Velocity Time Graph Practice

Name:_____

Reflection and Self-Assessment

Part 1: Circle the statement that best describes how you completed the practice:

- I answered all questions without using the online solutions. I checked my answers against the key at the back of the practice and was able to determine my mistakes and correct them without referring to the online solutions.

- I answered most questions correctly without using the online solutions. I used the online solutions to help me with some questions and was able, with help from the online solutions, to understand every question and answer them correctly.

- I used the online solutions to help me with most of the questions. I was able, with help from the online solutions, to understand each question and answer them correctly.

- Even using the online solutions, I was not able to fully understand the solution to some problems. The questions I had trouble with were:

  _____

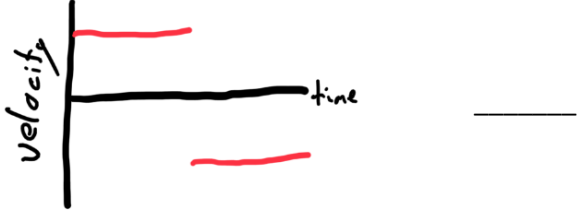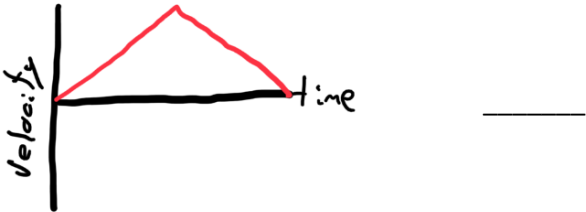- I did not attempt all the questions on the practice.

Part 2: Circle the statement that best describes your confidence in answering questions of this type in the future.

- I am confident I can answer nearly any question of this type correctly without using notes or other assistance.

- I am confident I can answer **MOST** questions of this type correctly without using notes or other assistance.

- I am **NOT** confident I can answer most questions of this type correctly without using notes or other assistance.

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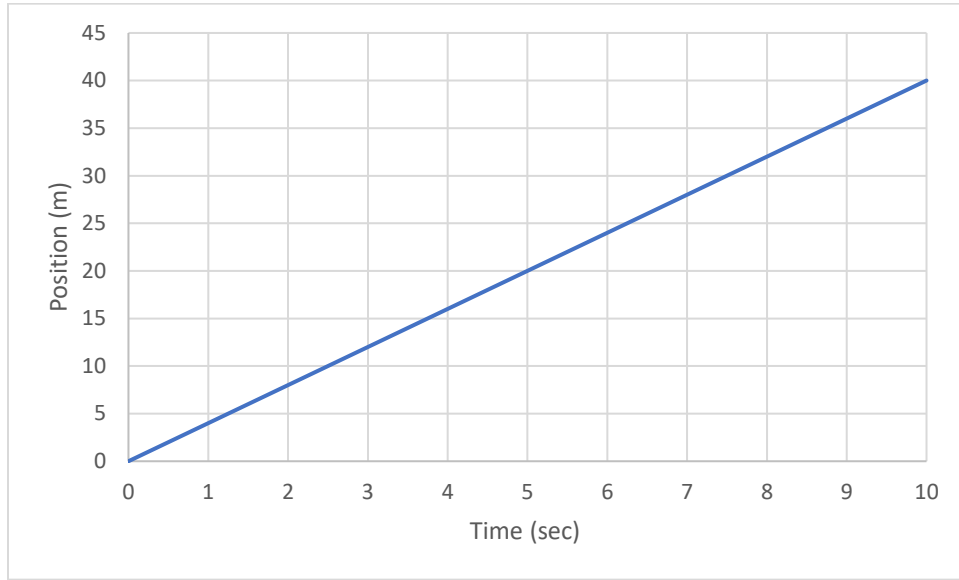1. Match the following velocity time graphs with descriptions of the motion.

