

## Physics 11 Chap 5 Answers p.109 #15 - #76

- 15) a) velocity increases quickly at first then more slowly. Acceleration is greatest at beginning but becomes zero acceleration when the gas pedal is lifted to shift.  
 b) Acceleration before is smaller than after because of the slope of the graph. The driver needs to lift off the gas to shift.

- 16) a) forward constant speed  
 b) forward increasing speed until point C, the slow down until D, then stop until E, then speed up backwards until G, then slow down.

- 17) Largest from 0-2 s. Smallest beyond 33 s.

18)

- 19) a) Runner A is ahead of B.  
 b) Runner B is faster (steeper slope)  
 c) B passes A at point P

- 20) a) at 1.4 s and 7.8 s  
 b) Car A  
 c) at 4.0 s, when slopes are equal  
 d) none  
 e) most of the graph until 8.0 s

- 21) a) constant positive velocity  
 b) displacement  
 c) positive increasing velocity (jerk)  
 d) displacement

22) equal displacements

- 23) Positive velocity slows as going up, stops, changes direction and negative velocity speeding up. Acceleration constant.

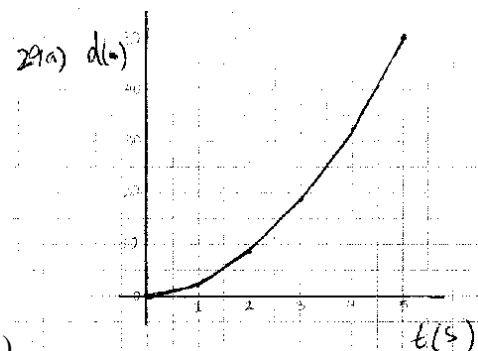
- 24) a) Smaller speed on moon because of smaller acceleration  
 b) longer time to fall

- 25) a) lower maximum height.  
 b) max height on Dweeb is 3 times higher.

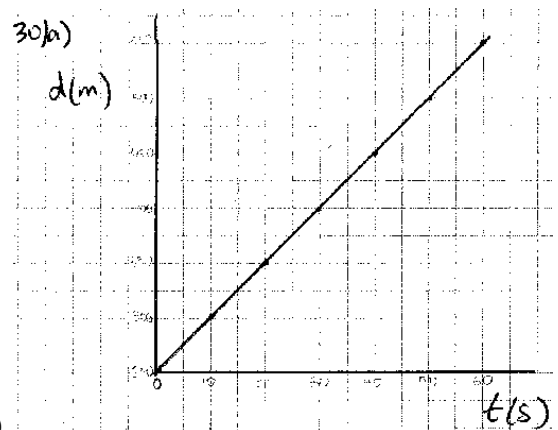
- 26) a) Rock B will be faster at bottom.  
 b) same acceleration  
 c) Rock A arrives first

27)  $1.5 \times 10^{11}$  m

28) 1.7 minutes

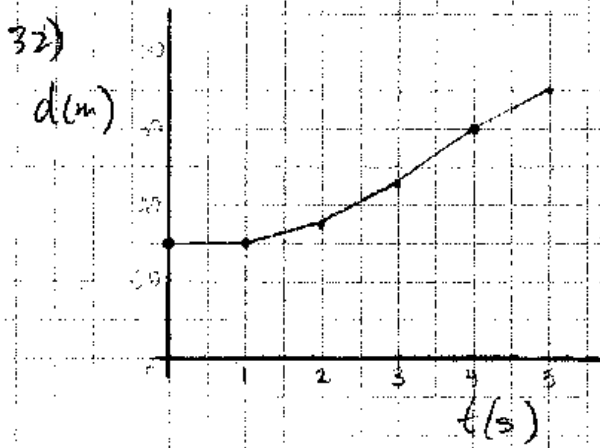


- b) The Curve is a parabola  
 c) After 2.2 seconds the ball has rolled approximately 10 m



- b) 550 m  
 c)  $3.0 \times 10^2$  m

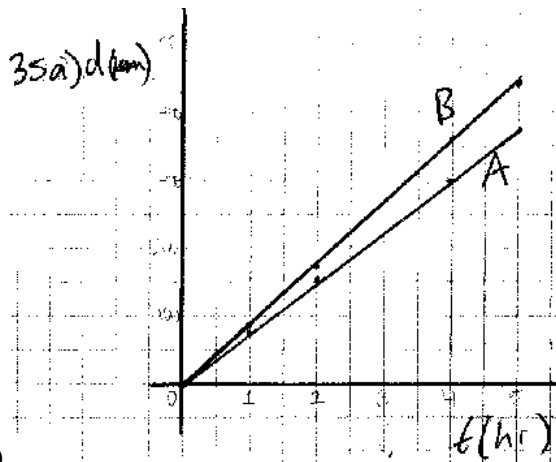
31) See chart.



