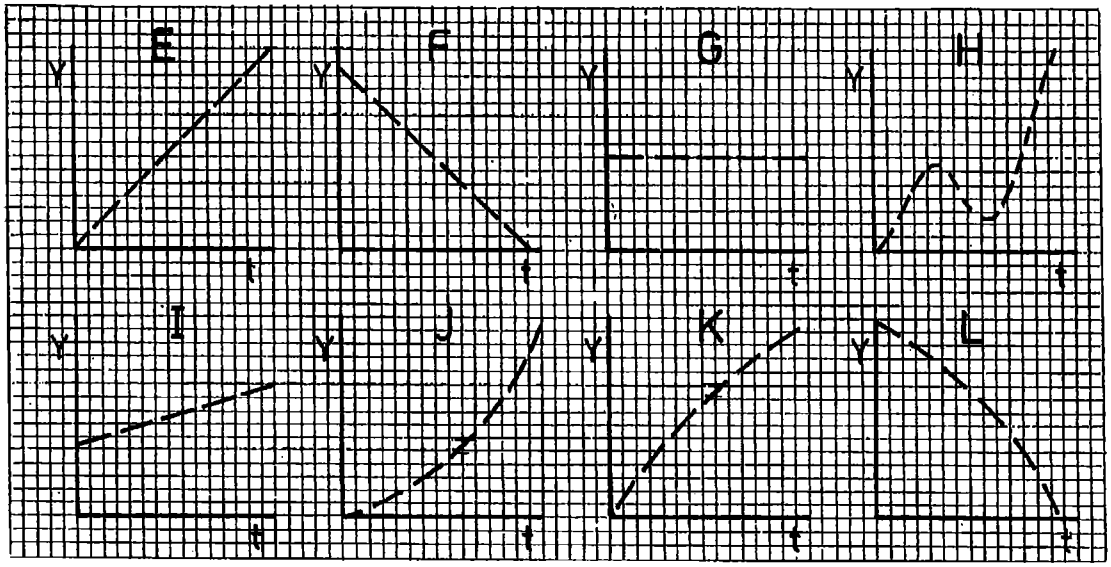
INTERPRETING MOTION GRAPHS – 1

This test is designed to measure your ability to interpret the shapes of motion graphs. In each question select the correct answer and write its letter (A, B, C or D) on your answer sheet.

The questions refer to the graphs below. Each graph represents a portion of the motion of an object moving in a straight line.



Set 1 Displacement/Time Graphs In this set, the y axis represents displacement. For each question, choose the graph which best fits the description given.

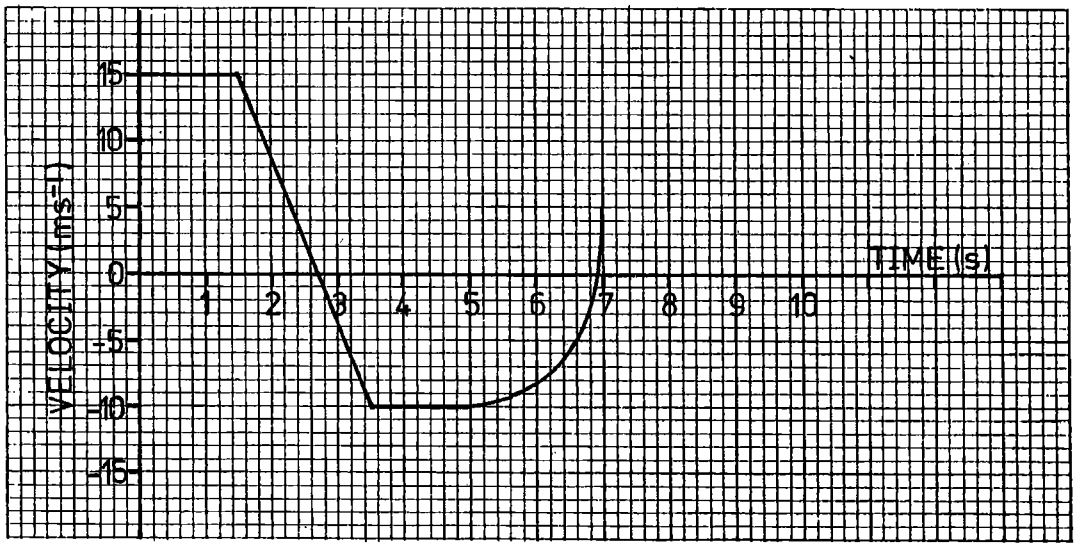
Question	Description An object moving with:	Graph			
		A	B	C	D
1	zero velocity (i.e. stationary)	E	F	G	H
2	constant (uniform) velocity	E	G	J	K
3	non-uniform velocity	F	G	H	I
4	increasing velocity	H	I	J	K
5	decreasing velocity	F	H	J	K