| Graph	Description
a) _____	**A:** Starts moving in the negative direction, slows to a stop and accelerates in the positive direction.
b) _____	**B:** Starts at rest, accelerates in the positive direction, and then slows to a stop.
c) _____	**C:** Starts moving with a constant velocity in the positive direction, immediately turns around the starts moving with the same speed in the negative direction
d) _____	**D:** Starts at rest and accelerates in the positive direction

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2. Sketch a velocity time graph, with values labelled for each of the following situations:
   a. An object moves with a constant velocity of 5.0 m/s for 15 seconds.

   b. An object starts at rest and accelerates at a constant rate to a velocity of 15.0 m/s after 15 seconds.

   c. An object moves in the negative direction for 5 seconds at -5.0 m/s, then instantaneously stops and remains at rest for 5 seconds, then moves in the positive direction at 5.0 m/s for 5 seconds.

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3. For each of the position time graphs shown, sketch a velocity time graph with values labelled.

a.

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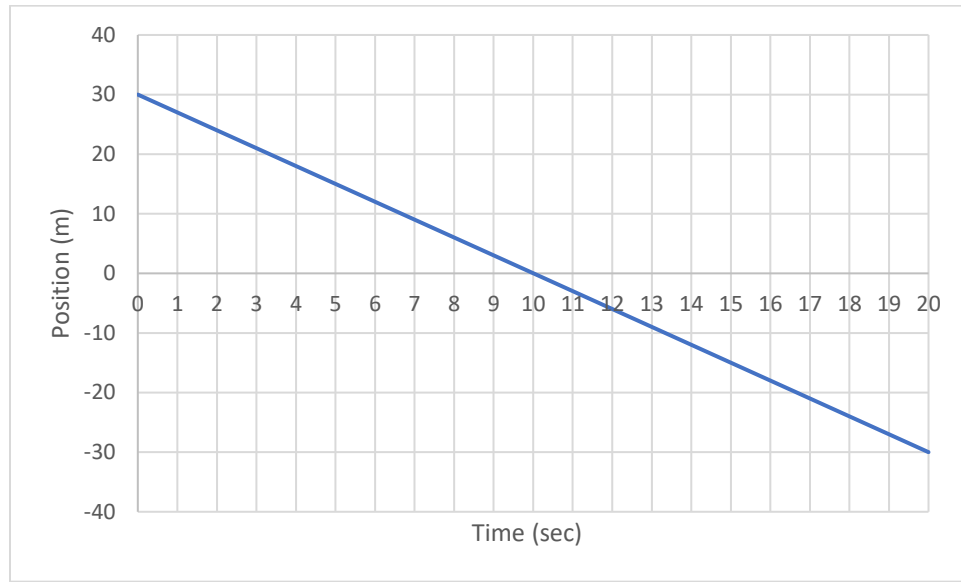
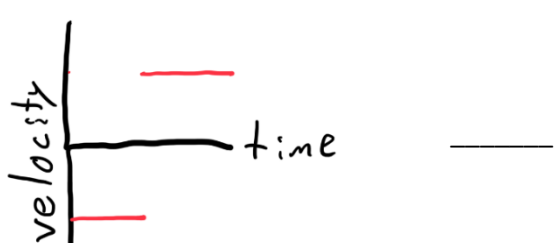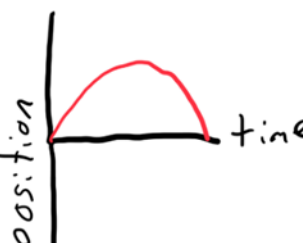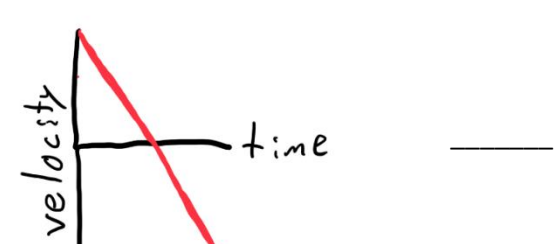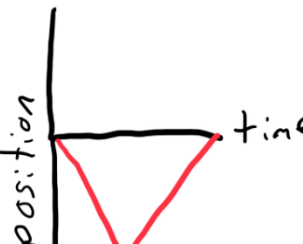Name:_____

b.

