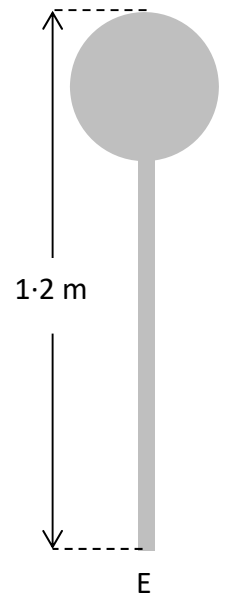
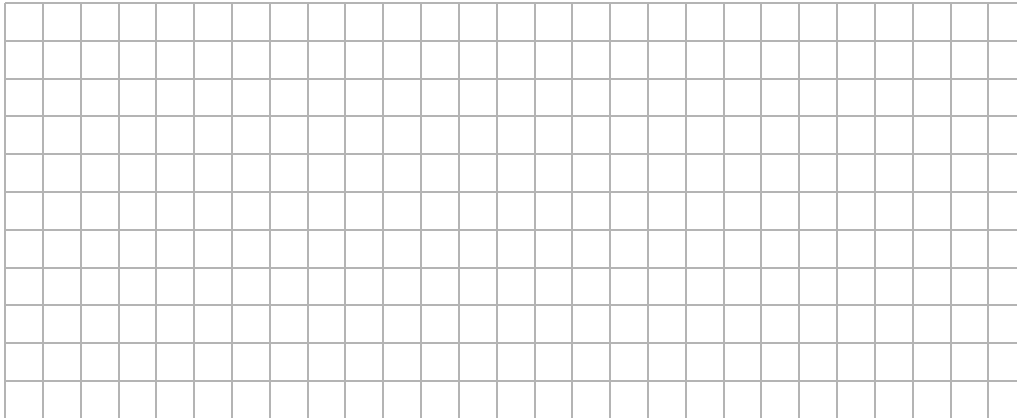
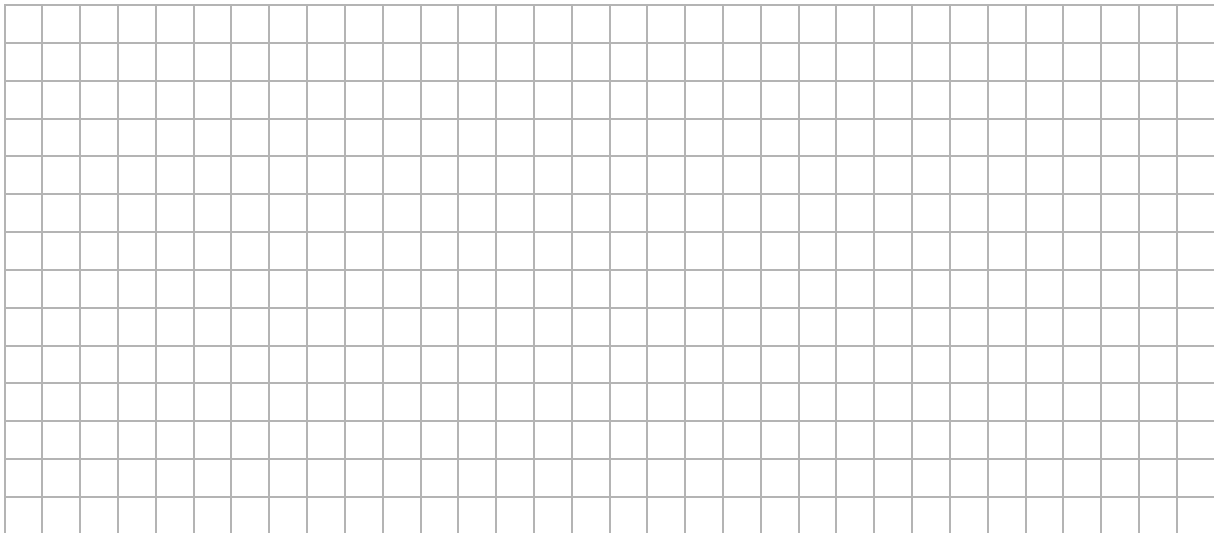




- (b) (i) The **surface area** of sphere E can be taken to be  $503 \text{ cm}^2$ .  
 The height of the railing at E (i.e. the sum of the heights of bar E and sphere E) is 1.2 metres.  
 Find the height of bar E, in cm, correct to 1 decimal place.