Set 2 Velocity/Time Graphs In this set, the y axis represents velocity. For each question, choose the graph which best fits the description given.

Question	Description An object moving with:	Graph			
		A	B	C	D
6	constant velocity	F	G	H	I
7	increasing velocity	F	H	I	L
8	constant accleration	E	G	J	K
9	increasing acceleration	E	F	H	J
10	decreasing acceleration	F	I	J	K

INTERPRETING MOTION GRAPHS – 2

This test is designed to measure your ability to interpret a motion graph. The questions refer to the graph below:



The graph shows the velocity of an object over a period of time.

a) When (if ever) is the object stationary? _____

b) What is the maximum velocity of the object? _____

c) What is the minimum velocity of the object? _____

d) What is the displacement of the object at 2.7 seconds? _____

e) What is its displacement at 6.9 seconds? _____

f) What is its maximum displacement? _____

g) What is the velocity of the object at t = 4? _____

h) What does the area under the graph represent? _____

i) What does the slope of the graph represent? _____

j) What was the average velocity of the object? _____

k) What was the instantaneous acceleration of the object at time t = 2? _____

l) When is the acceleration zero? _____

m) When is the acceleration negative? _____

n) What the magnitude of this acceleration? _____

o) When is the acceleration positive? _____

p) What is its average value for this period? _____

q) What total distance did the object travel? _____

Continue the graph using the following information:

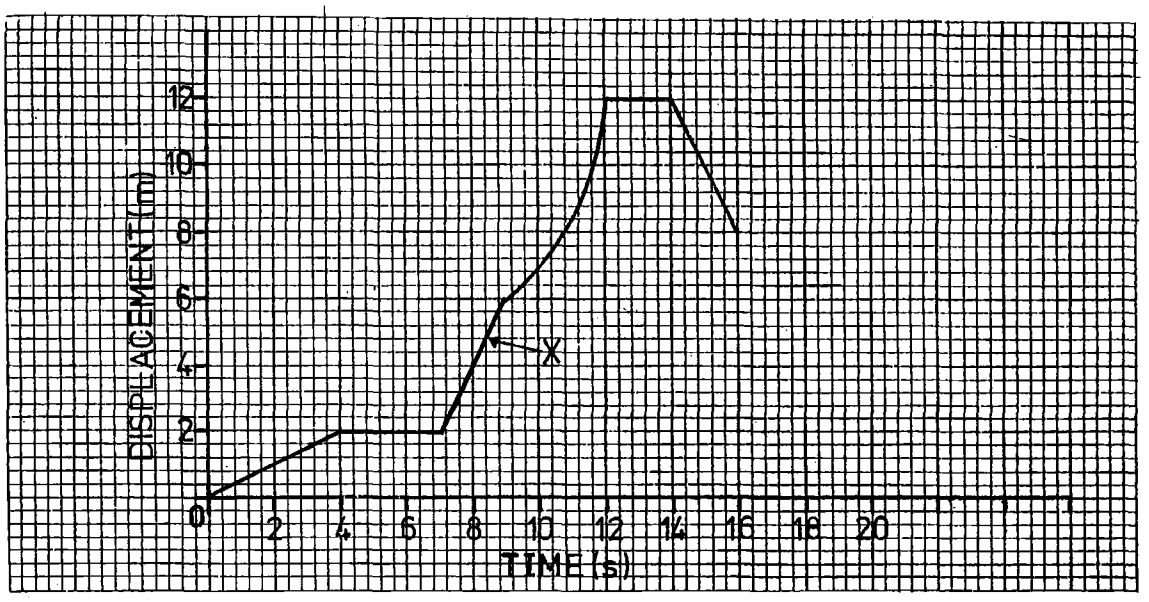
r) the object continues on its journey with zero acceleration for 2 seconds