Velocity Time Graph Practice
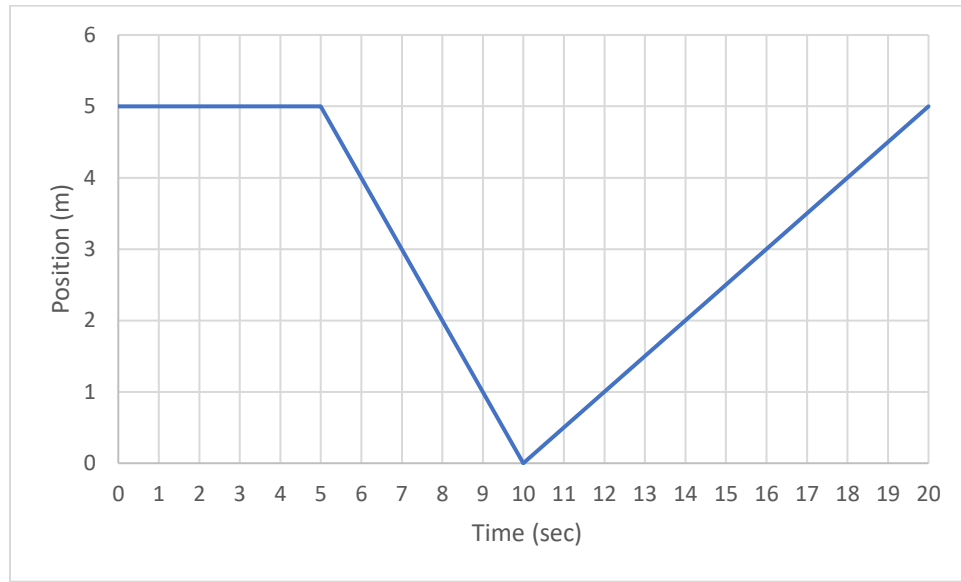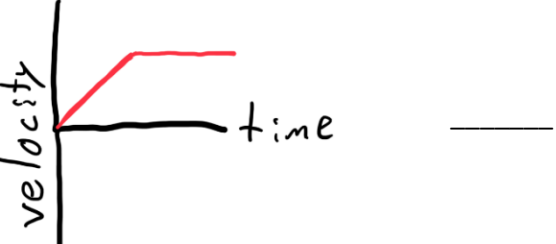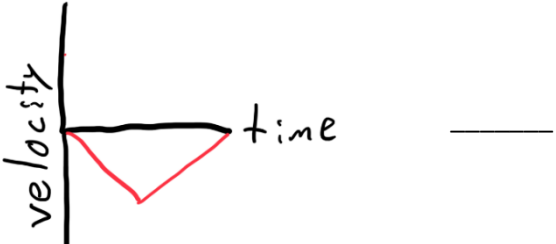
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c.

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4. Match the following velocity time graphs with corresponding position time graphs.

a)	_____	A:
b)	_____	B:
c)	_____	C:
d)	_____	D:
e)	_____	E:

