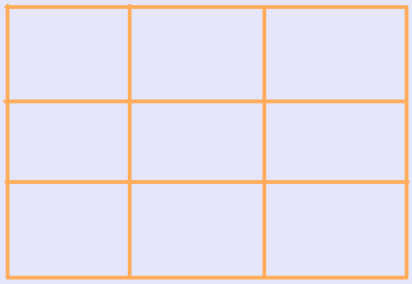
Probability



Game 1: write in any numbers you like. I will throw a dice , if your number comes up cross it out (once only). First person to delete all their numbers wins.

Game 2: I will throw 2 dice and add the scores together...

Game 3 : I will throw two dice and find the product of their scores..

A sample-space diagram (for game 2)

+	1	2	3	4	5	6
1	2	3	4	5	6	7
2						
3						
4						
5						
6						

Find

1) p(5) = $\frac{4}{36}$

2) p (4)= $\frac{3}{36}$

3) p(25)= 0

4) p (8)= $\frac{5}{36}$

5 p (0) = 0

6) p(even no.)= $\frac{18}{36}$

7) p(prime no.)= $\frac{15}{36}$

8) p(square no)= $\frac{7}{36}$

9) p (not a 5) = $\frac{32}{36}$

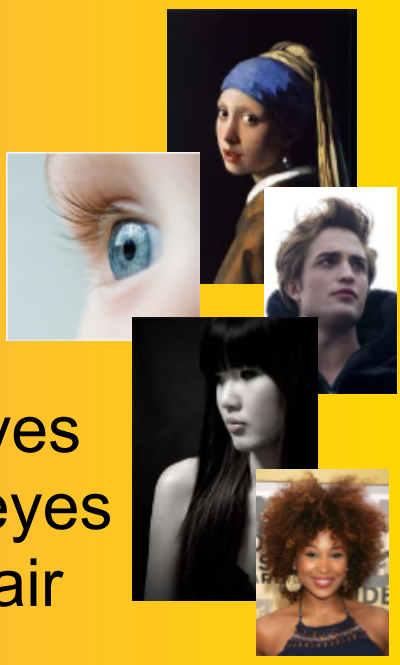
10) p (triangular no.)= $\frac{10}{36}$

1, 3, 6, 10, 15

Draw a sample space diagram for game 3 (the product of the two numbers). Answer the same questions.

Mutually exclusive events

Suppose we pick someone at random...



A: The person is a girl
B: the person is a boy
C: the person has blue eyes
D: the person has black eyes
E: the person has curly hair

E : 1, 3, 7, 21

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If events are mutually exclusive then you can add the probabilities.

For two mutually exclusive events

$P(A \text{ or } B) = P(A) + P(B)$

'Or' Rule

Independent events

This means two or more events, for which the outcome of one does not affect the outcome of others.

Which of these are independent:

The sex of a fourth child if 3 are boys
Getting a 6 if you have already thrown one
Staying up late and getting an A in your test next day.

For two independent events:
p(A and B) = p(A) x p(B)

'And' Rule

Find the probability of drawing out two yellows if the first bead is not replaced.

$\frac{5}{9} \times \frac{4}{8} = \frac{20}{72}$

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even head p(even + head)
$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

Q2a) p(5 and 5) $= \frac{1}{8} \times \frac{1}{8} = \frac{1}{64}$

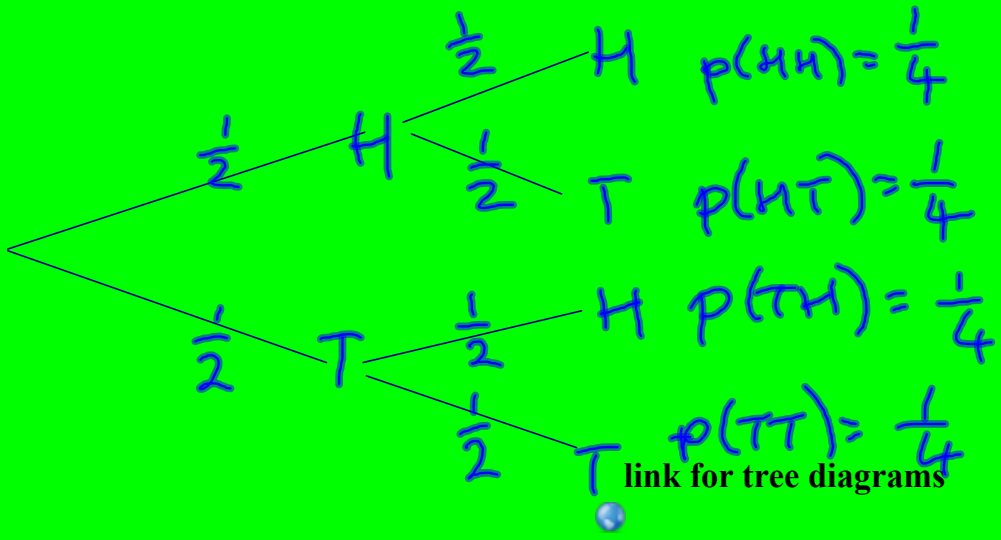
Listing

A dice and a coin is thrown.
List all the possible outcomes.

H 1 T1
H 2 T2
H 3 T3
H 4 T4
H 5 T5
H 6 T6

The same data could be presented in a tree diagram:

Tree Diagrams



link for tree diagrams

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Relative Frequency

Relative frequency is an estimate of probability using experiments.

For example
the probability of throwing a 6 on a dice is $\frac{1}{6}$.

I throw a dice 600 times then I can estimate that 6 will come up.....times.
So the relative frequency is...

(100)

$$\frac{100}{600} = \frac{1}{6}$$

see yenka

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Test Yourself page 178

See your exercise book for drawing the graph.

Attachments

relative frequency.xls

2 dice throw.xls

probability ch11.xbk