

4. The discrete random variable D has the following probability distribution

d	10	20	30	40	50
$P(D = d)$	$\frac{k}{10}$	$\frac{k}{20}$	$\frac{k}{30}$	$\frac{k}{40}$	$\frac{k}{50}$

where k is a constant.

- (a) Show that the value of k is $\frac{600}{137}$

(2)

The random variables D_1 and D_2 are independent and each have the same distribution as D .

- (b) Find $P(D_1 + D_2 = 80)$

Give your answer to 3 significant figures.

(3)

A single observation of D is made.

The value obtained, d , is the common difference of an arithmetic sequence.

The first 4 terms of this arithmetic sequence are the angles, measured in degrees, of quadrilateral Q

- (c) Find the exact probability that the smallest angle of Q is more than 50°

(5)