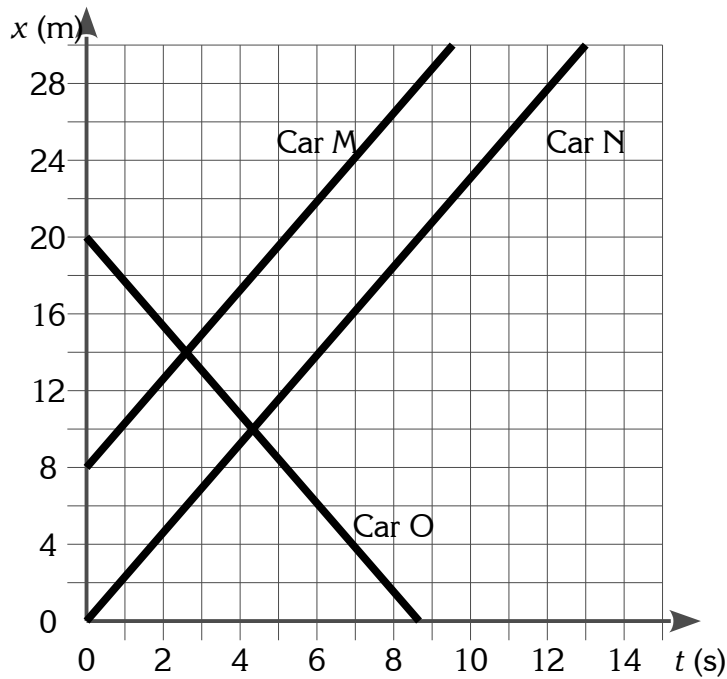
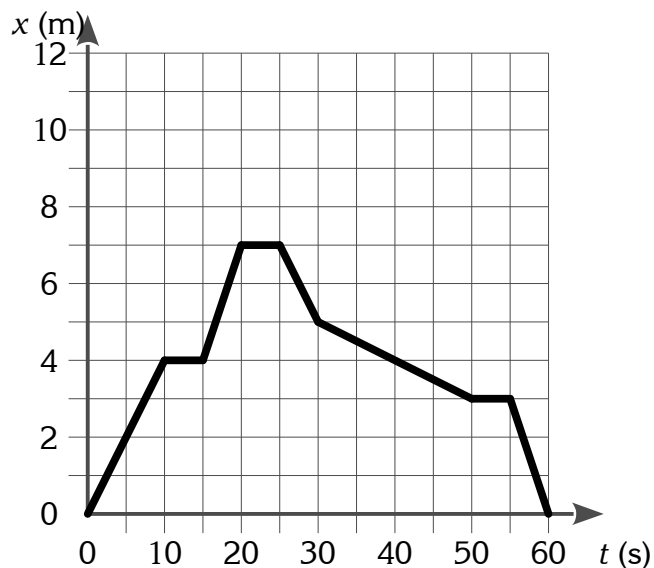


## Uniform motion review questions



- 1) Refer to the graph above.
  - A) At what position did each car start?
  - B) At what position did each car end (as far as you can tell)?
  - C) What is happening when the lines for cars M and O cross?
  - D) Which car traveled the fastest? How do you know?
  - E) Which car traveled the greatest distance? How do you know?
  - F) Which car reached the 12 m mark first? When did this happen?



2) Refer to the graph above, which depicts Julia's motion along an aisle in the supermarket.

A) Write a story – just a few sentences – to explain the motion shown in the graph.

B) When does Julia have a position of 4 m?

C) How much time passes between when Julia enters the aisle and when she reaches a position of 7 m?

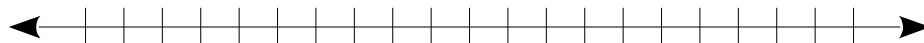
D) What is Julia's velocity between the times 30 s and 50 s?

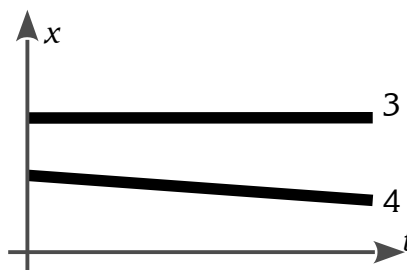
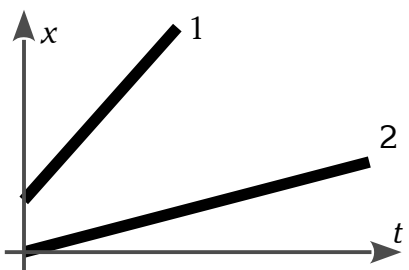
E) What is Julia's velocity between the times 15 s and 20 s?

F) What is Julia's average velocity between the times 0 s and 20 s?

G) What is Julia's average velocity between the times 25 s and 60 s?

