

Solutions

Each answer shows the steps, then the **result**.

2.1

- $\chi^2 = \sum \frac{(O - E)^2}{E}$

2.2

- $5 - 1 = 4$

3.1 B

- A large χ^2 means observed counts differ greatly from expected

3.2

- each $E = \frac{120}{6} = 20$; $\chi^2 = \frac{(15 - 20)^2 + (22 - 20)^2 + (23 - 20)^2 + (19 - 20)^2 + (18 - 20)^2 + (23 - 20)^2}{20}$
 $= \frac{25 + 4 + 9 + 1 + 4 + 9}{20} = \frac{52}{20} = 2.6$; $2.6 < 11.07$; do not reject — no evidence the die is unfair

3.3

- degrees of freedom $= (3 - 1)(4 - 1) = 6$