s) it then accelerates at $5ms^{-2}$ for 2 seconds

t) After 2 seconds of uniform acceleration the object is stationary.

INTERPRETING MOTION GRAPHS – 3

This test is designed to measure your ability to interpret motion graphs. The questions refer to the two graphs below:



The graph shows the displacement of an object over a period of time.

a) How long did it take the object to travel 6 metres? _____

b) How long did it take the object to travel the last 6 metres of its journey? _____

c) What total distance was travelled by the object? _____

d) What is its displacement after 16 seconds? _____

e) How far is it displaced between t = 6 and t = 16? _____

f) What is the instantaneous velocity of the object at position x? _____

g) When is the object stationary? _____

h) What is the highest constant velocity of the object? _____

i) What is the acceleration of the object at X? _____

j) What is the average velocity of the object? _____

k) What is represented by the area under the graph? _____

l) When was the velocity negative? _____

m) What is the magnitude of the negative velocity? _____

n) How far did the object travel between t = 12 and t = 14? _____

o) What does the slope of the graph represent? _____

p) What does a slope of zero represent? _____

q) Where is the slope zero? _____

Continue drawing the graph using this information:

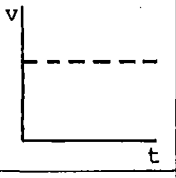
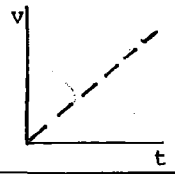
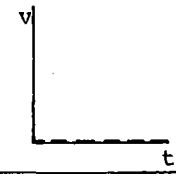