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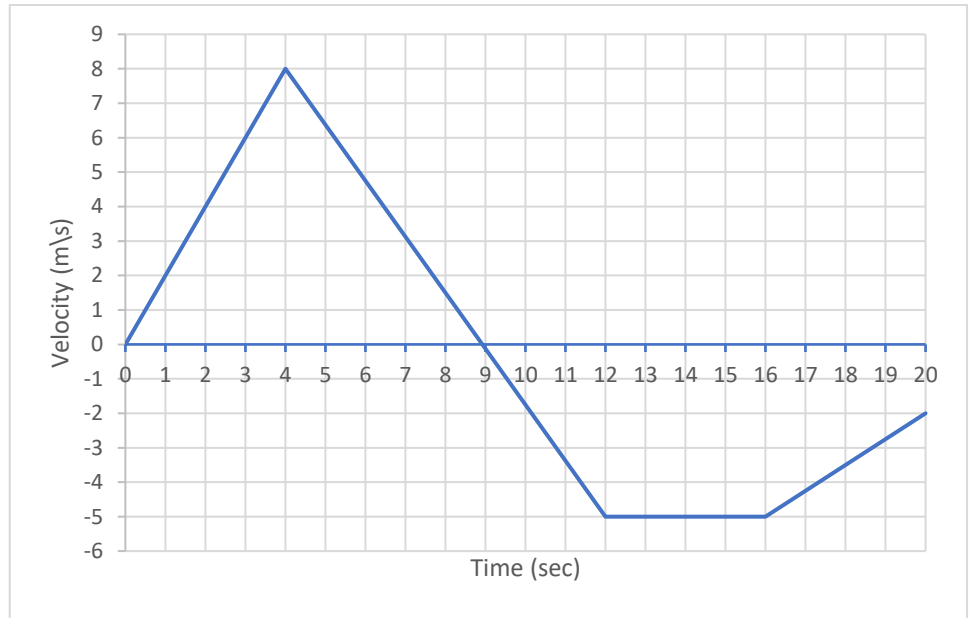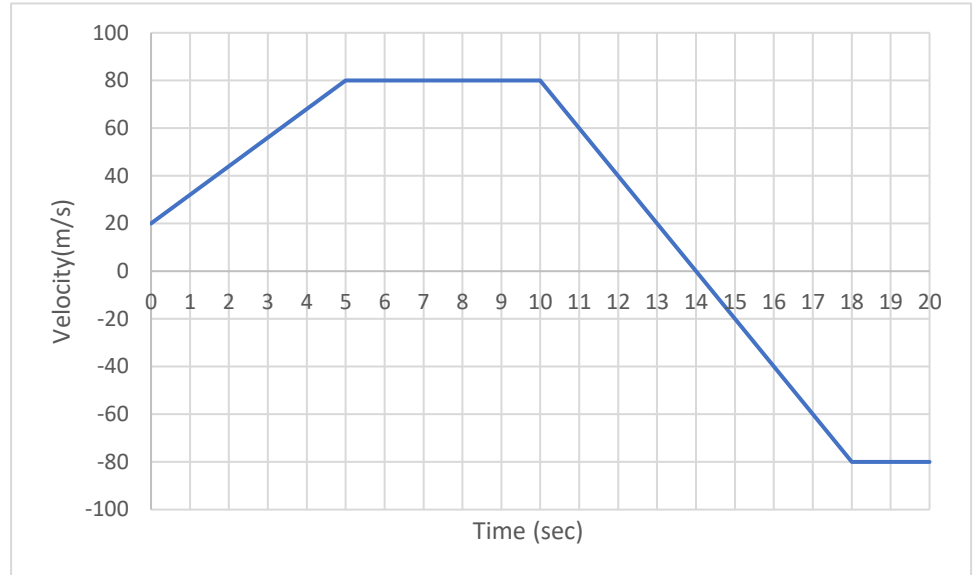5. Consider the velocity time graph shown.

a. What is the velocity of the object at t=2?

b. What is the velocity of the object at t=14?

c. What is the acceleration of the object between times t=0 and t=4?

d. What is the acceleration of the object between t=4 and t=12?

e. What is the acceleration of the object between t=12 and t=16?

f. What is the acceleration of the object between t=16 and t=20?

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6. Consider the velocity time graph shown.

a. A student claims the object is stationary between t=0 and t=10. What mistake do you think they made?

b. When is the object not moving?

c. During what time periods is the object moving with constant velocity?

d. During which time periods is the object moving in the positive direction?

