1. *Spany* sells seeds and claims that 5% of its pansy seeds do not germinate. A packet of pansy seeds contains 20 seeds. Each seed germinates independently of the other seeds.

(a) Find the probability that in a packet of *Spany*'s pansy seeds

(i) more than 2 but fewer than 5 seeds do not germinate,

(ii) more than 18 seeds germinate.

(5)

Jem buys 5 packets of *Spany*'s pansy seeds.

(b) Calculate the probability that all of these packets contain more than 18 seeds that germinate.

(2)

Jem believes that *Spany*'s claim is incorrect. She believes that the percentage of pansy seeds that do not germinate is greater than 5%

(c) Write down the hypotheses for a suitable test to examine Jem's belief.

(1)

Jem planted all of the 100 seeds she bought from *Spany* and found that 8 did not germinate.

(d) Using a suitable approximation, carry out the test using a 5% level of significance.

(6)

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