

TRAIN OF THOUGHT (TEACHER GUIDE)

1. The best answer is **D** because when the train maintains a constant speed, so the acceleration is 0 m/s^2 .

It is not **A-C** because these all reflect positive acceleration.

2. The best answer is **C** because in the table the distance traveled in 3 seconds is shown as 75m.

It is not **A** because this is the velocity at 8 seconds. It is not **B** because this is the distance traveled at two seconds. It is not **D** because this is the velocity for the first three seconds.

3. The best answer is **B** because this is the velocity recorded at 6 seconds in Table 2.

It is not **A, C, or D** because these are similar detractors that could be selected if the student relied on Figure 1 rather than Table 2 and misjudged the y-axis.

4. The best answer is **C** because this is the rate of change reflected each second in Table 2. The passage mentions that deceleration and acceleration are calculated by finding the change in velocity over time. Students can use any two points in the table to make their calculation.

It is not **A, B, or D** because these are miscalculations of the rate of change.

5. The best answer is **A** because the student should apply the acceleration formula from question 2 using the initial speed of 19.5 shown at the bottom of Table 2 combined with what they see in Figure 1 for 19 seconds, the final speed mentioned in the question of 23.5 and the elapsed time of 5 seconds to find the answer.

It is not **B-D** because these are just answer choices that incrementally increase and reflect possible miscalculations.

6. The best answer is **D** because this answer reflects what happens to the train across the entire graph.

It is not **A** because it says the train accelerates after first maintaining a constant speed rather than decelerating. It is not **B** because this answer mentions returning to the initial speed but the rate at the end of the graph is lower than the rate at the start. It is not **C** because it does not mention starting with a constant speed.

7. The best answer is **B** because maintaining a constant speed should be reflected as a horizontal line as it is in Figure 1 for the first three seconds, seconds 8-9, and 14-20.

It is not **A** because that graph shows acceleration. It is not **C** because it is not a function of time. It is not **D** because that graph shows deceleration.