Solutions

2.1

- $P(\cup) = 0.3 + 0.4 - 0.12 = 0.58$.
- Independence check: $P(\text{rain}) \times P(\text{rush}) = 0.12$.
- Equal to the joint $\rightarrow$ independent.

2.2

- $P(1) = \binom{6}{1}(0.15)(0.85^5) = 6 \times 0.15 \times 0.4437$.
- $= \mathbf{0.399}$.
- $P(0) = 0.85^6$.
- $= \mathbf{0.377}$.

2.3

- $z = (32 - 26)/4 = 1.5$; tail $= 1 - 0.9332 = \mathbf{0.0668}$.
- Within ± 6: $z = \pm 1.5 \rightarrow 0.9332 - 0.0668 = \mathbf{0.8664}$.

2.4

- The binomial counts successes among MANY trials.
- A single order is one Bernoulli trial: "late" is an event with probability 0.15 – the binomial appears only when counting across orders.

2.5

- (a) Binomial(25, complaint rate) – counting successes.
- (b) Normal – continuous, roughly symmetric measurement (weights pile around a mean).
- (c) Equally likely outcomes – direct counting, 1 in 4.