

**Question 24** (7 marks)

A researcher conducted a field experiment to determine the effects of planting density on the yield of cauliflowers.

Three planting densities were used:

Treatment A – 20 cm spacing between plants

Treatment B – 50 cm spacing between plants

Treatment C – 80 cm spacing between plants

The researcher prepared 36 trial plots of equal size. Mean yields (grams/cauliflower) for each of the treatments and the position of each plot are shown. The soil texture trend and gradient of the field are also shown.

<i>Gradient</i>								<i>Soil texture</i>	
Top of slope	↓	A	A	A	A	A	A	Sandy loam	Mean yield treatment A $\bar{x} = 1250$ g
Mid-slope	↓	B	B	B	B	B	B	Clay loam	Mean yield treatment B $\bar{x} = 1500$ g
Bottom of slope	↓	C	C	C	C	C	C	Clay	Mean yield treatment C $\bar{x} = 1850$ g

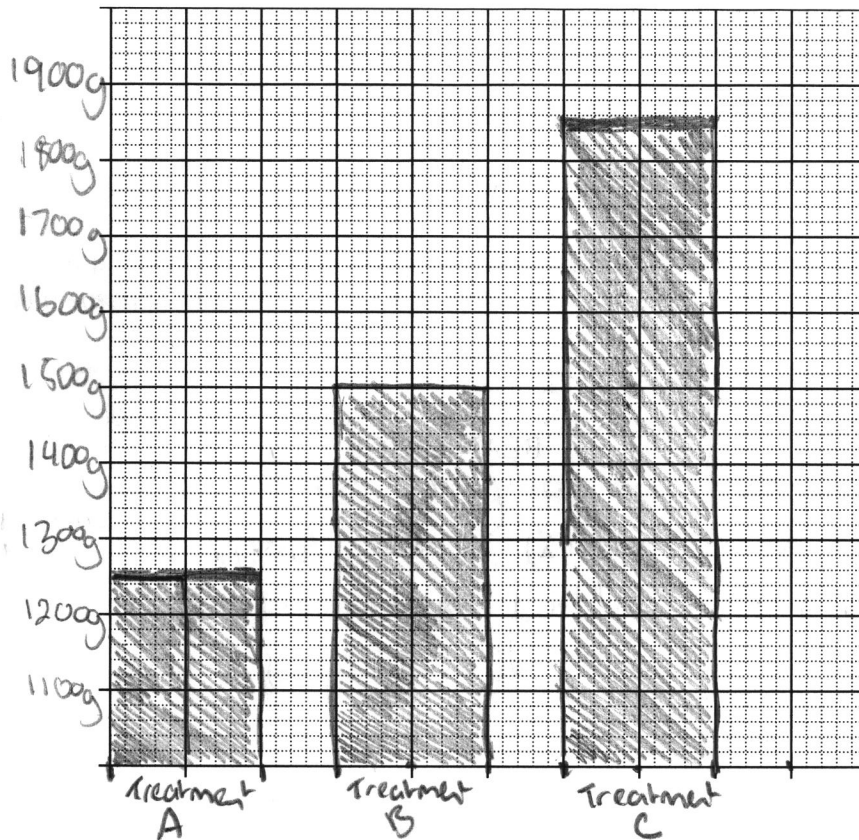
- (a) Which treatment in this experiment is most likely to produce the greatest number of cauliflowers? 1

~~See~~ Treatment B

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Question 24 (continued)

- (b) Construct a graph that represents the mean yields of the THREE treatments in this experiment. 3



- (c) Explain how an alternative experimental design for this experiment may improve the validity of the results. 3

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By planting each cauliflower in the  
same type of soil and gradient.  
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**End of Question 24**