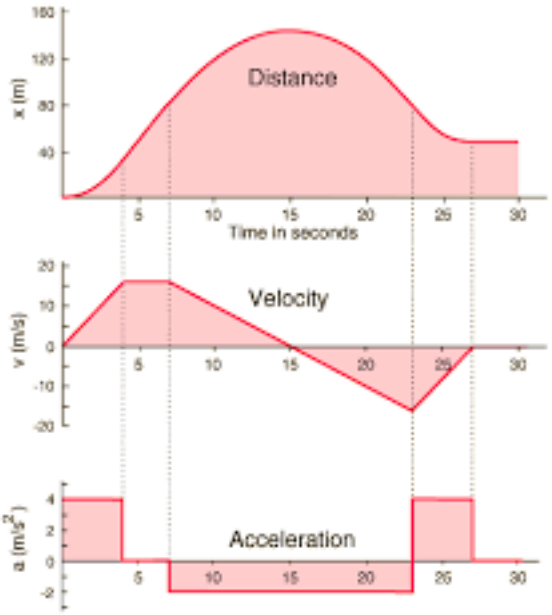
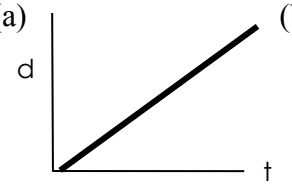
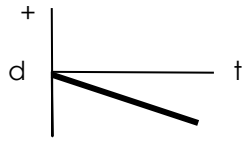
Physics 30S
Unit 2 – Motion Graphs
HOMEWORK ANSWERS

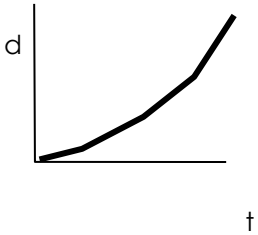


Mrs. Kornelsen
Teulon Collegiate Institute

Grade 11 Physics – Position-time Graphs Answers

1. -1.5km/h and 0.4km/h
2. (a) B is moving faster
   (b) A starts ahead
   (c) Where they are at the same place at the same time. B passes A.
3. (a) at d = 0.
   (b) No.
   (c) 3km south of the station
4. (a) can't go back in time
   (b) can't be at more than one place at the same time.
5. (a) 

(b) 

(c) 

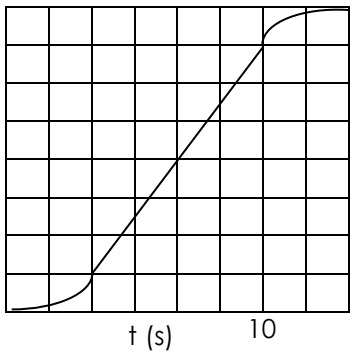
Grade 11 Physics – d-t Graphs and Non-uniform Motion Answers

1. (a) increasing (b) no

2. (a) 2.0m/s (b) 1.67m/s

3. (a) t = 5s (b) t = 12s (c) t = 0-5s and t = 12-14s
   (d) t = 5-12s (e) 1.25m/s [South] (f) 3.57 m/s
   (g) 2.14m/s [South] (h) yes, both 2.0m/s (g) no

4. The problem is that there is no acceleration. It should look approximately like:



Grade 11 Physics – v-t Graphs and Acceleration Answers

1. 2.0m/s^2 [East]
2. 120m/s [up]
3. 5.0s
4. A
5. 7.0m/s [South]
6. 0.51s
7. (a) 0 – 4.0s and 10.0 – 12.0s (b) 5.0 – 10.0s (c) 10.0s
   (d) 14.0m/s [North] (e) 4.0m/s^2 [North] (f) 4.0m/s^2 [South]

Grade 11 Physics – Acceleration-time Graphs Answers

1. (a) speeding up, 22m/s [South]
   (b) slowing down, 2m/s [South]

2. (a) constant velocity, a = 0
   (b) accelerating at 7.5m/s^2 [South]
   (c)15m/s [North]
   (d) 60m/s [South]

3. (a) I - V
   (b) VI
   (c) VII
   (d) V
   (e) VI
   (f) negative
   (g) negative

4.

