2. A bag contains a large number of coins. It only contains 20p and 50p coins. A random sample of 3 coins is taken from the bag.

(a) List all the possible combinations of 3 coins that might be taken.

(2)

Let $\overline{X}$ represent the mean value of the 3 coins taken.

Part of the sampling distribution of $\overline{X}$ is given below.

$\overline{x}$	20	a	b	50
$P(\overline{X} = \overline{x})$	$\frac{4913}{8000}$	c	d	$\frac{27}{8000}$

(b) Write down the value of a and the value of b

(1)

The probability of taking a 20p coin at random from the bag is p

The probability of taking a 50p coin at random from the bag is q

(c) Find the value of p and the value of q

(2)

(d) Hence, find the value of c and the value of d

(3)

Let M represent the mode of the 3 coins taken at random from the bag.

(e) Find the sampling distribution of M

(3)

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