Using Formulae

i. The speed, V, of a car at a certain point in time can be found using the following formula:

$$V = u + 10a$$

where u is the car's initial speed and a is the car's acceleration. Given that a car is travelling at 40 initially and then accelerates by 2, what is the car's new speed?

ii. The outside temperature, T (in degrees centigrade), of an aeroplane at a given altitude H is given by:

$$T = \frac{H}{200} - 50$$

A plane is flying at 1000m. What is its outside temperature at that altitude?

iii. The surface area, S (in cm^2), of a cylinder is given by the formula:

$$S = 2\pi r(r + h)$$

where r is the radius of the cylinder and h, its height. What is the surface area of a cylinder with radius 4cm and height 6cm? Leave your answer in terms of pi.

iv. We can convert temperatures given in degrees Centigrade into degrees Fahrenheit using the following equation:

$$F = \frac{9}{5}C + 32$$

where F is the temperature in Fahrenheit and C is the temperature in Celsius. Convert $100°C$ to Fahrenheit.

v. The volume, V, of a sphere is given by:

$$V = \frac{4}{3}\pi r^3$$

where r is the radius of the sphere. Given a sphere has a radius 3, calculate its volume. Leave your answer in terms of π.

vi. The surface area, A, of a cube can be found using the equation:

$$A = 6x^2$$

where x is the length of the sides. Find the surface area of a cube with sides of length 5.