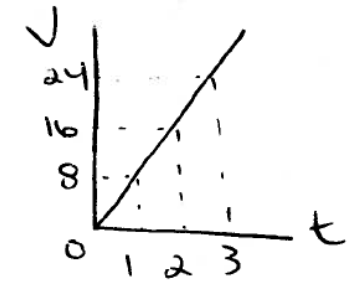
d-t Graph	Matching v-t Graph	Matching a-t Graph
A	D	B
B	C	A or D
C	A	A or D
D	B	C

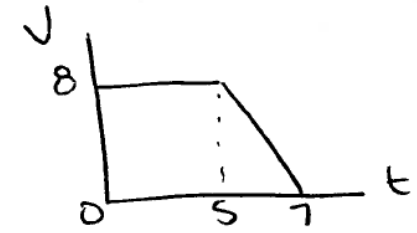
Grade 11 Physics – Displacement on a v-t Graph Answers

1. (a) 20km/h, 40km/h, 80km/h
   (b) 10km/h/s, 6.67km/h/s, 0

2. The following are not drawn to scale:
   (a) the slope must be 8km/h/s

(b)





3. (a) 240km (b) 112.5m (c) 24m
   (d) ~~540m~~ 270m (e) 18m (f) 337.5m

4. (a) i) 4m/s ii) 6m/s iii) 3m/s iv) 2m/s
   (b) i) 0 ii) 1m/s^2 iii) -0.67m/s^2 iv) 0.75m/s^2

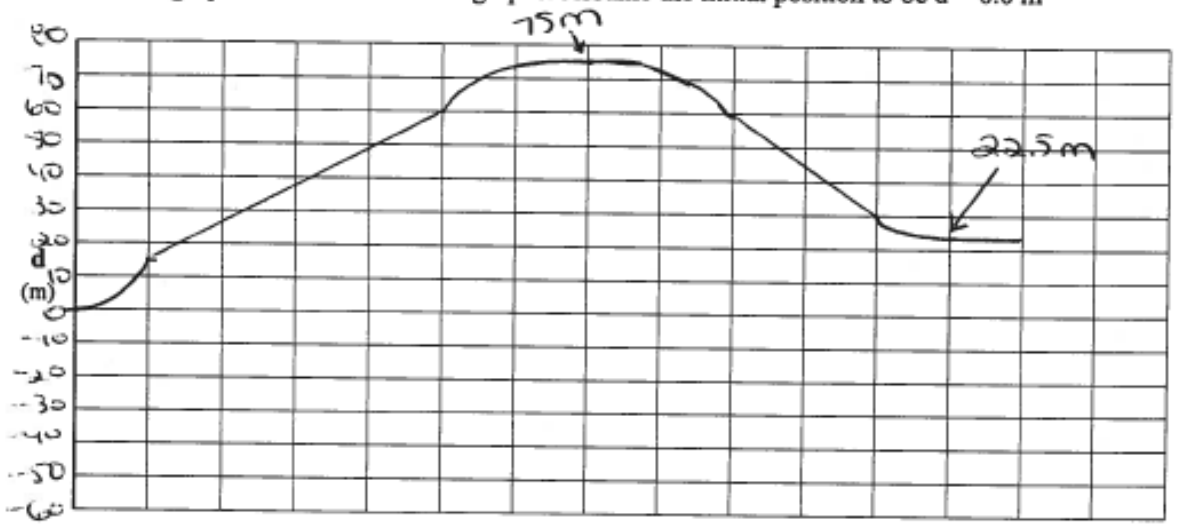
Grade 11 Physics - Practice with d-t and v-t graphs answers.

