of 20 km/h. For how long was he riding his bike?  
   \( \text{(show your work!)} \)
4) Ms. Litwak buys a new car that can accelerate from rest (0 m/s) to 24 m/s in 8 seconds. What is the car’s rate of acceleration?

5) The graph below shows a runner’s motion during the first 5 seconds of a race.

![Distance vs. Time graph]

a) What was the runner’s average speed for the first 5 minutes of the race?

b) Describe the runner’s motion.

_______________________________

c) How far had the runner traveled after 4 seconds? ________________________

6) A snail slowly slithers down the sidewalk. It travels at a speed of 3 cm/min. How far would it travel in 20 minutes?

7) The fastest man on earth, Usain Bolt, runs at a speed of 10 m/s. How long would it take him to run 160 meters?