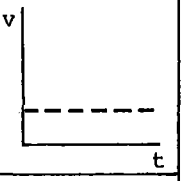
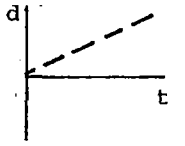
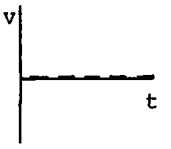
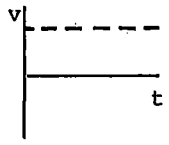
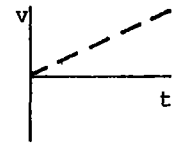
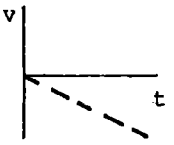
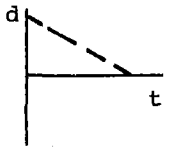
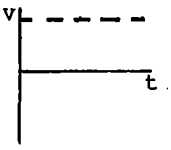
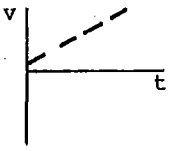
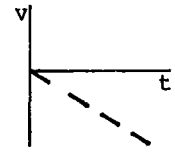
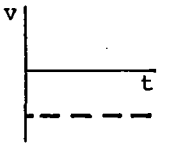
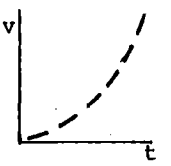
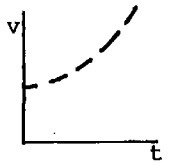
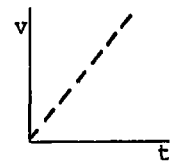
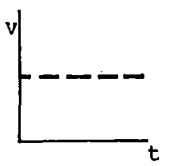
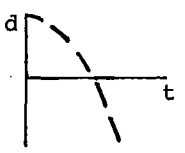
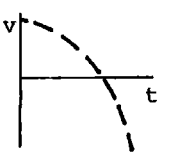
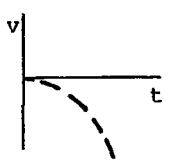
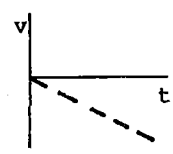
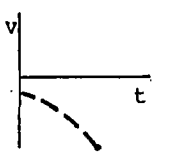
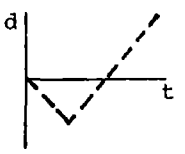
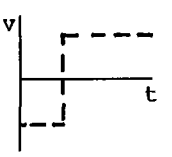
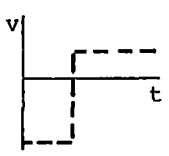
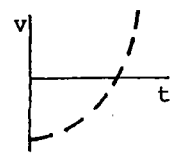
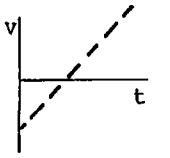
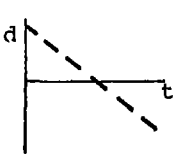
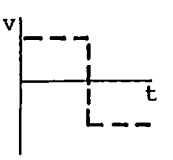
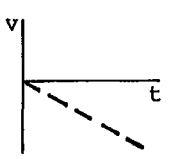
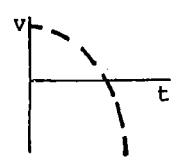
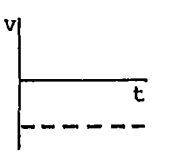
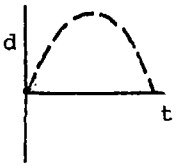
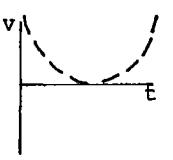
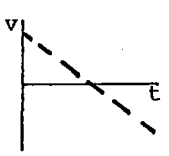
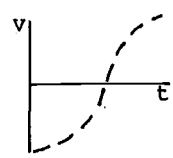
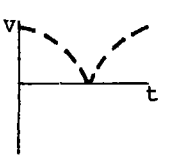
r) for the next 3 seconds the object was stationary.

