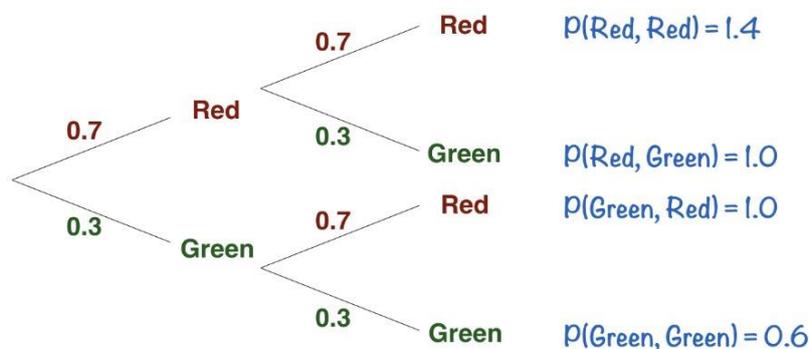


Interleaf 8

1. A teacher asks her class how many siblings each pupil has and claims that the average number of siblings that each has is 1.5. Which of the three averages – mean, median or mode – could this figure **not** be? Explain your reasoning carefully.
2. Three positive whole numbers are all different. They have a median of 5 and a mean of 4. Find the three numbers.
3. Two fair dice are rolled simultaneously. What is the probability that the total score is:
(a) 7;
(b) 10 or more;
(c) less than 5?
Give each of your answers as fractions in their lowest terms.
4. (a) Clint is given the tree diagram below. He works out the probabilities of the four possible combinations of outcomes on the right. What mistake is he making?



- (b) Work out the correct value for the probability of two reds, or $P(\text{Red, Red})$ from the same tree diagram.
5. A laptop is marked as 10% off in a sale. The sale price is £540. What was the original cost of the laptop?
 6. Phobos and Deimos are the two moons of the planet Mars. The times it takes for each of Phobos and Deimos to fully orbit Mars are 8 hours and 30 hours respectively. If the two moons currently lie in a straight line with Mars, how long will it be until they next all lie in a straight line? Give your answer in Earth days (this straight-line configuration is known as **syzygy**).
 7. An isosceles triangle has sides 5cm, 5cm and 7 cm. Is the triangle acute angled, right angled or obtuse angled? Explain your reasoning carefully.

Answers

1. This could not be the mode – as the number of siblings must be a natural number and will occur more than once in the case of the mode.
2. 1, 5 and 6.
3. (a) $\frac{1}{6}$ (b) $\frac{1}{6}$ (c) $\frac{1}{6}$ (all 3 answers are equal!).
4. (a) Clint has added the probabilities together on the branches of the tree; he ought to have multiplied them together instead.
(b) 0.49.
5. £600.
6. LCM of 8 and 30 is 360 hours, or 15 days.
7. Acute angled, since $5^2 + 5^2 > 7^2$.