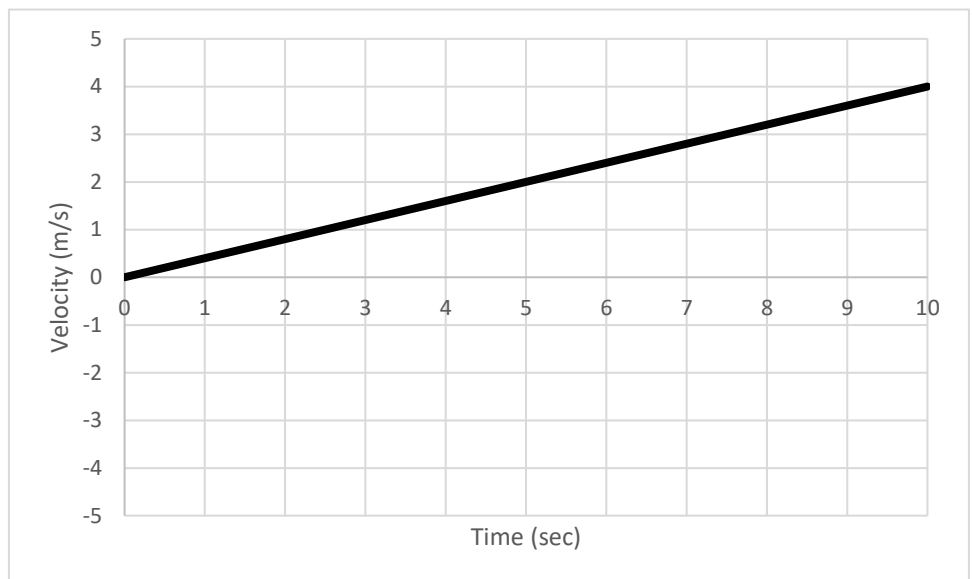e. During which time periods is the object **accelerating** in the positive direction?

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7. Consider the velocity time graph shown.
    a. What is the velocity of the object throughout this graph?

b. What is the total displacement of the object during the time shown on the graph?
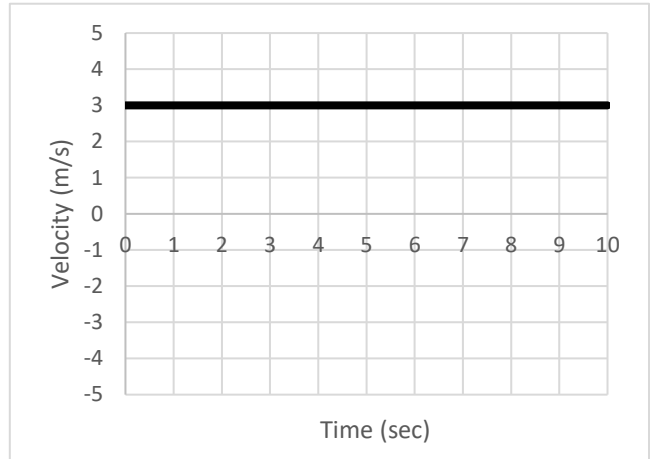
8. Consider the velocity time graph shown.