s) it then headed towards home at 2 metres per second

t) after 3 seconds, it slowed down to 1 metre per second until it reached home

INTERPRETING MOTION GRAPHS – 7

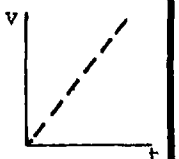
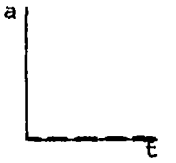
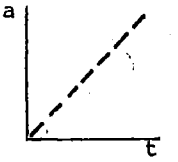
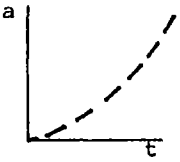
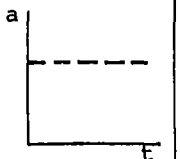
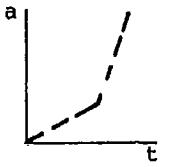
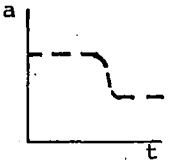
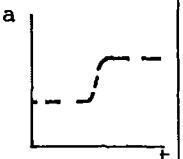
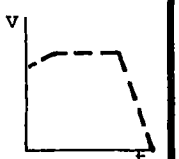
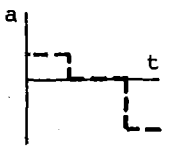
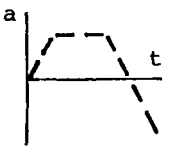
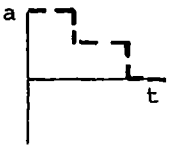
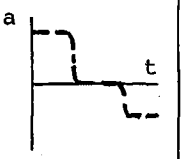
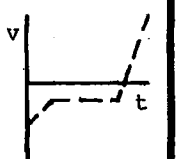
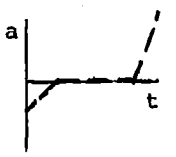
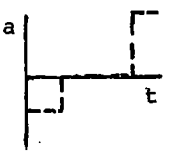
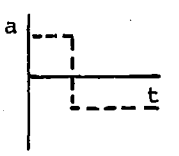
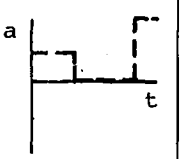
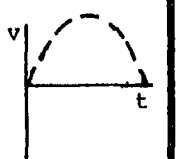
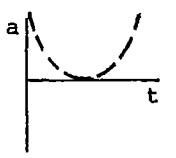
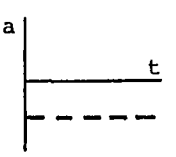
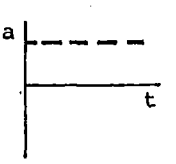
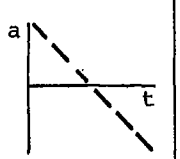
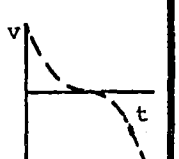
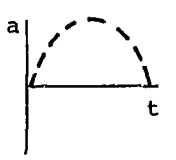
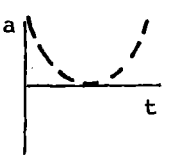
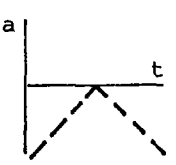
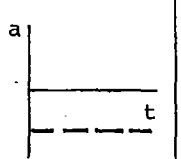
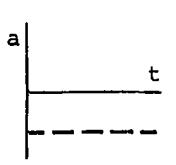
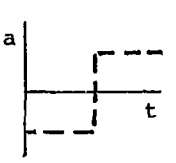
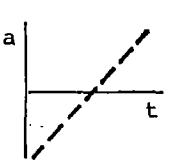
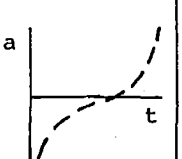
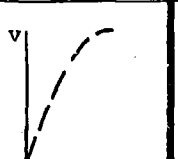
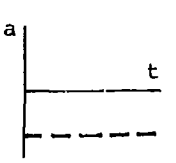
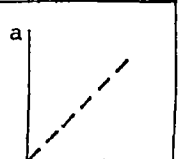
This test is designed to measure your ability to change a displacement/time graph to a velocity/time graph. For each question select the correct answer and write its letter (A, B, C or D) on your answer sheet.
For each displacement/time graph choose the graph which best represents this motion on a velocity/time graph.

Q	Displacement/ Time Graph	Equivalent Velocity/Time Graph			
		A	B	C	D
1					
2					
3					
4					
5					
6					
7					
8					

INTERPRETING MOTION GRAPHS - 8

This test is designed to measure your ability to change a velocity/time graph. For each question select the correct answer and write its letter (A, B, C or D) on your answer sheet.