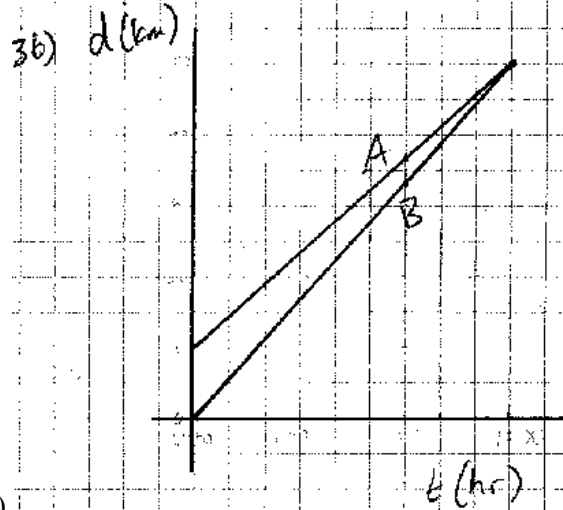
32) Average velocity = 8.0 m/s

- 33) a) 50 km/h  
b) No; 48 km/h

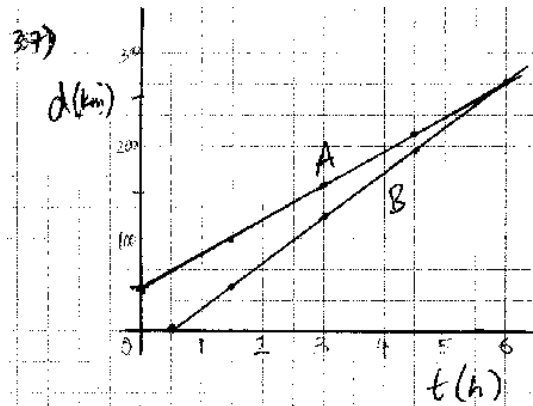
- 34) a) 400 m  
b) 0  
c) -200m



- 35) b) 150 km; 170 km  
c) 1.6 h; 1.4 h



36) Both cars arrive at the beach at 1:00 PM



- 37) a) 6.0 h  
b)  $2.6 \times 10^2$  km  
c) 7.3 m

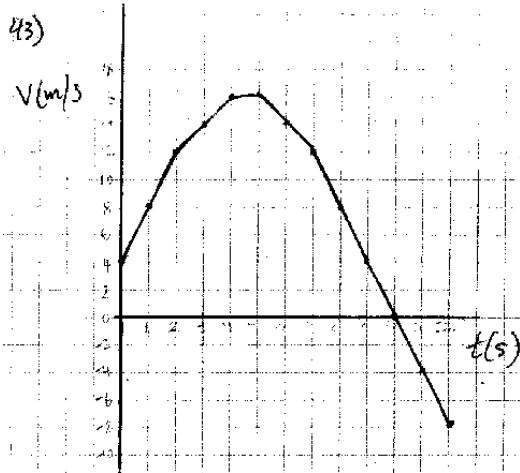
38) 11 m

- 39) a) 2.3 m/s  
b) 0.67 m/s  
c) 1.2 m/s, answer will vary

- 40) a) 75 m  
b) 150 m  
c) 125 m  
d) 500 m

41) a) 23 m/s, answers will vary

42) 11 km/h



- 43) a) speeding up from 0.0 s to 4.0 s,  
slowing down from 5.0 s to 10.0 s  
b) at 10.0 s  
c)  $4.0 \text{ m/s}^2$ ,  $-4.0 \text{ m/s}^2$

44)  $8.0 \text{ m/s}^2$

- 45) a)  $6 \text{ m/s}^2$   
b)  $0 \text{ m/s}^2$   
c)  $-2 \text{ m/s}^2$   
d)  $-4 \text{ m/s}^2$

