Physics – Speed, Velocity, and Graphing Practice   Name_____**KEY**__
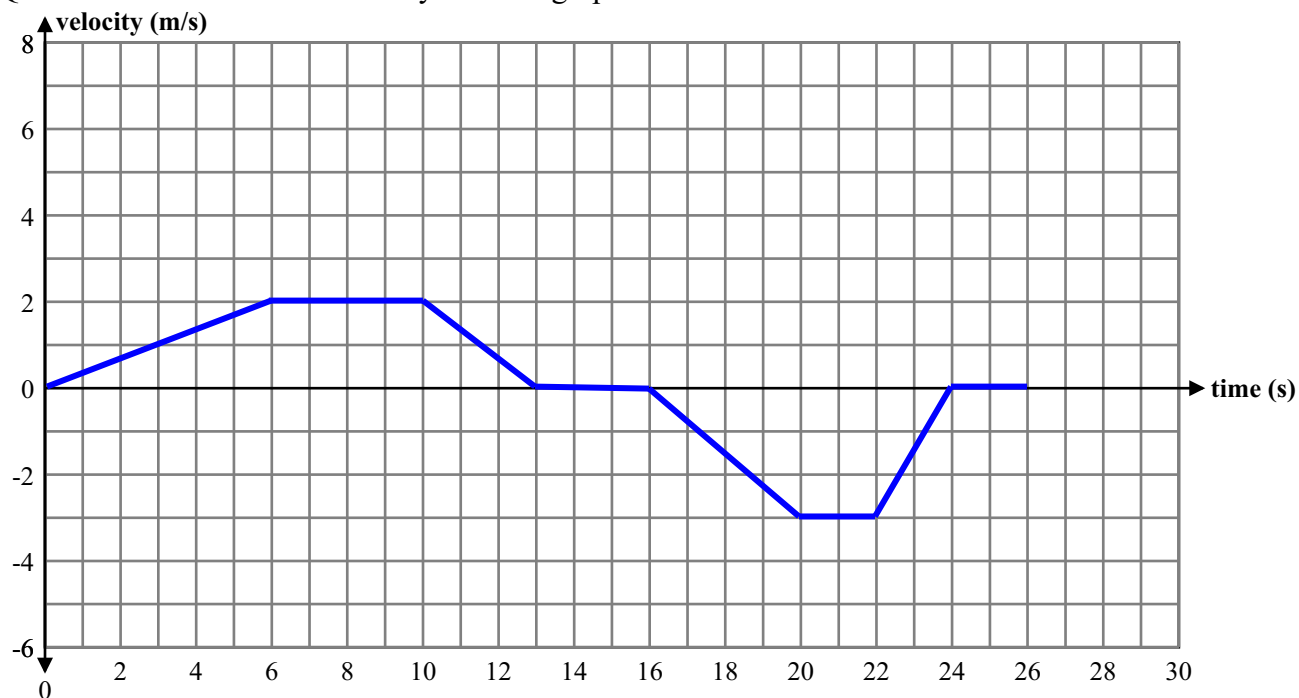
Questions 1-4 refer to the velocity vs. time graph below:

1) During what time period(s) is the object at rest?

0 s, 13-16s, 24-26 s

2) a)What is the total displacement of the object during the first 6 seconds?

6m

   b)What is the total displacement of the object over the first 25 seconds of the graph?

+2 meters

3) During what time period(s) is the <u>speed</u> of the object increasing?

When absolute value of v is increasing; 0-6 s, 16-20 s

4) Describe the motion of the object between 22 and 24 seconds.

It is moving in the negative direction, slowing down.

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5) A plane is flying due east at 6.2×10^2 km/hr. How long does it take to move 1650 m? (note units!!)