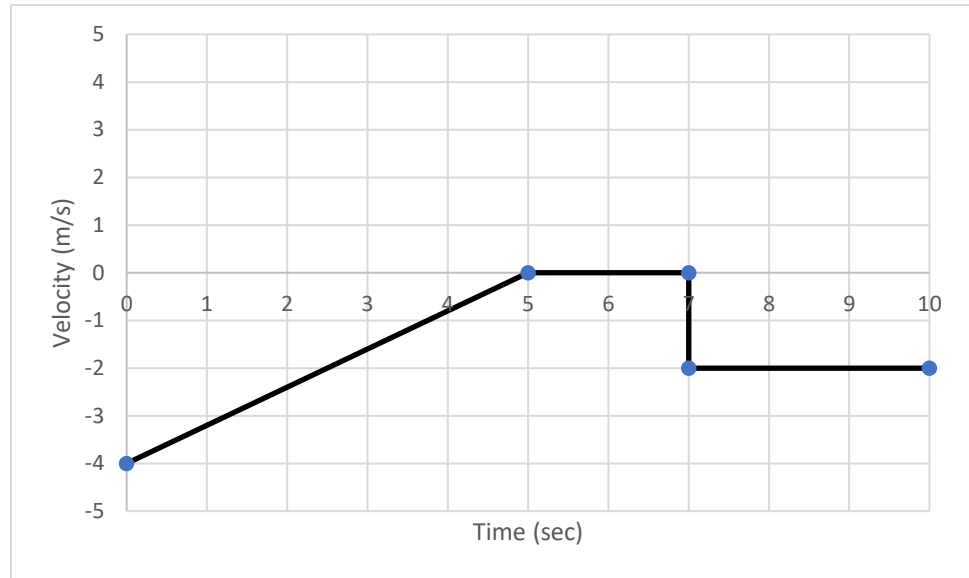   a. What is the **acceleration** of the object throughout the graph?

b. What is the total displacement of the object during the time shown on the graph?

Velocity Time Graph Practice
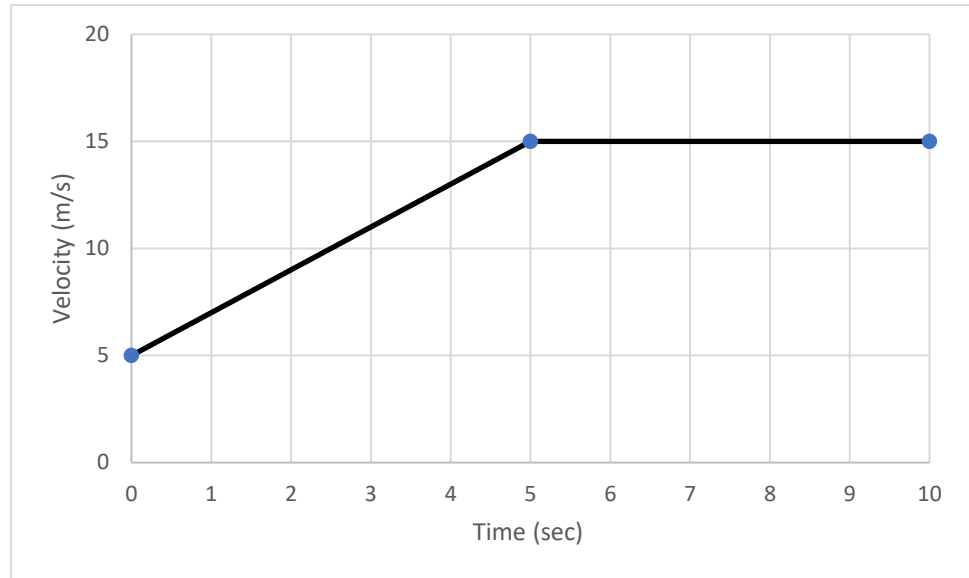
Name:_____

9. Consider the velocity time graph shown.

a. What is the acceleration of the object between t=0 and t=5?

b. Describe the motion of the object between t=5 and t=7.

c. Describe the motion of the object between t=7 and t=10.

d. What is the total displacement of the object?

