

Probability questions

Quick quiz questions building on last week's lesson

- 1) What is the probability of rolling a die and obtaining an odd number?
- 2) You toss a coin AND roll a die. What is the probability of getting a tail and a 4 on the die?
- 3) You have 4 red balls, 3 white balls and 1 green ball in a bag.
 - a) What is the probability of picking a red ball?
 - b) What is the probability of picking a ball that is not white?
- 4) A game requires you to roll two dice (say red and blue) but then to multiply the numbers on the dice to obtain the score.
 - a) Copy and complete the possibility space diagram below

		Blue die					
		1	2	3	4	5	6
Red die	1	1	2		4		
	2	2	4	6			
	3		6	9			
	4	4					
	5						30
	6				24		36

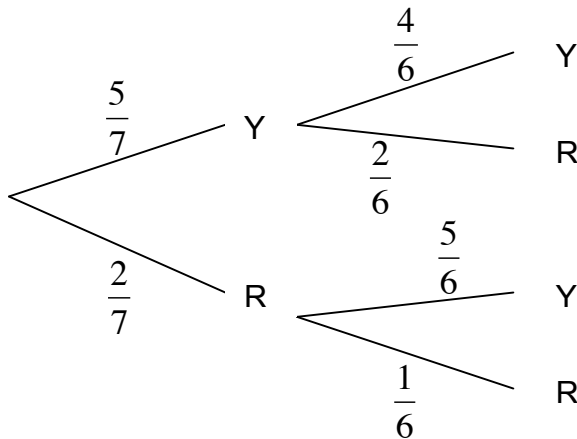
- b) What is the probability of a score greater than 10 in this game?
 - c) What is the probability of a prime number score?
 - d) Find the probability of the score being a square number
- 5) You have 5 yellow balls and two red balls in a bag. You pick a ball from the bag and note the colour, but you do not return this ball to the bag. You pick a second ball from the bag and note its colour.
 - a) Draw a tree diagram to represent all the possible outcomes of this drawing of two balls
 - b) Use the tree diagram to find the probability of picking one ball of each colour
 - c) What is the probability of *at least one* red ball

Answers

- 1) $\frac{3}{6} = \frac{1}{2}$ 2) $\frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$ (and means \times) 3) a) $\frac{4}{8} = \frac{1}{2}$ b) $\frac{5}{8}$
- 4) a) see the table below

		Blue die					
		1	2	3	4	5	6
Red die	1	1	2	3	4	5	6
	2	2	4	6	8	10	12
	3	3	6	9	12	15	18
	4	4	8	12	16	20	24
	5	5	10	15	20	25	30
	6	6	12	18	24	30	36

- b) $\frac{17}{36}$ by counting c) $\frac{4}{36} = \frac{1}{9}$
- d) $\frac{8}{36} = \frac{4}{18}$ (along diagonal plus two other 4s)
- 5) a) see the tree below...



b) $P(\text{One of each}) = P(\text{Y AND R}) + P(\text{R AND Y}) =$

$$\frac{5}{7} \times \frac{2}{6} + \frac{2}{7} \times \frac{5}{6} = \frac{20}{42} = \frac{10}{21}$$

c) Either $\frac{10}{42} + \frac{10}{42} + \frac{2}{42} = \frac{22}{42} = \frac{11}{21}$ or $1 - \frac{20}{42} = \frac{22}{42} = \frac{11}{21}$

(i.e. either $P(\text{RY}) + P(\text{YR}) + P(\text{RR})$ or $1 - P(\text{YY})$)