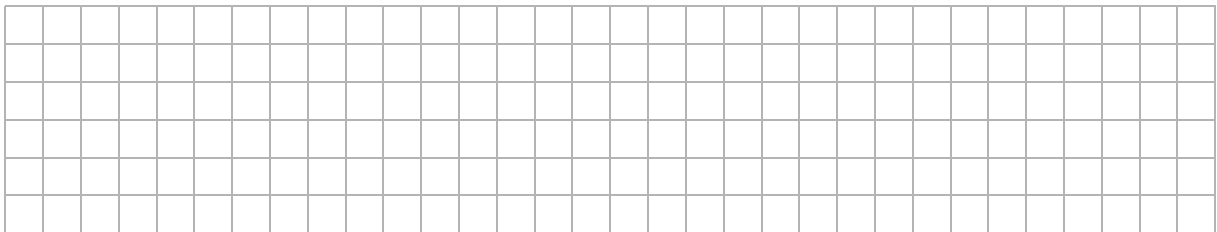
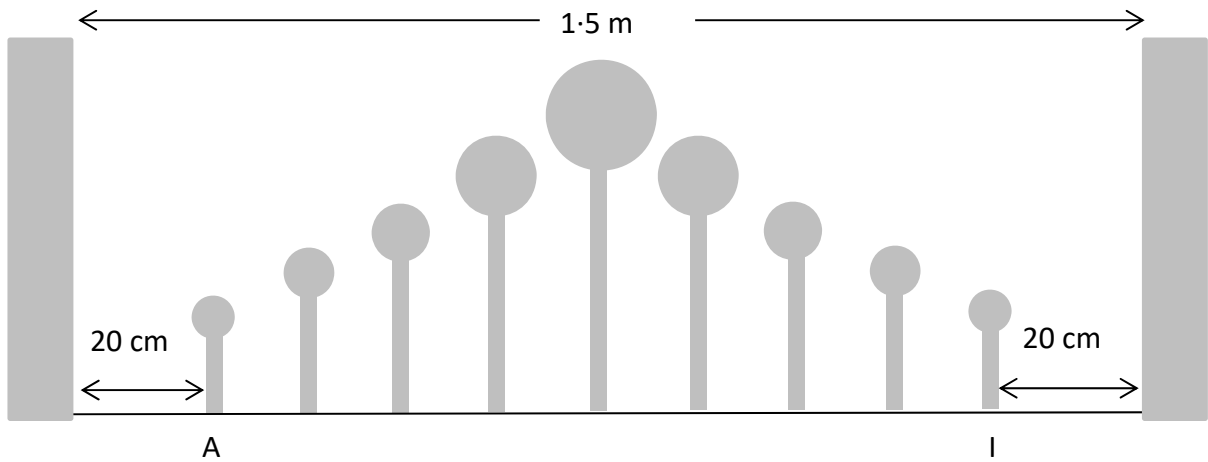
- (ii) The radius of each bar is 1 cm. The volume of bar A is  $71.3\pi \text{ cm}^3$ .  
 The heights of the bars A, B, C, D, and E form an arithmetic sequence.  
 Find, in cm, the height of each bar.