d=vt   t=d/v

= 1650 m ÷ 6.2×10^5 m/hr = 0.0027 hr = 9.6s

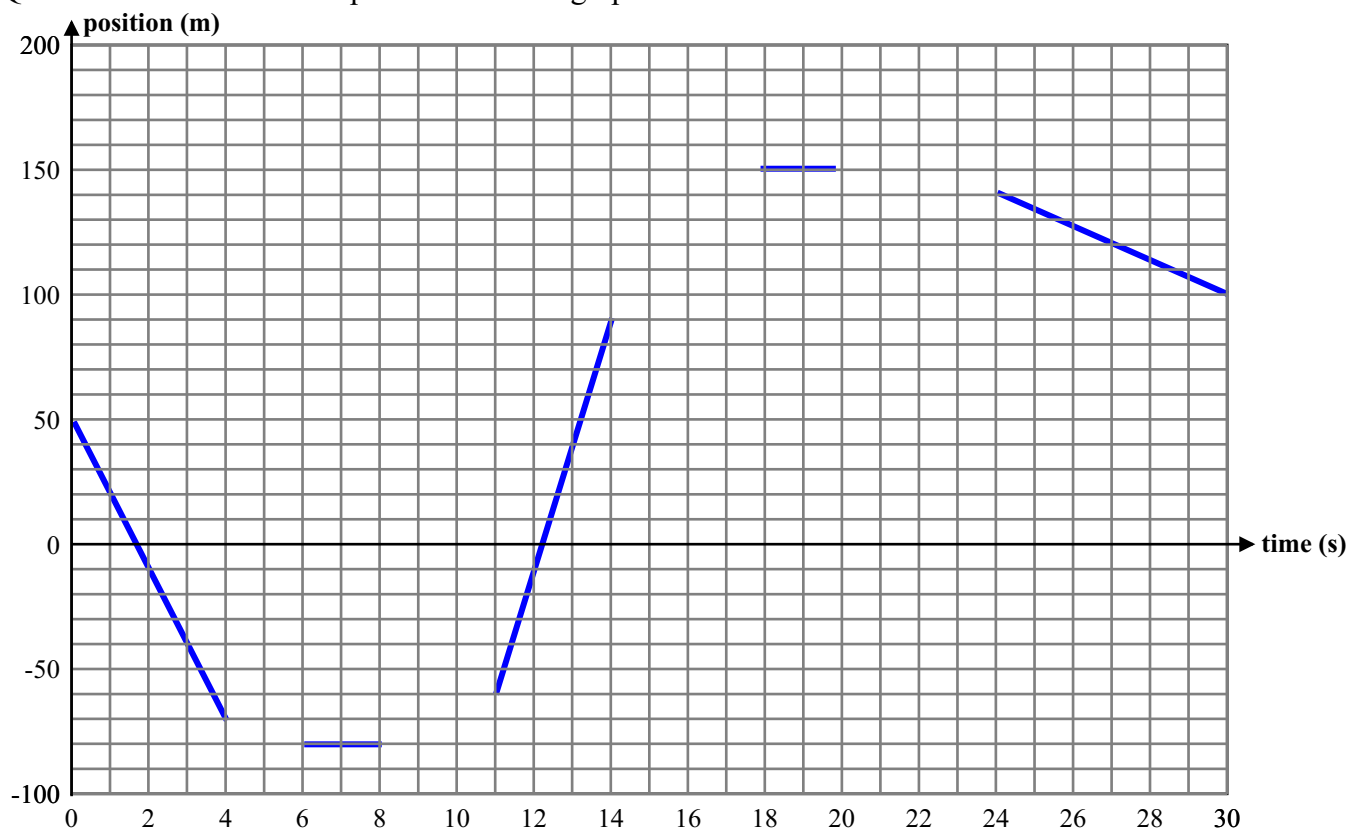6) A 1700-kg car accelerates steadily from 10.0 m/s to 26.0 m/s, over a 6.0 second period.

a) What is its average speed during this period?

Average of 10 and 26 = 18m/s

b) How far does it travel during that time?

d = vt = 18m/s · 6s = 108m

Questions 7-12 refer to the position vs. time graph below:

7) During what time period(s) does the object have zero velocity?

6-8 s and 18-21 s (allow up to 1 second outside that range as well)

8) What is the velocity of the object during the first 3 seconds?

-90m/3s = -30m/s

9) What is the average velocity of the object from 3 to 12 seconds?

+30m/9s = +3.3 m/s

10) What is the instantaneous velocity of the object at t = 15s?

Draw a tangent at that point. The slope is approx +22m/s.   Allow 19-25m/s.

11) During what time period(s) does the object have the greatest speed? What is that speed?

From 11-14s, object moves +150m in 3 s; v= +50m/s

12) Sketch the shape of the velocity vs. time graph which would match the position vs. time graph above.

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