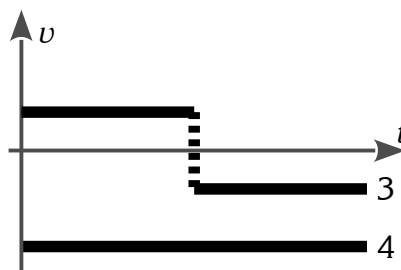
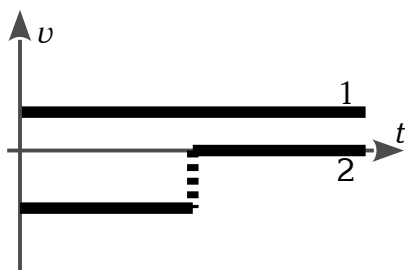
H) Draw a motion map for Julia, showing one dot for every 5 s.





3) These questions refer to position graphs of several objects seen above. You do not need to “use” every object. You may use an object more than once.

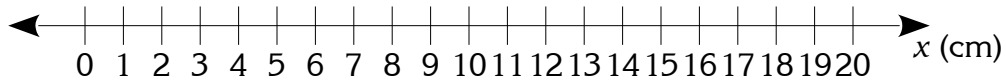
- A) Which object is the fastest?
- B) Which object is going backward the entire time?
- C) Which object never moves?
- D) Which object starts the furthest from the origin?



4) These questions refer to velocity graphs of several objects seen above. You do not need to “use” every object. You may use an object more than once.

- A) Which object moves backward with a constant negative velocity the whole time?
- B) Which object moves the fastest?
- C) Which object moves in two different directions?

- 5) Illustrate this story with a motion map using the number line shown below: At the time  $t = 5$  s, you notice an ant's at a position of 8 cm. It moves with a velocity of  $+2$  cm/s until it leaves the area you are studying.

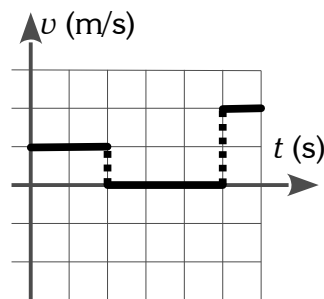
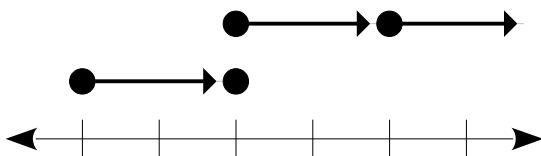
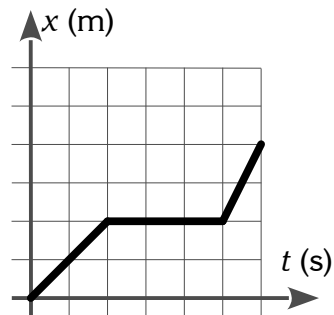


- 6) Illustrate this story with a motion map: Starting at 100 cm, Anya walks left for two seconds, ending up at 20 cm. She stands there for 3 seconds, then walks right at 50 cm/s for 3 more seconds.



- 7) Circle the representation that doesn't match the others, then write/draw a corrected version in the space below.

The object moves forward at  $1$  m/s for  $2$  seconds, then rests for  $3$  seconds, and moves forward again for  $1$  more second at  $2$  m/s.



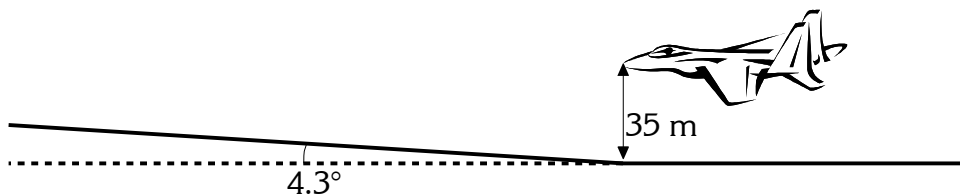
Use the position formula to solve the following problems:  $x_f = x_i + v \cdot \Delta t$

You may need to convert units for some of them!

8) A car is moving down the street at 55 km/h. A child suddenly runs out into the street. If it takes 0.75 s for the driver to react, how many meters will the car move before beginning to slow down?

9) Every morning, Nora runs a loop around her neighborhood which is 6.2 km long. Today, she forgot her phone so she can't check the time while she runs. But, when she passes the McDonald's, she knows she's gone exactly 3.0 km so far. If she keeps a steady pace of 18 km/h while running, how much more time does she have for the day?

10) A top-gun pilot is flying at 1300 km/h, and at a low altitude of just 35 m to avoid enemy radar. She reaches a very gentle hill with a slope of  $4.3^\circ$ . How much time does she have to pull up before she crashes?



- 11) An object travels 3 m at a constant velocity of 1.2 m/s, then travels another 3 m at a constant velocity of 0.7 m/s. What is the object's average velocity for the entire 6 m of motion?
- 12) Suppose you're going on a long road trip to New Orleans, which is about 1,130 km from Melbourne. The speed limit most of the way there is 110 km/h. How much time can you save on the trip by speeding at 115 km/h instead of 110 km/h?
- 13) Mingyu and Trinity want to ride their bikes to the beach in Indialantic on Saturday. Trinity is a 7-day boarder, but Mingyu stays with her guardians in Satellite Beach on the weekends. The park is 4.3 miles from FAA, but 7.3 miles from Mingyu's house. Both girls ride at a speed of 12 mph. Mingyu plans to leave home at 9:00 AM. When should Trinity leave if the girls want to arrive at the beach at the same time?