

## Chapter 2 - Chapter Review

1. C

2. C

3. B

4. D

5. C

6. A

7. C

8. D

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9. B

10. A

11. A

12. A

13. A

14. A

15. D

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16. distance =  $35 + 18 + 26 = 79$   
displacement =  $-35 + 18 - 26 = -43$

A

17. displacement =  $-1 + 0.8 - 0.8 + 0.5 - 0.5 + 0.2 - 0.2 = -1\text{m}$   
distance =  $1 + 0.8 + 0.8 + 0.5 + 0.5 + 0.2 + 0.2 = 4\text{m}$

D

18.  $86.4 \text{ km/h} = 24 \text{ m/s}$

$$v = \frac{d}{t}$$

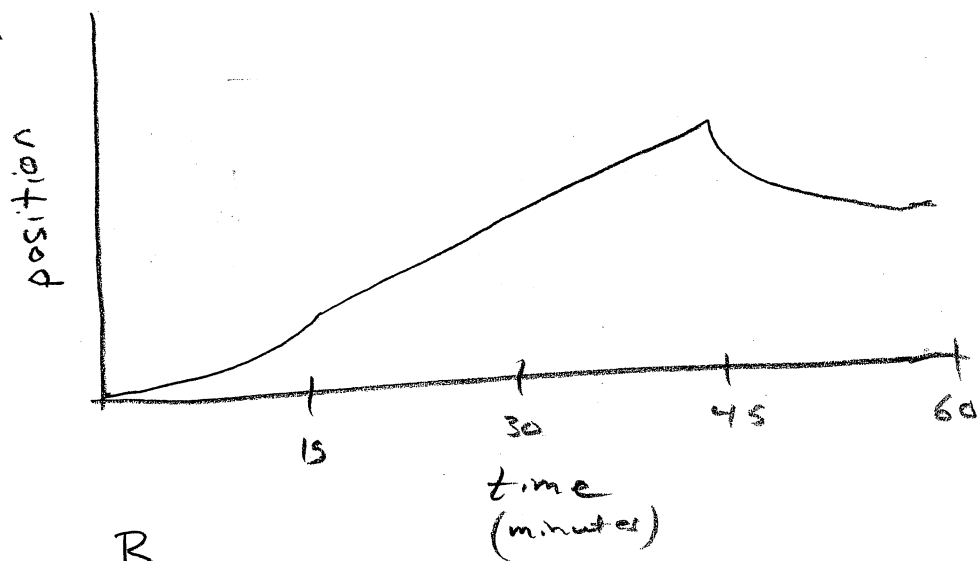
$$d = vt = 24(3.3) = 79.2\text{m}$$

B

$$19. v = \frac{d}{t} = \frac{12 - 0}{10 - 0} = 1.2 \text{ m/s}$$

B

20.



B

21. C (two points are needed to calculate an average velocity and you need two average velocities to calculate an average acceleration)

22. C

$$23. \quad 0-10 \quad \left( \frac{160 + 205}{2} \right) 10 = 1825$$

Area = Displacement

$$10-20 \quad \left( \frac{205 + 225}{2} \right) 10 = 2150$$

Total area =

$$20-30 \quad \left( \frac{225 + 240}{2} \right) 10 = 2325$$

$$= 16220 \text{ m}$$

$$30-40 \quad \left( \frac{240 + 248}{2} \right) 10 = 2440$$

$$40-50 \quad \left( \frac{248 + 249}{2} \right) 10 = 2485$$

$$50-60 \quad \left( \frac{249 + 250}{2} \right) 10 = 2495$$

$$60-70 \quad (250) 10 = 2500$$

23 continued.

$$0-40 \quad \left( \frac{160 + 248}{2} \right) 40 = 8160$$

$$\text{Total area} \\ = 15630$$

$$40-70 \quad \left( \frac{248 + 250}{2} \right) 30 = 7470$$

Average velocity.

$$7\text{-segments:} \quad v = \frac{d}{t} = \frac{16220}{70} = 231.7 \text{ m/s}$$

$$2\text{-segments:} \quad v = \frac{d}{t} = \frac{15630}{70} = 223.3 \text{ m/s}$$