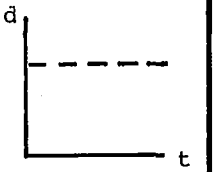
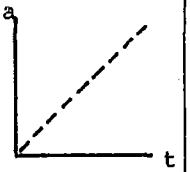
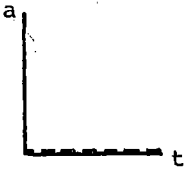
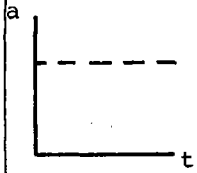
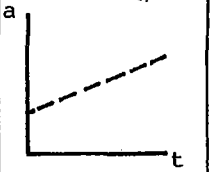
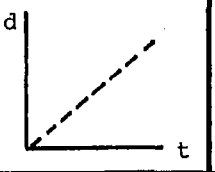
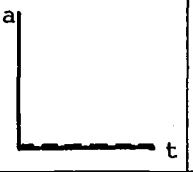
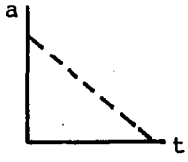
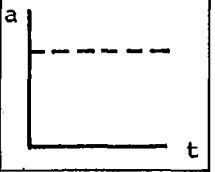
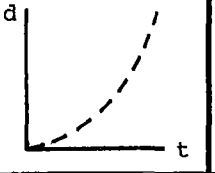
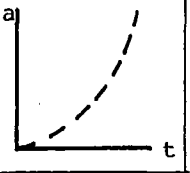
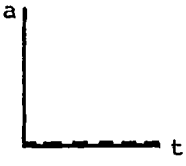
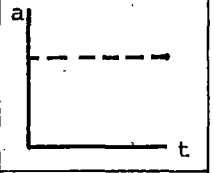
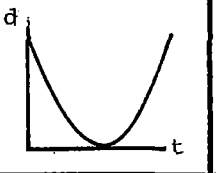
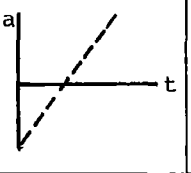
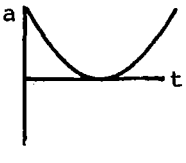
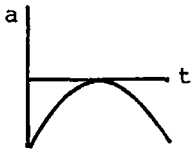
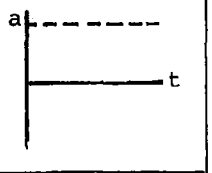
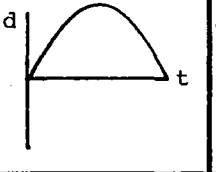
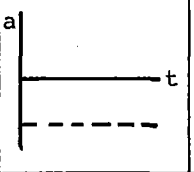
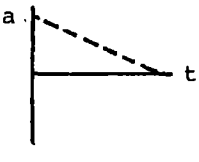
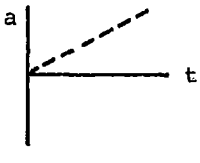
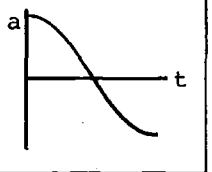
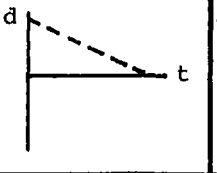
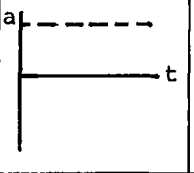
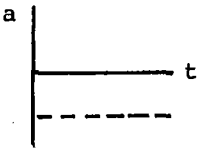
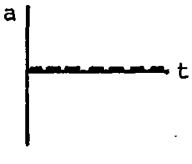
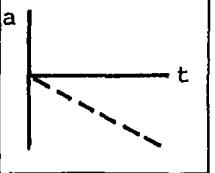
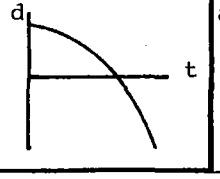
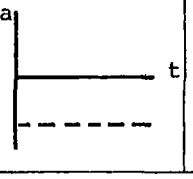
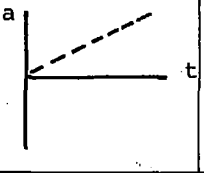
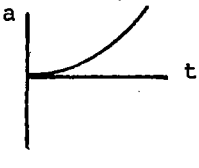
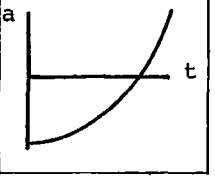
For each velocity/time graph, choose the graph which best represents this motion on an acceleration/time graph.

Q	Velocity/ Time Graph	Equivalent Acceleration/Time Graph			
		A	B	C	D
1					
2					
3					
4					
5					
6					
7					
8					

INTERPRETING MOTION GRAPHS – 9

This test is designed to measure your ability to change a displacement/time graph to an acceleration/time graph. For each question select the correct answer and write its letter (A, B, C or D) on your answer sheet.

For each displacement/time graph shown, choose the graph which best represents this motion on an accleration/time graph.

