**1.** The lattice diagram below shows the possible outcomes when a red die and a blue die are thrown together and the event of throwing at least one five is represented by the dots :

**(a)** How many possible outcomes are there?

**(b)** What is the probability of throwing at least one five?

**(c)** Calculate the probability of each of the following events:

**(i)** throwing a double three

**(ii)** throwing any double

**(iii)** throwing a one and a two

**(iv)** throwing two odd numbers

**(v)** throwing an odd on the red and an even on the blue die

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|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1

2

3

4

5

6

Red die

1

2

3

4

5

6

Blue die

**2.** The two way table represents the outcomes when the spinner shown is spun and a coin is tossed:

**O**

**A**

**I**

**E**

**U**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A** | **E** | **I** | **O** | **U** |
| **H** | (H, A) | (H, E) | (H, I) | (H, O) | (H, U) |
| **T** | (T, A) | (T, E) | (T, I) | (T, O) | (T, U) |

**(a)** State the number of possible outcomes

**(b)** Calculate the probability of the following events:

**(i)** throwing a head

**(ii)** spinning an E

**(iii)** getting a T and a U

**(iv)** getting the word TA, TO or HE

**3.** The tree diagram below represents a coin being tossed three times:

**H**

**T**

**T**

**T**

**H**

**H**

**H**

**H**

**H**

**H**

**T**

**T**

**T**

**T**

**HHH**

**HHT**

**HTH**

**HTT**

**THH**

**THT**

**TTH**

**TTT**

**(a)** How many different outcomes are there?

**(b)** Find:

**(i)** Pr (all heads) **(ii)** Pr (no heads) **(iii)** Pr (at least one tail)

**(iv)** Pr (two or more tails) **(v)** Pr (at least one of each) **(iv)** Pr (four heads)

**4.** The spinner shown is spun twice.

**4**

**3**

**2**

**1**

(a) Represent the sample space using a lattice diagram

(b) Find the following:

(i) Pr(1 followed by 4)

(ii) Pr(double 3)

(iii) Pr(double 6)

(iv) Pr(any double)

(v) Pr(total of 5)

**5.** The primary colour spinner shown is spun and a normal die is thrown

(a) Represent the sample space using a two-way table

(b) Find the following:

**Blue**

**Red**

**Yellow**

(i) Pr(blue and an odd number)

(ii) Pr(red and a 6)

(iii) Pr(not yellow or even)

(iv) Pr(not red)

(v) Pr(yellow and a number greater than 2)

**6.** The primary colour spinner from the previous question is spun twice.

(a) Draw a tree diagram to represent the sample space.

(b) Find the following:

(i) Pr(blue first)

(ii) Pr(both red)

(iii) Pr(yellow followed by blue)

(iv) Pr(red and yellow in any order)

(v) Pr(no red)

**7.** The couple decide to have four children. Assume that the probability of a girl or boy being born is equal

(a) Draw a tree diagram to represent the sample space.

(b) Find the following:

(i) Pr(all girls)

(ii) Pr(at least one boy)

(iii) Pr(exactly two boys)

(iv) Pr(all the same gender)

(v) Pr(2 boys and 2 girls)

(vi) Pr(at least 2 girls)

(vii) Pr(the eldest child is a boy)

(viii) Pr(the youngest child has exactly two elder sisters)