**Velocity versus Time Graphs**



The gradient of a velocity versus time graph gives the

acceleration of the object.

Gradient = Acceleration

1. Which line has the higher acceleration?

**The red line**

2. Are these objects accelerating or decelerating?



3. Calculate the acceleration of this graph.

Acceleration = gradient

= rise/run

**= 50/5**

**= 10 m/s2 forwards**



4. Describe the motion of the object from t = 0 s

to t = 2 s.

**The object is moving at a constant velocity of 4 m/s**

5. Describe the motion of the object from t = 2 to

t = 4 s.

**The object is decelerating as the gradient is negative**

6. Calculate the acceleration of the object from t =

2 to t = 4 s.

**Acceleration = gradient = rise/run = 4/2 = - 2 m/s2**

The area under a velocity versus time graph is the TOTAL DISPLACEMENT

7. Calculate the total displacement of this object.

**Area under graph = rectangle**

**= 10 x 5**

**= 50 m forwards**



8. Calculate the total displacement of this object.

**Area under graph = triangle + rectangle**

**= (0.5 x 8 x4) + (8 x 6)**

**= 16 + 48**

**= 64 m forwards**