46)  $33 \text{ m/s}$

- 47) a)  $607 \text{ m/s}$   
b) 1.83 times the speed of sound

48)  $7.0 \times 10^4 \text{ m/s}$

49)  $9.2 \times 10^2 \text{ m}$

50)  $1.6 \times 10^3 \text{ m}$

- 51) a) 43 m  
b) 43 m, the car is on the way back down the hill

52)  $71 \text{ m/s}$

- 53) a)  $1.4 \times 10^2 \text{ m}$   
b)  $5.5 \times 10^2 \text{ m}$

54) a) 24s

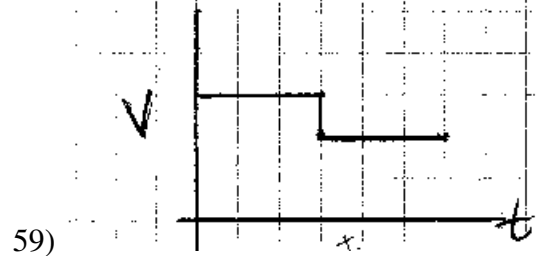
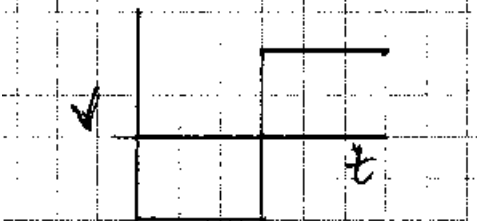
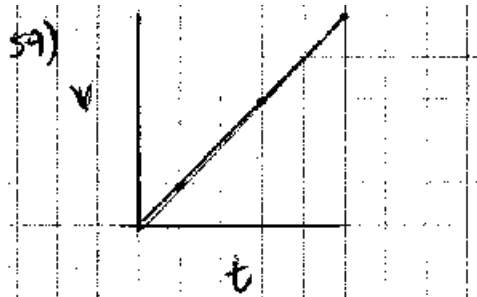
b)  $7.4 \times 10^2 \text{ m}$

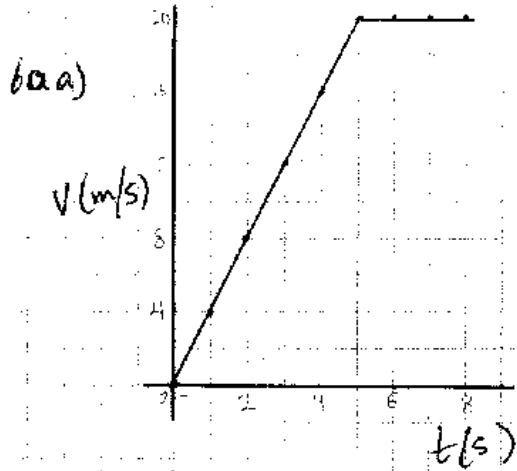
- 55) a)  $3.1 \times 10^8 \text{ m/s}$   
b) 11 microseconds

56) 1.6m thick

57)  $2.8 \times 10^2 \text{ m/s}^2$ , or 29 times g

- 58) a)  $247 \text{ m/s}^2$ , 25 times g  
b)  $-207 \text{ m/s}^2$ , 21 g

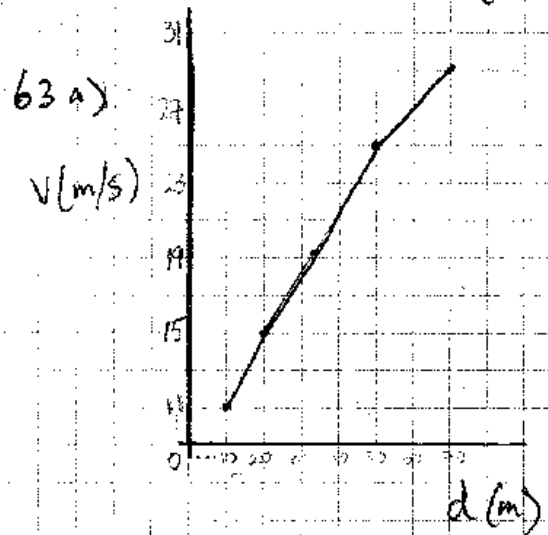




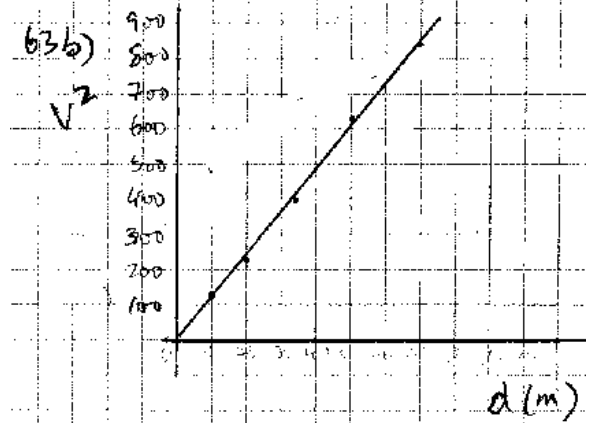
- 60)
- b) 8.0 m
  - c) 32 m
  - d) 110 m
  - e)  $4.0 \text{ m/s}^2$ , acceleration
  - f)  $0.0 \text{ m/s}^2$ , const velocity

- 61) a) Hits the board and slows down
- b)  $3.7 \times 10^3 \text{ m/s}^2$
  - c) 380 g
  - d) -8 cm

