

Variation

1. P varies directly as the cube of Q. What will happen to P if Q is doubled?
2. A varies directly as the square of B. What will happen to A if B is trebled?
3. M varies directly as N and inversely as the square of P. What will happen to M if N is multiplied by 8 and P is doubled?
4. A varies as the cube of B and inversely as C. If B is doubled and C is halved, what effect will this have on A?
5. T varies as the square of U and as V. If U is trebled and V is doubled, what effect will this have on T?
6. A weight on the end of a spring is spun on a circle on a smooth table. The tension, T, in the spring varies directly as the square of the speed, V, and inversely as the radius, r, of the circle.
 - (a) Write down a formula connecting T, V and r.
 - (b) The speed of the weight is multiplied by 4 and the radius is halved. What happens to the tension in the spring?
7. The number of letters, N, which can be typed on a page varies inversely as the square of the size, s, of letters used.
 - (a) Write down a relationship connecting N and s.
 - (b) The size of the letters is halved. What effect does this have on the number of letters which can be typed on a page?
8. The weight, W kg, of a cylindrical pole varies as its length, L cm and as the square of its diameter, D cm.
If L is multiplied by 8 and D is halved, what happens to W.
9. The force, F newtons, needed to stop a train varies as the square of the speed, S kmph, of the train and inversely as the stopping distance, D metres.
What happens to F if S is doubled and D is multiplied by 4.
10. The time, t seconds, taken by a child to slide down a chute varies as the length, L m, of the chute and inversely as the square root of the height, H m, of the chute above the ground.
What effect will it have on the time taken to go down the chute if the length of the chute is doubled and the height above the ground is multiplied by 4?