# Exercise 3

Paper 2 style · Graphic display calculator

## 3 6 marks SL 4.2 · 4.3 ●●○ Typical

The numbers of text messages sent in one day by 12 students are

$$2,\ 5,\ 6,\ 6,\ 8,\ 9,\ 10,\ 12,\ 13,\ 13,\ 15,\ 29.$$

**(a)** Find the mean and the standard deviation of these data. **[2]**

**(b)** Write down the lower quartile and the upper quartile. **[2]**

**(c)** Show that 29 is an outlier. **[2]**

The markscheme is on the next page: try the question first. Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization.
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**MARKSCHEME (a)**

mean 10.7 $(10.6666\ldots)$ **A1**

standard deviation 6.64 $(6.63743\ldots)$ **A1**

Total 2 marks

**Note** The population standard deviation $\sigma$.

**MARKSCHEME (b)**

$Q_1 = 6$ **A1**

$Q_3 = 13$ **A1**

Total 2 marks

**MARKSCHEME (c)**

$13 + 1.5 \times 7 = 23.5$ **M1**

$29 > 23.5$, so 29 is an outlier **A1**

Total 2 marks