- 62) a) 50.0 m
- b) 22 m/s

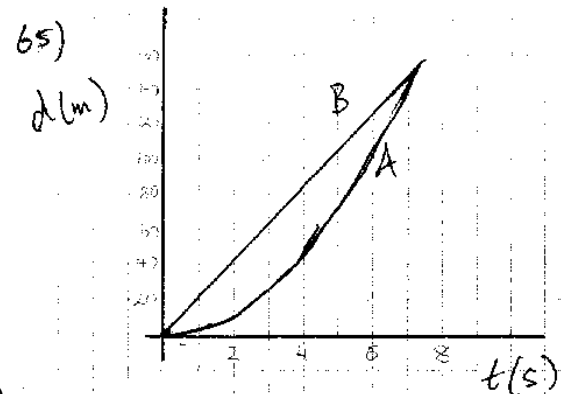


- 63)
- parabolic

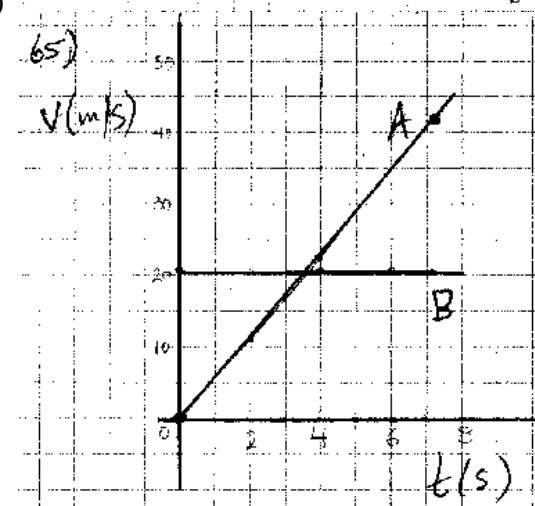


- straight line
- c)  $12.3 \text{ m/s}^2$
  - d) yes,  $-6.0 \text{ m/s}^2$

- 64) a)  $1.5 \times 10^2 \text{ m}$
- b) 42 m/s



- 65)



- b) yes

- 66) 1.2 s

Mr. Lo

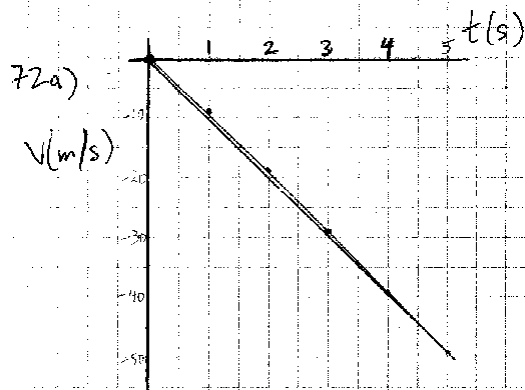
- 67) a)  $-78 \text{ m/s}$   
b)  $-3.1 \times 10^2 \text{ m}$

68) pos v, increase v, pos a

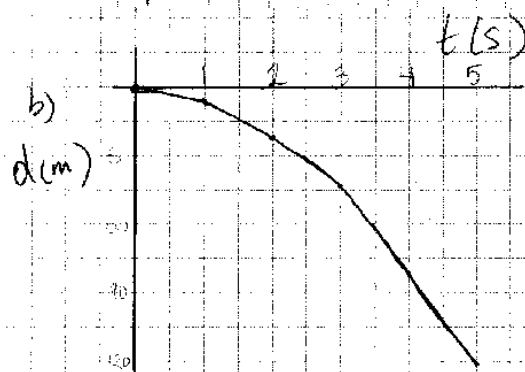
- 69) a)  $-20.0 \text{ m}$   
b)  $20.0 \text{ m}$

- 70) a)  $276 \text{ m}$   
b)  $7.5 \text{ s}$

71)  $44 \text{ m}$



72)



c)  $-20 \text{ m/s}$ ,  $-40 \text{ m/s}$ , yes the values agree

d)

e)  $0.5 \text{ g}$

f) yes

- 73) a)  $-15 \text{ m/s}$   
b)  $10.0 \text{ m}$   
c)  $10 \text{ m}$  below origin,  $20 \text{ m}$  below helicopter

- 74) a)  $-25 \text{ m/s}$   
b)  $30 \text{ m}$   
c)  $20 \text{ m}$  below chopper

75)  $20.0 \text{ m}$  below chopper

- 76) a)  $-4.85 \text{ m/s}$   
b)  $4.43 \text{ m/s}$   
c)  $930 \text{ m/s}^2$ , 95 times  $g$