Comparing distributions with mean and standard deviation

Grade 8 | Higher | 5 questions, 22 marks

GCSE Statistics topic practice

Name: _____ **Date:** _____ **Score:** _____ **/ 22**

1 Asha can take Bus X or Bus Y to college. The table shows information about the journey times, in minutes, for each bus.

	Mean	Standard deviation
Bus X	24	6.5
Bus Y	27	2

a. Compare the journey times for the two buses. (2)

b. Asha says, "Bus X is always quicker than Bus Y." Is Asha correct? Give a reason for your answer. (1)

(3 marks)

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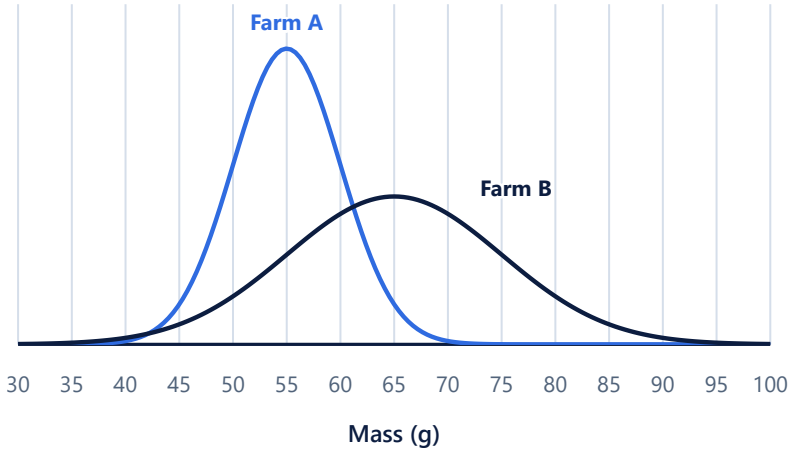
2 The diagram shows the distributions of the masses of the eggs from Farm A and from Farm B. Both distributions are normal.

a. Which farm has eggs with the greater mean mass? Give a reason for your answer. (1)

b. Which farm has eggs with the greater standard deviation? Give a reason for your answer. (1)

c. A shop wants eggs that are all about the same mass. Which farm should the shop buy from? Give a reason for your answer. (1)

d. Almost all of the eggs from Farm A have a mass between 40 g and 70 g. Work out an estimate for the standard deviation of the masses of the eggs from Farm A. (1)



(4 marks)

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3 A magazine tests the battery life, x hours, of 25 phones of Brand A. The results are summarised below.

$\Sigma x = 1500 \quad \Sigma x^2 = 91\,600$

a. Calculate the mean and the standard deviation of the battery life for Brand A. (3)

b. For 25 phones of Brand B, the mean battery life is 57 hours and the standard deviation is 12.5 hours. Compare the battery life of the two brands. (2)

(5 marks)

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4 Priya grows tomato plants using two fertilisers. The heights, in cm, after 4 weeks of the 5 plants grown with fertiliser P are

12 15 11 14 13

a. Calculate the mean and the standard deviation of these heights. Give the standard deviation correct to 2 decimal places. (3)

b. For the 5 plants grown with fertiliser Q, the mean height is 13.6 cm and the standard deviation is 3.2 cm. Compare the heights of the plants grown with the two fertilisers. (2)

(5 marks)

5 Two machines cut metal rods. The target length is 50 cm. A rod is accepted only if its length is between 49 cm and 51 cm. The lengths of the rods from each machine are normally distributed.

	Mean (cm)	**Standard deviation (cm)**
Machine A	50.2	0.4
Machine B	50.0	1.1

a. For machine A, work out the two lengths between which the middle 95% of the rods lie. (2)

b. For machine B, work out the two lengths between which the middle 95% of the rods lie. (1)

c. Which machine should the factory use? Give reasons for your answer. (2)

(5 marks)

End of questions | Total 22 marks

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