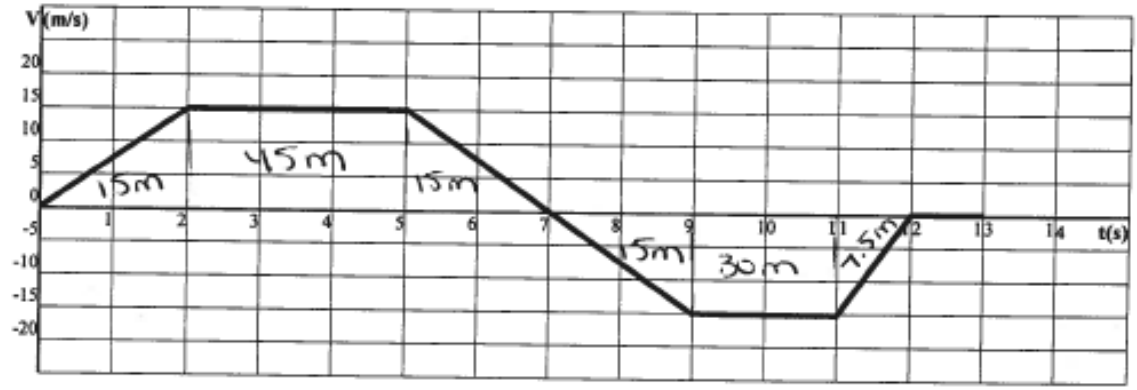
1) (a) 1.75 m/s
   (b) 4m
   (c) 20m
   (d) 0 m/s
   (e) 1 m/s^2 (approx.)
   (f) staying the same
   (g) increasing

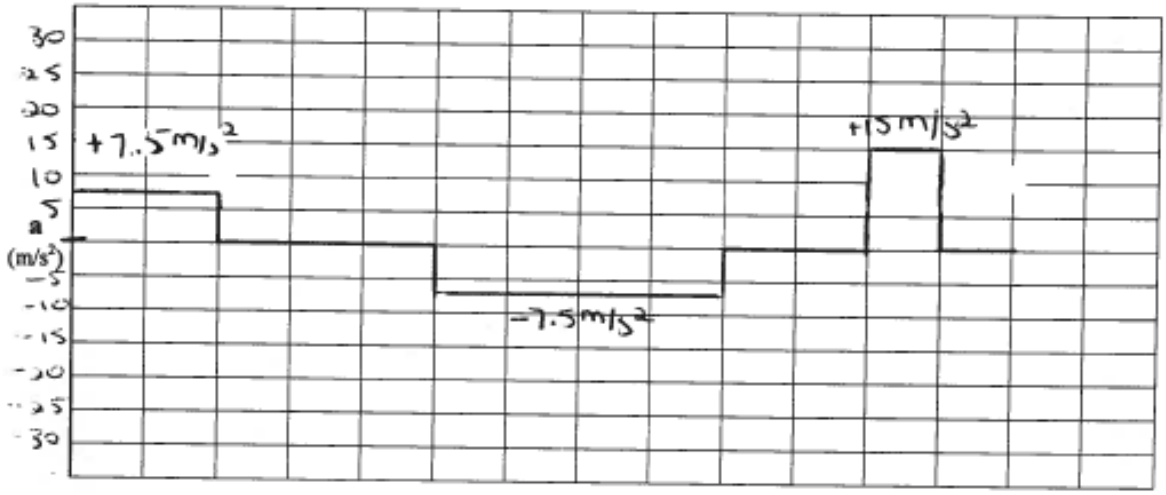
2) (a) 11 m/s
   (b) 4-6 s
   (c) 8m
   (d) start and 17-20 s
   (e) [redacted] 0 m/s^2
   (f) -2.7 m/s^2
   (g) 18m

