Year 8 Probability – Challenge

ANSWER KEY HappyKids.fit

Answers and worked solutions · 8 questions

A. Think like a mathematician

1. **Complementary events add up to 1: P(not late) = 1 − 0.3 = 0.7.**
   Error: the probabilities do not add up to 1
   1 − 0.3
   = 0.7

2. **The 11 totals are not equally likely. There are 36 equally likely outcomes, and 5 of them give 6: P = 5/36.**
   Error: the totals are not equally likely
   Count pairs with total 6: 5
   P = 5/36 = 5/36

3. **Yes. A and not A are complementary, so their probabilities add up to 1.**
   List or count the outcomes
   A and not A are complementary, so their probabilities add up to 1.
   Decide

4. **Yes. 7 can be made in 6 ways out of 36, more than any other total.**
   List or count the outcomes
   7 can be made in 6 ways out of 36, more than any other total.
   Decide

5. **No. There are 2 × 6 = 12 outcomes: H1 to H6 and T1 to T6.**
   List or count the outcomes
   There are 2 × 6 = 12 outcomes: H1 to H6 and T1 to T6.
   Decide

6. **experimental 0.55, theoretical 0.5: they are close**
   Experimental: 55 ÷ 100 = 0.55
   Theoretical: 1/2 = 0.5
   Close, as expected with many trials

7. **1/6**
   12 equally likely outcomes, 2 successful
   P = 2/12 = 1/6

8. **1/18**
   A 6 × 6 grid gives 36 equally likely outcomes; 2 of them work
   P = 2/36 = 1/18