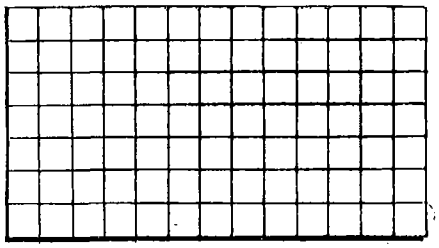
		Equivalent Acceleration-Time Graph			
Q	Displacement Time Graph	A	B	C	D
1					
2					
3					
4					
5					
6					
7					

DRAWING MOTION GRAPHS

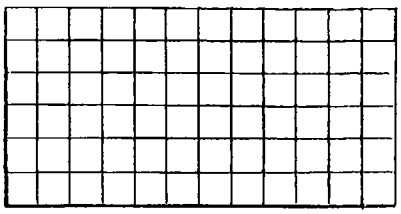
This test is designed to measure your ability to draw graphs of the motion of various objects.

In each space provided, draw a graph which represents the motion of the object as described in each space.

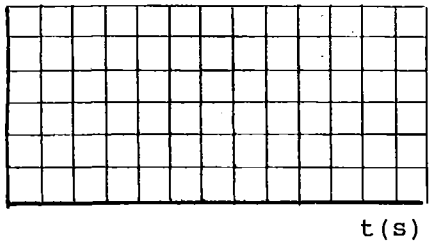
1. Object travels uniformly for 4 seconds at 5 ms^{-1}.



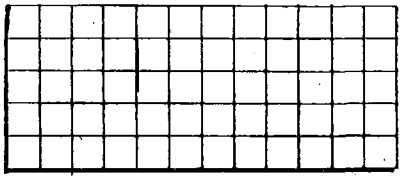
2. Object starts from rest and accelerates at 2 ms^{-2} for 3 seconds.



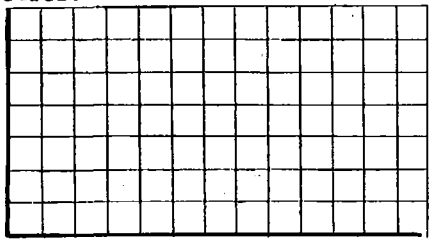
3. Object starts from rest and accelerates at 4 ms^{-2} for 2 seconds then travels uniformly for 3 seconds.



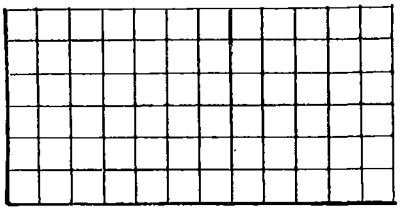
4. Object starts at 6ms^{-1} and slows down to 3 ms^{-1} in 4 seconds. It stops after another 2 seconds of uniform deceleration.



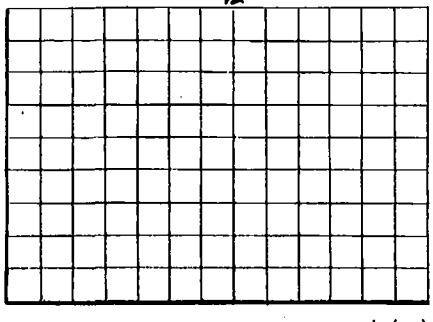
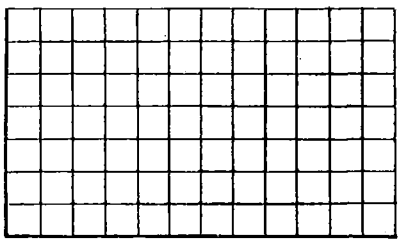
5. Object moves with uniform velocity and travels 10 metres.



6. Object moves at 2 ms^{-1} for 3 seconds, then accelerates for 3 seconds. It travels 14 metres in all.



7. Object starts at 2 ms^{-1} and accelerates uniformly until it has travelled ~~18~~ 12 metres.



8. Object starts from rest and accelerates uniformly for 2 seconds. It then travels with constant velocity for 2 seconds. It travels a total of 10 metres.