Solutions

2.1

- Each one-step setting increase travels with +0.62 score on average in this sample.
- At 4: $2.1 + 0.62 \times 4 = 2.1 + 2.48$.
- $=$ **4.6** (4.58).

2.2

- $r^2 = 0.71^2 =$ **0.50**.
- It means half the score variance moves with the setting in this sample.
- It does NOT mean 50%-accurate predictions or any causal share – variance shared, nothing more.

2.3

- The U-shape says the true relation curves; a straight line systematically misses at the ends.
- Try a quadratic term (or bin the settings) – and say so before quoting any slope.

2.4

- Honest: "setting and score move together ($r^2 = 0.50$); higher settings travel with higher scores in these 10 batches."
- A causal rate needs temperature randomly assigned across batches (holding recipe and time fixed).
- Then the slope becomes an effect of the intervention, not an association.

2.5

- (a) False – r is strength and direction of association; accuracy claims need prediction errors.
- (b) True – and that is exactly why the intercept is not interpreted here.
- (c) True – no data beyond setting 5 vouches for the line.

exercises.lol exercises.com.cn