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| **Physics 20 - Lesson 3** |
| **Velocity – Graphical Analysis – Answer Key** |

1. Use the graph below to answer parts A to C.

Position vs Time

+40

+20

0

-20

-40

-60

0

5

10

15

20

25

30

35

40

Time (s)

Position (m)

A. What was the velocity of the object at 5 s and at 25 s? (-2.67 m/s)



V=slope of P-T graph 

B. How much time did the object require to travel 30 m from its starting position?

(11.3 s)

 Read off Graph!



C. How far would the object travel in 40 s? (-107 m)







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2. Use the graph below to answer parts A and B.

velocity vs time

+15

+10

+5

0

-5

-10

0

2

4

6

8

10

12

14

16

Time (s)

velocity (m/s)

A. What was the object’s distance and displacement for the 0 to 8.0 second interval? (64 m, +16 m)

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B. At what time was the displacement zero? (10.67 s)





3. Draw a displacement - time graph which indicates the motion of an object traveling at a constant velocity of -30 m/s for 15 s and then +20 m/s for another 25 s.

Velocity-Time Graph

Time (s)



0

+200

-400

-200

-600

0 5 10 15 20 25 30 35 40



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4. From the position – time graph provided, draw an accurate velocity – time graph.

Position vs Time

+30

+20

+10

0

-10

-20

0

5

10

15

20

25

30

35

40

Time (s)

Position (m)



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Velocity (m/s)

-6

-4

-2

0



Time (s)

Velocity-Time Graph

0 5 10 15 20 25 30 35 40



+2

5. From the velocity – time graph provided, draw an accurate position – time graph.



velocity vs time

+15

velocity (m/s)

-10

80

70

60

50

40

30

20

10

0

Time (s)

0

0 10 20 30 40 50 60 70 80

Time (s)

Position-Time Graph

+10

+5

0

-5

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6. Given the following data:











50

100

150

200





|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Distance (m) | 6 | 12 | 18 | 24 | 29 | 36 |
| Time (s) | 1 | 2 | 3 | 4 | 5 | 6 |

A. On the graph below, plot a distance time graph.

B. On the other graph, plot the corresponding velocity-time graph. (Show all calculations)



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Distance-Time Graph

0 1 2 3 4 5 6 7 8

Distance (m)



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Velocity-Time Graph



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Time (s)

2

4

6

8

Time (s)

10

Velocity (m/s)

0

0 1 2 3 4 5 6 7 8

0

10

20

30

40