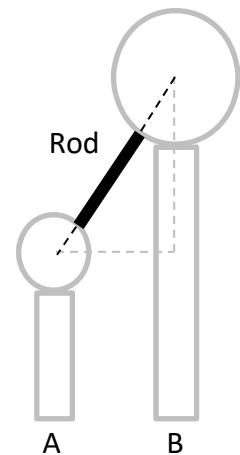
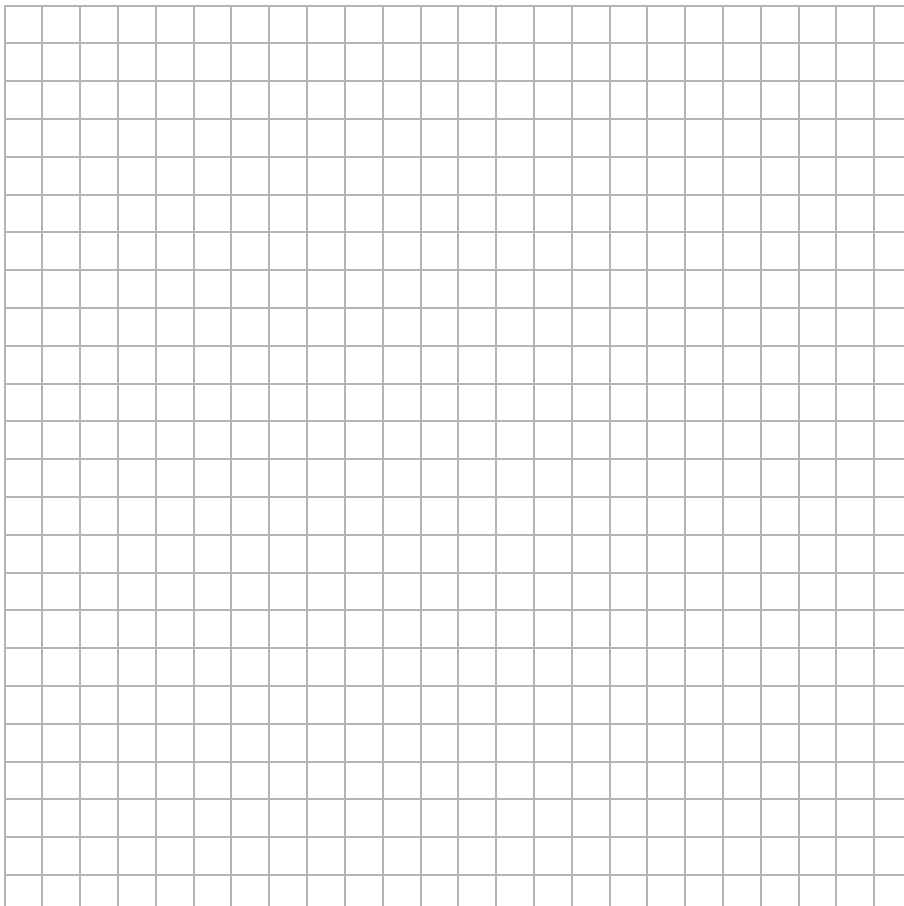
A =	B =	C =	D =	E =
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*This question continues on the next page*

- (c) There is a wall on each side of the section of railing, as shown in the diagram below which is not to draw to scale. The distance from wall to wall is 1.5 m. The distance from the wall to bar A is 20 cm and similarly from the other wall to bar I is 20 cm. The radius of each bar is 1 cm. The gap between each bar is identical. Find the size of this gap.



- (d) The sphere on bar A and the sphere on bar B are to be joined by a straight rod as shown in the diagram below which is not to draw to scale. Find the length of the shortest rod that will join sphere A to sphere B. Give your answer in cm, correct to 1 decimal place.



**Question 8**

**(60 marks)**

*Acme Confectionery* makes cakes and chocolate bars.

- (a) (i) *Acme Confectionery* has launched a new bar called *Chocolate Crunch*. The weights of these new bars are normally distributed with a mean of 4.64 g and a standard deviation of 0.12 g. A sample of 10 bars is selected at random and the mean weight of the sample is found.

Find the probability that the mean weight of the sample is between 4.6 g and 4.7 g.

- (ii) A company surveyed 400 people, chosen from the population of people who had bought at least one *Chocolate Crunch* bar.

Of those surveyed, 324 of them said they liked the new bar.

Create the 95% confidence interval for the population proportion who liked the new bar.

Give your answer correct to 2 decimal places.

*This question continues on the next page*