Question 1.

A person is initially at point C on the x-axis and stays there for a little while, then strolls along the x-axis to point A, stays there for a moment and then runs to point B and remains there.

Which of the following graphs correctly depicts this motion?

- purple
- green
- yellow
- pink

blue: None of these!
Question 2.

A train car moves along a long straight track. The graph shows the position as a function of time for the train.

The graph shows that the train…

- **Green:** speeds up all the time.
- **Yellow:** slows down all the time.
- **Blue:** speeds up part of the time and slows down part of the time.
- **Pink:** moves at constant velocity.
- **Purple:** None of these statements is true.
Question 3.

A train moves along a straight track and its position vs. time looks like:

Which graph best depicts the train's *velocity* vs. time?

- **Pink**: Constant velocity
- **Yellow**: Variable velocity
- **Blue**: Accelerating
- **Green**: Decelerating
- **Purple**: None of these!

![Graphs showing different velocity scenarios](image-url)
Question 4.

The graph shows positions as a function of time for two trains running on parallel tracks.

Which statement is true?

Pink: At time $t_C$, both trains have the same (instantaneous) velocity.

Green: Both trains speed up all the time.

Blue: Both trains have the same velocity at some time before $t_C$. If this is your answer, mark that time.

Yellow: At some time, both trains have the same acceleration. If this is your answer, mark that time.

Purple: The train A initially speeds up but after the time $t_a$ slows down, while the train B maintains a constant speed. If this is your answer, mark the time $t_a$.

White: None of these!
Question 5.

The graph below represents a motion of a person walks along a sidewalk.

A. What is the average velocity of the person between $t = 0$ s and $t = 5$ s?

Yellow: 10 m/s  Green: 5 m/s  Blue: 2.5 m/s  Pink: 2 m/s
Purple: 0

B. What is the average velocity of the person between $t = 5$ s and $t = 15$ s?

Yellow: 10 m/s  Green: 5 m/s  Blue: 2.5 m/s  Pink: 2 m/s
Purple: 0

C. What is the average velocity of the person between $t = 15$ s and $t = 20$ s?

Yellow: 5 m/s  Green: 2 m/s  Blue: 0  Pink: -1 m/s
Purple: -2 m/s

D. What is the average velocity of the person between $t = 0$ s and $t = 25$ s?

Yellow: 7.5 m/s  Green: 5 m/s  Blue: 0.25 m/s  Pink: 0.2 m/s
Purple: undefined
Question 6.

A truck traveling at 50 km/h approaches a car stopped at a red light. When the truck is 100m from the car, the light turns green and the car immediately begins to accelerate at $2.00 \text{ m/s}^2$ to a final speed of 100 km/hr. Which graph below represents this situation?

- **Green**
- **Yellow**
- **Blue**
- **Purple**: None of these
Question 7.

The graph shows a velocity of an object moving along a straight line

A: During the first 5 seconds, the object…
   - Yellow: Moves to the right at a constant speed
   - Blue: Moves to the right with constant positive acceleration
   - Pink: Moves to the right with acceleration that is not constant

B: Between t = 10s and t = 20s, the object…
   - Yellow: Moves to the right at a constant speed
   - Blue: Moves to the right and speeds up
   - Pink: Moves to the right and slows down
   - Green: Moves to the left at constant speed
   - Purple: Moves to the left and slows down
Question 8.

An athlete runs along the x-axis with a velocity which varies with time as...

The total distance traveled is...

Pink: 150m    Yellow: 125m    Blue: 100m
Green: 75m    Purple: 50m
Question 9.

An object moves along the x-axis with this velocity vs. time:

A: What is the displacement after 10 seconds?

Pink: 6 m  Yellow: 8 m  Blue: 10 m
Green: 20 m  Purple: None of these.

B: What is the distance traveled after 10 seconds?

Pink: 6 m  Yellow: 8 m  Blue: 10 m
Green: 20 m  Purple: None of these.
Question 10.

An object's velocity vs. time is:

Which graph best represents the object's acceleration vs. time?

Purple: None of these!
Question 11.

An object moves along a straight line as shown

![Graph showing velocity over time](image)

A: During the first 5 seconds, the object’s acceleration was…

Yellow: 0  
Green: 2 m/s/s  
Pink: 5 m/s/s  
Blue: 10 m/s/s  
Purple: None of the above

B: Between t = 10s and t = 20s, the object’s acceleration was…

Yellow: 0  
Green: 1 m/s/s  
Pink: 2 m/s/s  
Blue: -1 m/s/s  
Purple: -2 m/s/s
ANSWERS

1. pink (starts at positive x, then x decreases but never gets negative, then remains unchanged, then x increases at faster rate than it has decreased, meaning greater speed.)

2. yellow (the slope decreases with time)

3. purple

4. blue; at about 0.5 t_c

5. A pink; B purple; C pink; D pink

6. green

7. A blue; B yellow

8. blue

9. A purple (it is actually 4 m); B green

10. green (during each time interval acceleration was not changing!)

11. A green; B blue