

3. A bag contains red counters, green counters and white counters only. The table shows the proportion of each colour of counter that Elsa believes to be in the bag.

Colour	red	green	white
Proportion	p	0.2	$4p$

Elsa selects at random 40 counters from the bag, one at a time, with replacement.

Assuming Elsa's belief is true,

- (a) find the distribution of the number of red counters Elsa selects.

(3)

Jayda believes that the true proportion of green counters in the bag is greater than 0.2

She takes a random sample of 40 counters from the bag, one at a time, with replacement.

There are 11 green counters in her sample.

- (b) (i) Use a suitable test to assess Jayda's belief.

You should

- state your hypotheses clearly
- use a 5% level of significance
- state the p -value for the test

(4)

- (ii) Find the acceptance region for the test in part (i).

(2)