Grade 11 Physics – Converting Graphs

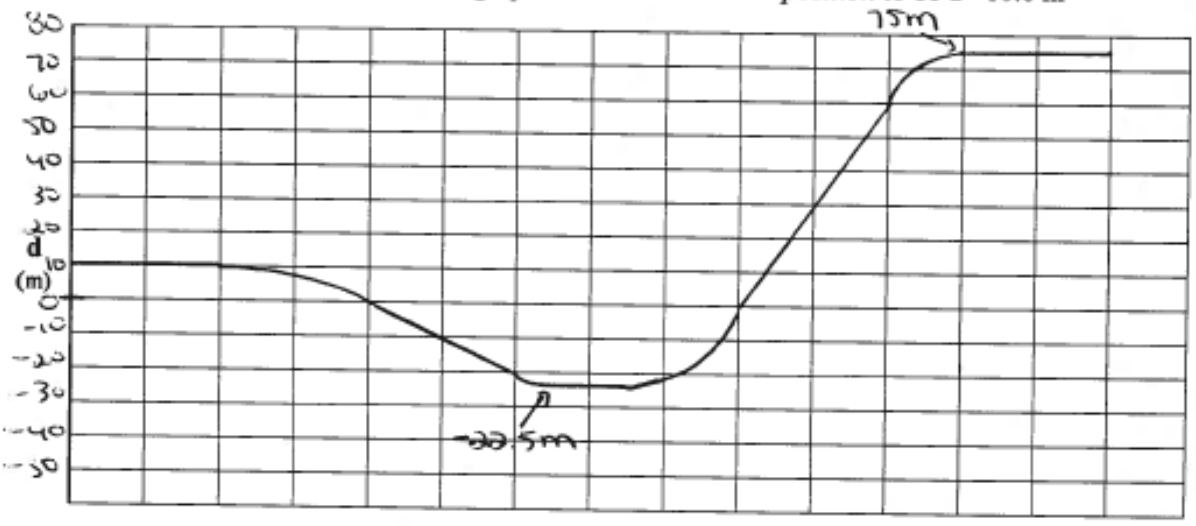
1) From this v-t graph draw the d-t and a-t graphs. Assume the initial position to be d = 0.0 m