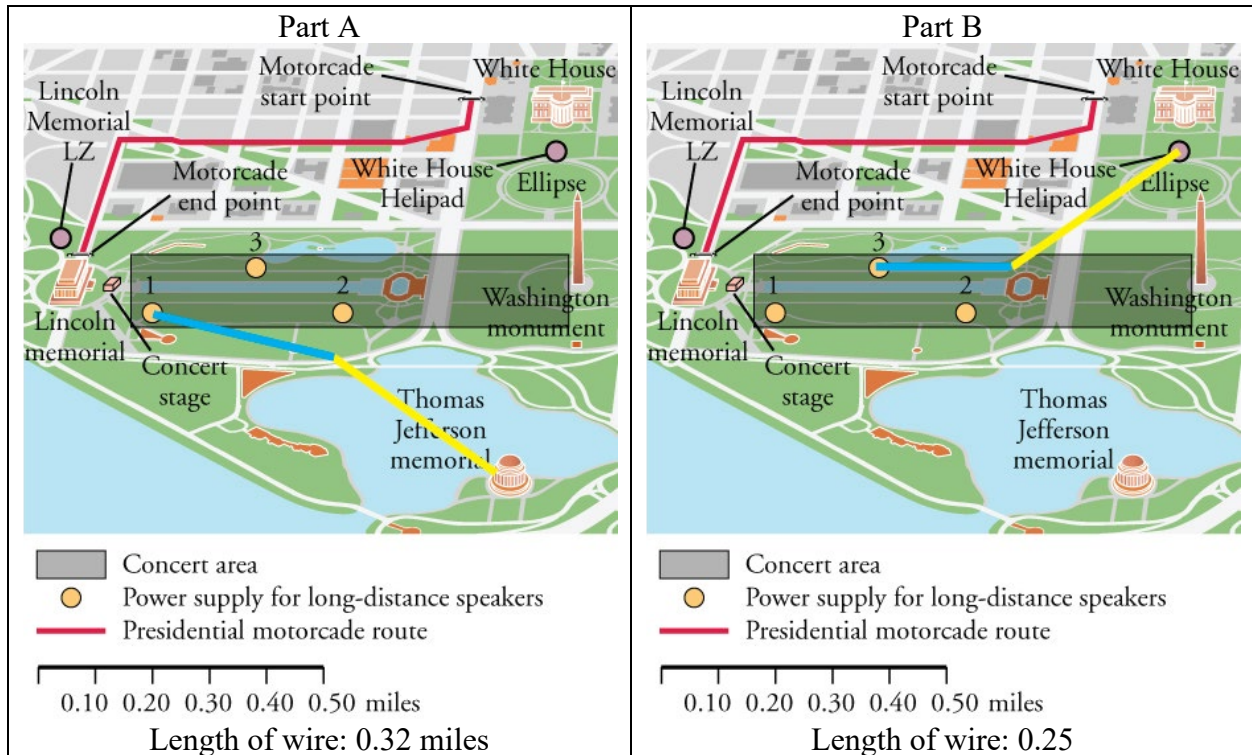
Your values may be slightly different due to estimating the values from the graph.

Since the line is curved, the more segments we use, the more accurate the estimation of the displacement and average velocity.

B (best answer from options given)

24.

The answers for Parts A and B will vary. The following represent possible answers. The yellow lines represent the 0.35 distance that the speaker projects and the blue line represents the length of wire.



Part C

distance = 0.9 miles

time = 5 minutes = 0.083 hours

$$v = \frac{d}{t} = \frac{0.9}{0.083} = 10.8 \text{ mph}$$

Part D

distance = 0.9 miles

speed = 30 mph

$$v = \frac{d}{t} \Rightarrow t = \frac{d}{v} = \frac{0.9}{30} = 0.03 \text{ hours (or 1.8 minutes)}$$

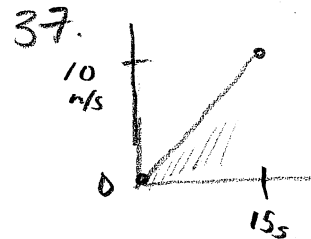
25. A    26. B    27. B    28. C    29. B

30. D    31. the greatest the displacement could have been is  $d = vt$   
 $= 32(82) = 1886\text{m}$

therefore, B

32. A    33. B

34. A    35. B    36. B



$$d = \frac{10(15)}{2} = 75\text{m} \quad \text{A}$$

38. B    39. B

40. The circumference of a circle is  $\pi d$ .

$$\text{distance} = 4.5(14)\pi = 63\pi$$

$$\text{displacement} = 74\text{cm}$$

C

41. to the hospital  $v = \frac{d}{t}$     to home  $3v = \frac{d}{t_2}$   
 $d = vt$      $d = 3vt_2$

Same distance

$$vt = 3vt_2$$

$$t_2 = \frac{t}{3}$$

B

42. C

43. B

44. B

45. B

46. B

47. displacement = 0 (the ball and the puck both return to the starting position)

$$\text{distance} = 20 + 20 = 40 \text{ m}$$

$$\text{Velocity} = 0 \quad (\text{displacement} = 0)$$

D.