Velocity Time Graph Practice

10.

a. Fill in the blanks:

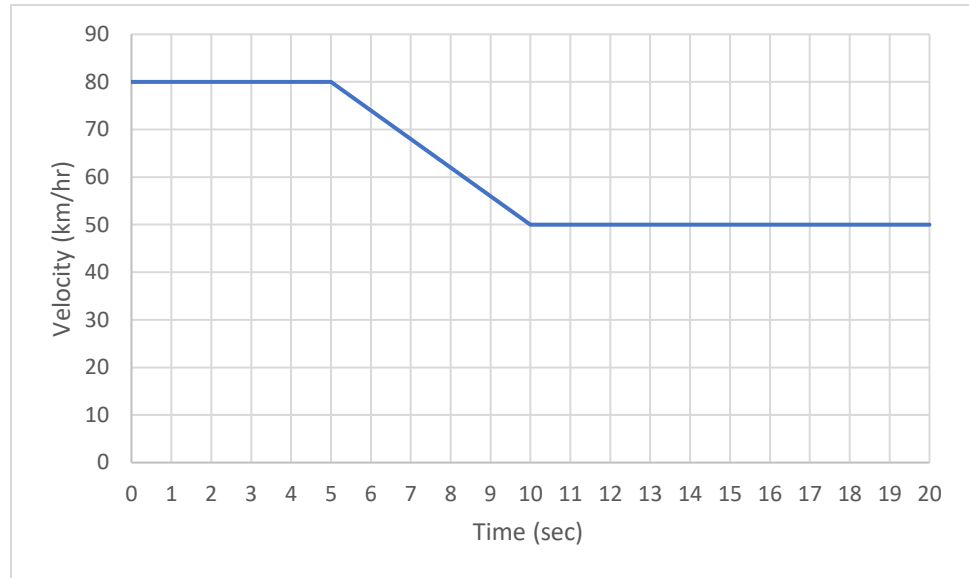The object starts with a velocity of _____ m/s. It accelerates at _____ m/s^2 for _____ seconds until it has a velocity of _____m/s. It continues at that velocity for the rest of the time.

b. Determine the total displacement of the object.

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11.

a. A student claims that during the first 5 seconds the object will have a displacement of $5 \times 80 = 400$ m. Why is that incorrect?

b. What are the units that the calculation should be in?

c. Determine the actual displacement in metres during the first 5 seconds. [1000m = 1 km, 3600 sec = 1 hr]

d. What is the total displacement during the whole graph in metres?
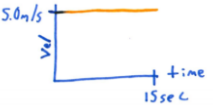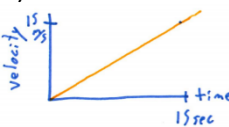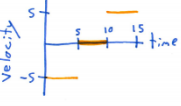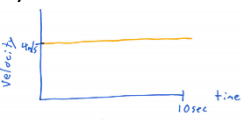
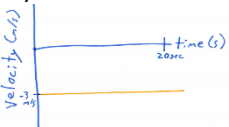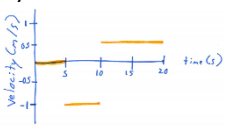Velocity Time Graph Practice   Name:_____

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Answer Key

Note that I have paid any particular attention to sig figs when working with graphs. If you rounded to a different number of sig figs that if fine for this practice. Do however, be sure you are reporting your units correctly.

1a) C	1b) B	1c) D	1d) A	2a)
2b)	2c)	3a)	3b)	3c)
4a) B	4b) C	4c) A	4d) E	4e) D
5a) 4m/s	5b) -5m/s	5c) 2 m/s^2	5d)-1.6 m/s^2	5e) zero
5f) 0.75 m/s^2	6a) Thought it was a position time graph	6b) t=14	6c) t= 5 to 10 sec, and t=18 to 20sec	6d) t=0 to 14sec
6e) t=0 to 5 sec	7a) 3 m/s	7b) 30 m	8a) 0.4 m/s^2	8b)20 m
9a) 0.8 m/s^2	9b) At rest	9c) Constant velocity of -2 m/s	9d) -18 m	10a) 5,2,5,15
10b) 125m	11a) Velocity is not in m/s	11b) $\frac{sec \cdot km}{hr}$	11c) 111 m	11d)340 m