Proportionality Calculations (Minimmally Different)

1. F is proportional to a. If $F = 10$ when $a = 2$, what is the value of F when $a = 3.5$?

   In science the proportionality constant in this equation would be called the mass. The equation is force = mass × acceleration. $F = m \times a$

2. W is proportional to g. If $W = 8$ when $g = 4$, what is the value of W when $g = 12$?

   In science the proportionality constant in this equation would be called the mass. The equation is weight = mass × gravitational field strength. $W = m \times g$

3. V is proportional to f. If $V = 20$ when $f = 40$ what is the value of V when $f = 25$?

   In science the proportionality constant in this equation would be called the wavelength. The equation is wave speed = frequency × wavelength. $v = f \times \lambda$

4. ΔGPE is proportional to Δh. If $\Delta GPE = 25$ when $\Delta h = 15$ what is the value of ΔGPE when $\Delta h = 20$?

   In science the proportionality constant in this equation would be called the mass × gravitational field strength. The equation is change in gravitational field strength = mass × gravitaional field strength × change in vertical height. $\Delta GPE = m \times g \times \Delta h$

5. P is proportional to the square of I. If $P = 24$ when $I = 2$ what is the value of P when $I = 3$?

   In science the proportionality constant in this equation would be called the resistance. The equation is electrical power = current × potential difference $P = I^2R$

6. P is proportional to R If $P = 50$ when $R = 2$ what is the value of P when $R = 5$?

   In science the proportionality constant in this equation would be called the square of the current. The equation is the same as in question 6

7. KE is proportional to the square of v If $KE = 100$ when $v = 5$ what is the value of KE when $v = 20$?

   In science the proportionality constant in this equation would be called half the mass. the The equation is kinetic energy = half $\times$ *mass* $\times$ *velocity squared.* $KE = \frac{1}{2}mv^2$

8. ρ is inversly proportional to V If $\rho = 0.5$ when $V = 4$ what is the value of ρ when $V = 6$?

   In science the proportionality constant in this equation would be called the mass. The equation is density = mass $\div$ *volume* $\rho = \frac{m}{V}$

9. P is inversly proportional to t If $E = 50$ when $t = 5$ what is the value of E when $t = 10$?

   In science the proportionality constant in this equation would be called the energy. The equation is power = energy transfered $\div$ *time taken* $P = \frac{E}{t}$