48. A

49. B      50. D

$$51. \text{ Area} = \left( \frac{18 + 170}{2} \right) 30 = 2820 \text{ m} \quad \text{C}$$

$$52. \quad v_{\text{avg}} = \frac{d}{t} = \frac{2820}{30} = 94 \text{ m/s} \quad \text{C}$$

53. A

$$54. \text{ displacement} = 0 \quad (\text{returned home})$$
$$\text{distance} = (1.3 + .68 + 1.1 + .42) 2$$
$$= 7 \text{ km}$$

A

55. Runner A

$$v = \frac{d}{t} = \frac{64}{25} = 2.56 \text{ m/s}$$

at 45 s

$$\begin{aligned} d &= vt \\ &= 2.56(45) = 115.2 \text{ m} \\ &= 120 \text{ m} \end{aligned}$$

C

Runner B

starts 2.5 s later  
therefore  $t = 25 - 2.5 = 22.5$

$$v = \frac{d}{t} = \frac{64}{22.5} = 2.84 \text{ m/s}$$

at 45 s

$$\begin{aligned} d &= vt \\ &= 2.84(45) = 127.8 \text{ m} \\ &= 130 \text{ m} \end{aligned}$$

56. (a)  $v = \frac{d}{t}$   
 $t = \frac{d}{v} = \frac{75}{2.2} = 34 \text{ s}$

(Father went in straight line, therefore, his distance should be used.)

(b)  $d = vt$   
 $= (3.5)(34) = 119 \text{ m}$

(c)  $119 - 75 = 44 \text{ m}$

B

57. B (lines are curved)

58. slope from first and last point

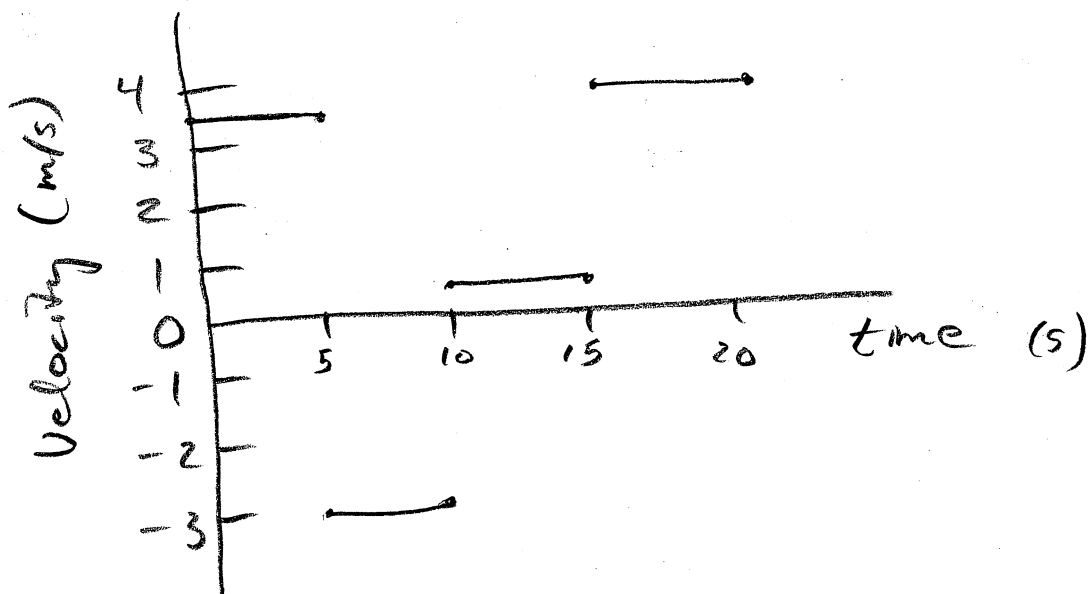
$$v = \frac{-2 - 0}{6 - 0} = -\frac{1}{3} \text{ m/s}$$

A

59. C (going up = speeding up; going down = slowing down)

60.

$t$ (s)	$v$ (m/s) (slope)
0-5	$\frac{17.5}{5} = 3.5$
5-10	$\frac{2.5 - 17.5}{5} = -3$
10-15	$\frac{5 - 2.5}{5} = 0.5$
15-20	$\frac{25 - 5}{5} = 4$



$$\text{Average velocity} = \frac{3.5 + (-3) + 0.5 + 4}{4} = 1.25 \text{ m/s}$$

or

$$= \frac{25 - 0}{20 - 0} = 1.25 \text{ m/s}$$

Acceleration = 0 (none of the velocity lines have a slope  $> 0$ ).

A