Name_____

GRAPHS OF MOTION 1

1. A racer covered a 4500 m course in 18 minutes. Calculate the velocity in meters per second.

1080 s

velocity = $\frac{\text{distance}}{\text{Time}}$ = $\frac{4500\,m}{1080\,s}$ = 4.17 $\frac{m}{s}$ = $\frac{m}{s}$

2. Jane ran at a constant speed of 2.75 m/s for 30 minutes. How far did she run in meters? Km?

$\times \frac{60\,s}{1\,min}$ = 1800 s

$V = \frac{d}{T}$ so $2.75\frac{m}{s} = \frac{d}{1800\,s}$ Thus $d = (2.75\frac{m}{s})(1800\,s)$

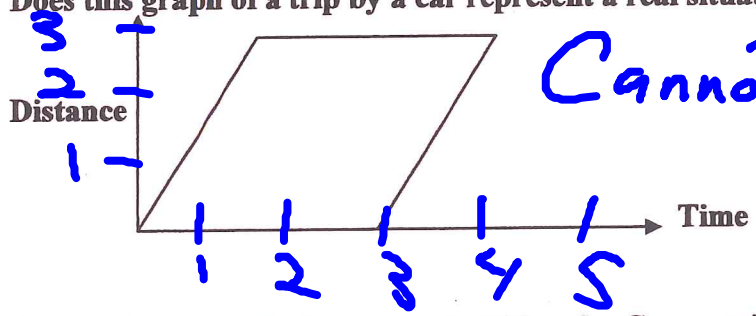
d = 4950 m = 4.95 km

3. A photon of light travels at 3 x 10^8 m/s (the speed limit of the universe). If it takes light about 9 minutes to reach Earth from the sun, what is the Earth-Sun distance?

$d = vt = (3\times10^8\,m/s)(540\,s) = 1620\times10^8\,m$

$1.62\times10^{11}\,m$

4. Does this graph of a trip by a car represent a real situation? Explain.



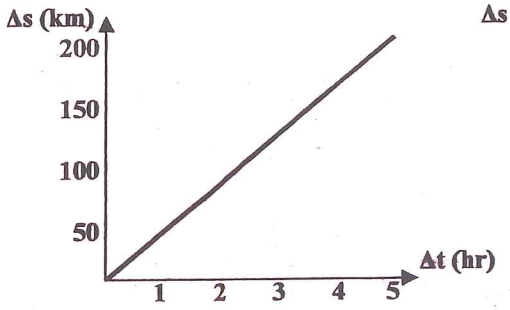
Cannot have Time go backwards

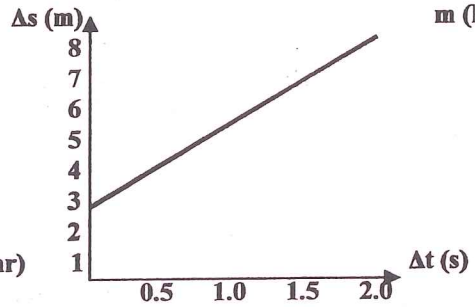
5. A car drives on a road at a speed of 35 mph. Convert this into m/s and compare the distance the car travels in one second to the size of our classroom.

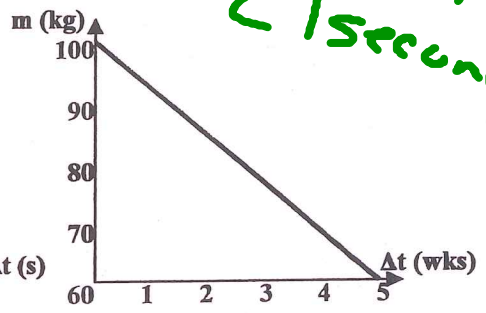
35 mph x $\frac{.447\,m/s}{1\,\frac{mi/s}{hr}}$ = 15.65 m/s

