Solutions

2.1

- $SE = 5.0/\sqrt{25}$.
- $= \mathbf{1.0}$.

2.2

- $26.8 \pm 2.064 \times 1.0$.
- $= 26.8 \pm 2.06$.
- 95% CI = [$\mathbf{24.7}$, $\mathbf{28.9}$].

2.3

- Correct: bands built this way capture the true mean in 95% of uses – this is one such band.
- Wrong: the true mean has 95% probability of lying in this interval.
- Wrong: 95% of orders fall within these minutes (that is a prediction interval, far wider).

2.4

- $n \geq (2 \times 5.0/0.5)^2 = 20^2$.
- $=$ **400** orders.
- Precision costs $\sqrt{n}$: one decimal more costs sixteen times this sample – and only a random design makes it truthful.

2.5

- (a) False – SE falls by $1/\sqrt{2}$, about 29%; halving needs 4× the data.
- (b) False – more confidence buys a WIDER band.
- (c) False – the means become normal; the data keep their shape.