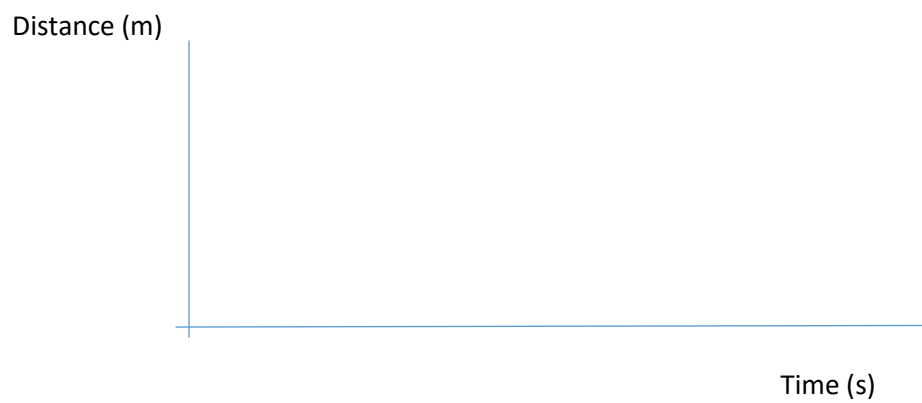


1. Rearrange $\frac{1}{x} + \frac{1}{y} = \frac{5}{z}$ for x

2.

- a. Sketch the distance-time graph for a tube train as it departs from rest from Westminster Station and comes to a stop at the next station, St James' Park.



- b. What would be different about this graph if it showed the *displacement* instead of the distance?

- c. Sketch the corresponding velocity-time graph for the graph you drew in part a.



3. Newton's gravitational force equation, which you will not have studied before, gives the magnitude of gravitational attraction between two massive bodies. It is given by the equation:

$$F = \frac{GMm}{r^2}$$

where F is the force in Newtons (N), M is the mass of the larger body and m is the mass of the smaller one, both measured in kilograms (kg), and r is the distance between the bodies and is measured in meters (m). G has a fixed value and is known as the Gravitational constant.

- Rearrange the equation for G
- By using the given equation, what are the units of G?
- Calculate the gravitational force of attraction between the Earth and the Moon.
Mass of the Earth = 6.0×10^{24} kg
Mass of the Moon = 7.4×10^{22} kg
Distance between the Earth and the Moon = 3.6×10^8 m
- If the distance between the Earth and the Moon were to double, what would happen to the magnitude of the force that you calculated in part c.?