Algebraic Direct Proportion

Example: A is directly proportional to B. When A=30, B=6.

a) Find an equation connecting A and B

b) Find the value of A when B=2

c) Find the value of B when A =55

a) $A = kB$

$30 = k \times 6$

$k = 5$. Therefore A=5B

b) A=5(2) so A=10

c) 55=5B so B=11

Answer the following and show detailed working:

Q1) X is directly proportional to Y. X=10 when Y=5.

a) Express X in terms of Y.

b) Find X when Y=12.

c) Find Y when X=84

Q2) M and N are in direct proportion. If M=45, N=3.

a) Find a formula connecting M and N.

b) What is the value of N when M=300?

c) Find the value of M when N=8

Q3) A is directly proportional to B. When A is 20, B is 5.

a) Calculate the value of A when B=10.5

b) What is the value of B when A=124?

Q4) X is directly proportional to the square of Y. If X=12, Y=2.

a) Express X in terms of Y.
b) Find the value of X when Y is 5.
c) Find the value of Y when X is 75.

Q5) G is directly proportional to the square root of H. If G=20, H=25.

a) Express G in terms of H.
b) Find the value of G when H is 49.
c) Find the value of H when G is 44.

Q6) A is directly proportional to the cube of B. If A=250, B=5.

a) Find an equation connect A and B.
b) Find the value of A when B is 3.
c) Find the value of B when A is 2000.

Q7) A tree grows proportionally to its age. After 4 years the tree is 44cm tall.

a) How tall was the tree after 3 years?
b) After how many years will the tree be 2.53m?

Q8) The mass, M, of a rope is proportional to the cube of its length, L. When the rope is 2m long it weighs 240g.

a) How much would a 3m long rope weigh?
b) How long would a rope weighing 468.75g be?