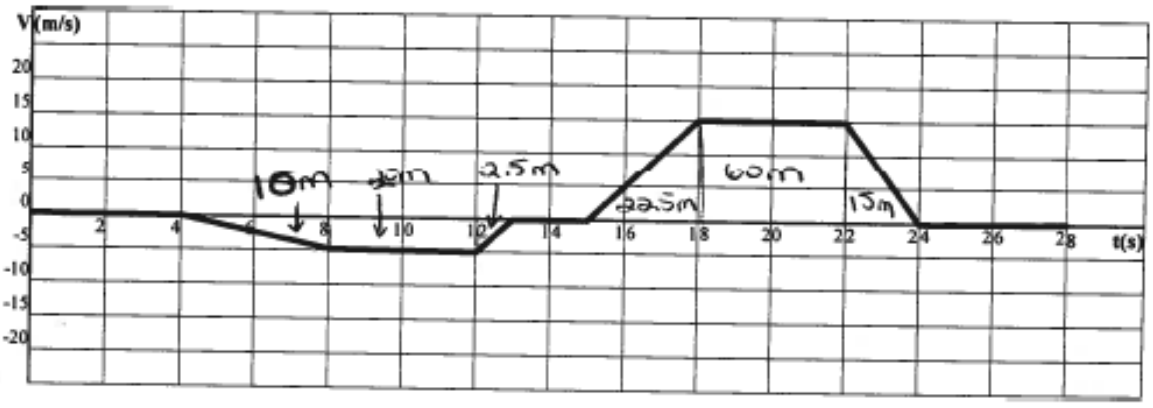


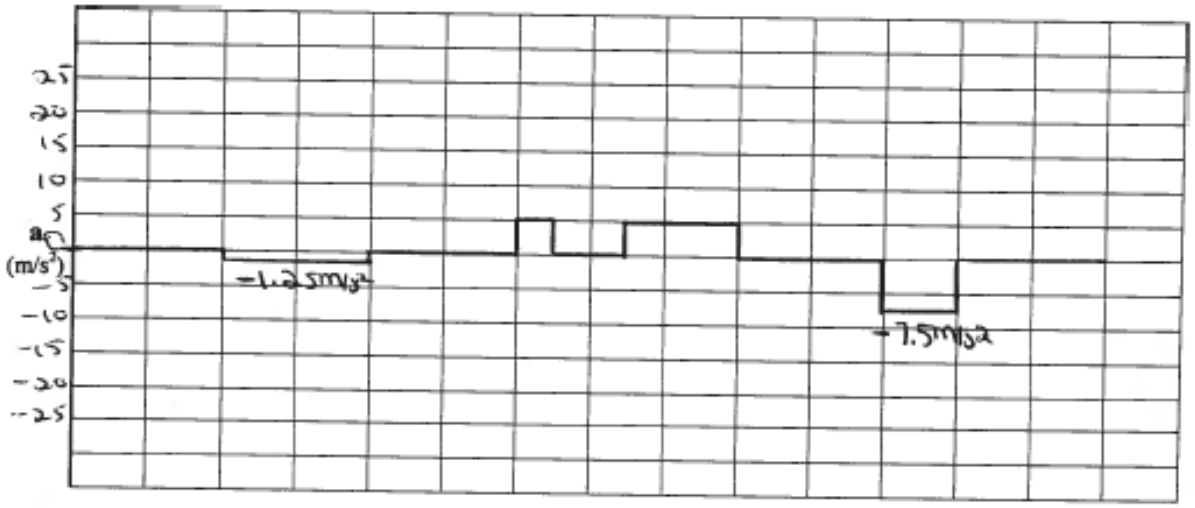




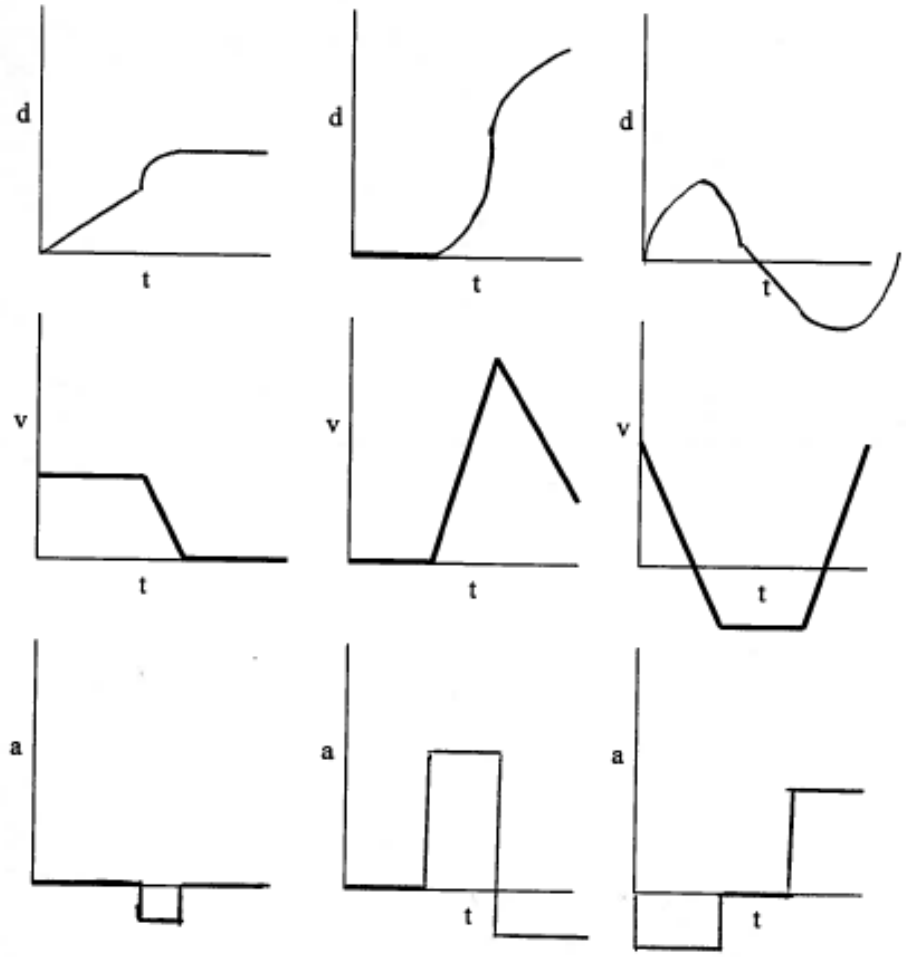
2) From this v-t graph draw the d-t and a-t graphs. Assume the *initial position* to be d =10.0 m







3) Sketch the following graphs from the v-t graphs given. You may assume the object creating the graph begins at d = 0m.



4) Sketch the following graphs from the a-t graphs given. You may assume the object creating the graph is initially moving in the positive direction and begins at d = 0m.