Classroom ≈ 13 m so a little < 1 second

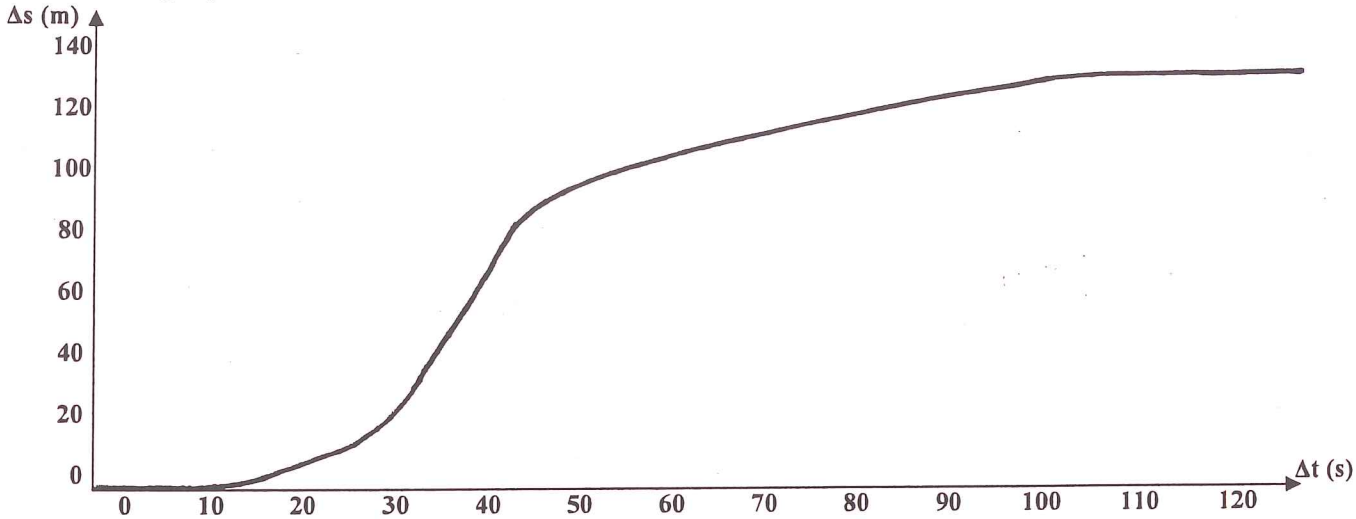
6. Calculate the slope of the following graphs. Be sure to state units.







7. Refer to the graph.



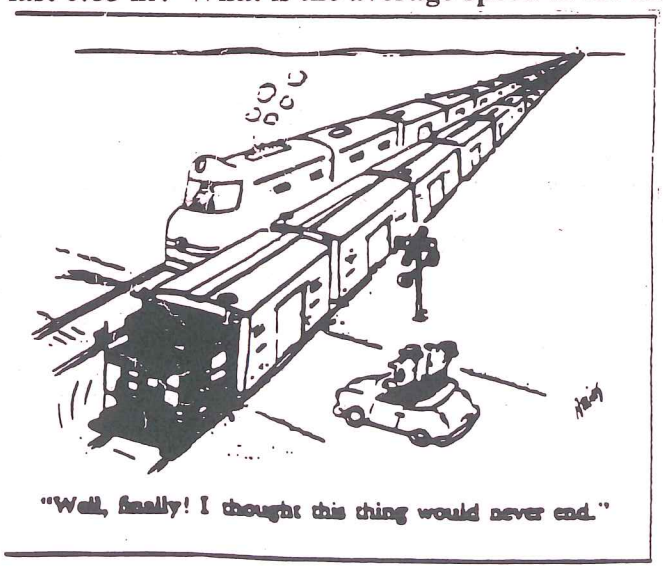
a. Describe the "trip".

b. At what time is the person going the fastest? Calculate this speed.

c. How fast is the person going at time 70 seconds?

d. What is the average speed for the entire trip?

8. A train travels 100 km/hr for 0.52 hr, then 50 km/hr for the next 0.24 hr, and finally 125 km/hr for the last 0.65 hr. What is the average speed of the train for this trip?



"Well, finally! I thought this thing would never end."