Probability

Q. These are 5 Brown, 4 white, 7 yellow, 8 green, 6 black balls in a bag. Find the probability of each:

1. Brown balls? _____ 2.White balls? _____

3. Yellow balls? _____ 4.Black balls? _____

5. Green balls? _____

6. Green or black balls? _____

7. Brown or white balls? _____

8. Black or white balls? _____

9. Not yellow balls? _____

10.Not green balls? _____

Q. Among 100 people at a conference, 18 are American, 25 are British, 15 are Chinese, 10 are Japanese, 10 are Indian, 12 are Pakistanis and 10 are African. Find the probability of each in simplest form:

11. American? _____ 12.British? _____

13. Chinese? _____ 14.Japanese? _____

15. Indian? _____ 16.African? _____

17. Pakistanis? _____ 18.Not Asian? _____

There are 50 students in a class of GCSE Maths, 5 got A+ grade, 12 got A grade, 18 got B grade, 7 got C grade, 8 got D grade.
Find the probability of each type:

19. A grade students? _____ 20.B grade students? _____

21.C grade students? _____ 22.D grade students? _____

23.A+ grade students?_____ 24.A to C grade students? _____

A pack of tickets contains 1 to 20 numbers. Find probability that is:

25.An odd number? _____ 26.An even number?_____

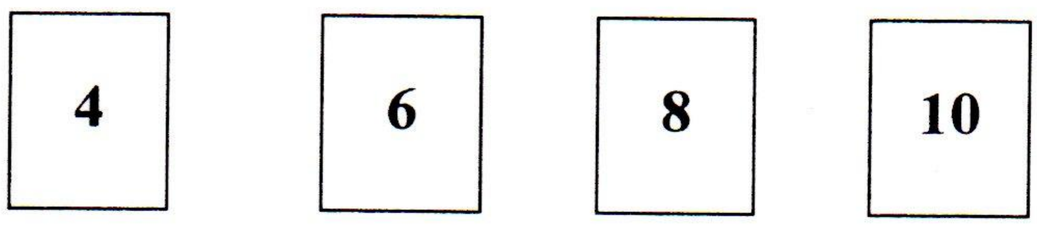
27.A number divided by 5?_____

28.A number divided by 4?_____

29.A number divided by 6?_____

30.A multiple of 3? _____

A pupil has the set number cards.



She is going to mix them up and take one card at random.
Find the probability and match the correct probability scale.

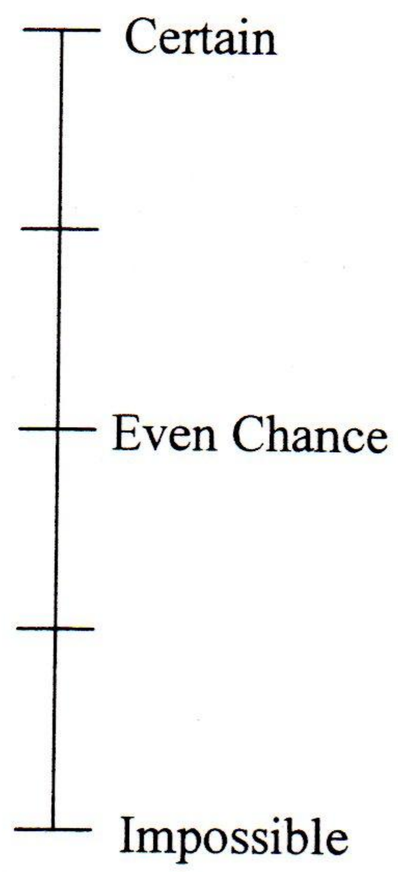
31. She will take a number **in the 4 times table.**

32. She will take an **even** number.

33. She will take an **odd** number.

34. She will take a number **less than 9**

35. She will take the number **4**



Which word from the box best describes the likelihood of each of these events?

Impossible	Unlikely	Even chance	Likely	Certain

36. You throw an ordinary dice and get an eight. _____

37. You throw a coin and get a Heads. _____

38. December 6th 2008 is the day after December 5th 2008 _____

39. That the sun will shine in July next year in London _____

40. That the next baby to be born will be a boy _____

Dice, Cards and Coins

A dice is thrown, find the probability of number that is:

1. An even number? _____

2. An odd number? _____

3. A number divided by 3? _____

4. A number divided by 2? _____

5. Maximum number? _____

6. Minimum number? _____

7. A number greater than 4?_____

8. A number less than 3? _____

9. An even or odd number?_____

10. An even number less than 5?_____

11. A pair of fair dice is thrown, and the result obtained by adding the numbers together. Find probability that:

a. sum of numbers is multiple of 3? _____

b. sum of numbers is multiple of 5? _____

c. sum of number is less than 7 ? _____

d. sum of numbers is more than 10? _____

e. sum of numbers is odd? _____

f. sum of numbers is divided by 4? _____

Worked out example: A coin is tossed, find the probability of: (i): a head, (ii): not tail?, (iii): tail or head?

Solution:

(i): S = [H, T], n(S) = 2

P(H) = ½ , P(T) = ½

P(H or T) = P(H) + P(T) = ½ + ½ = 1

(ii): For 2 coins, sample space is:

	H	T
H	H H	H T
T	T H	T T

(iii): For 3 coins, sample space is:

	H H	H T	T H	T T
H	H H H	H H T	H T H	H T T
T	T H H	T H T	T T H	T T T

12) Two Coins are tossed, the sample space shown as: [HH, HT, TH, and TT]. Find:

a) P (Two Heads) = _____

b) P (One Head) = _____

c) P (Two Tails) = _____

d) P (At least one Heads) = _____

e) P (At most one Head) = _____

f). P (No Heads) = _____

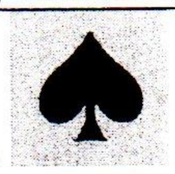
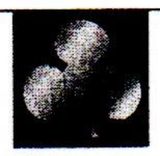
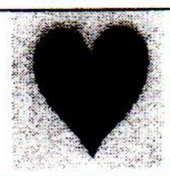
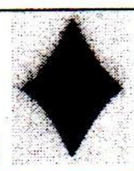
Three coins are tossed, find the probability that:

13) Two heads occur = _____

14) At least one head occur = _____

15) Two tails occur. = _____

Playing cards:

Spades 	A	2	3	4	5	6	7	8	9	10	J	Q	K
Clubs 	A	2	3	4	5	6	7	8	9	10	J	Q	K
Hearts 	A	2	3	4	5	6	7	8	9	10	J	Q	K
Diamonds 	A	2	3	4	5	6	7	8	9	10	J	Q	K

In a pack of 52 playing cards, what is probability of selecting….

16. A king or queen? _____

17. Jack or queen? _____

18. Ace or king? _____

19. A red card? _____

20. A black card? _____

21. An ace _____

22. Picture cards? _____

23. A club card? _____

24. A diamond card? _____

25. a heart card? _____

26. P (an ace of heart)? _____

27. An even number card? _____

28. Odd number card? _____

29. Card number 8 _____

30. Red card with number 8 _____

Probability Table

1) Marco has a 4-sided spinner.
The sides of the spinner are numbered 1, 2, 3 and 4
The spinner is biased, The table shows the probability that the spinner will land on each of the numbers 1, 2 and

Number	1	2	3	4
Probability	0.20	0.35	0.20	

Work out the probability that the spinner will land on the number 4 and write on the table.

2) There are some ribbons in a box.
The ribbons are green or red or yellow or white.
The table shows each of the probabilities that a ribbon chosen at random will be green or red or white.

Colour	Green	Red	Yellow	White
Probability	0.15	0.30		0.35

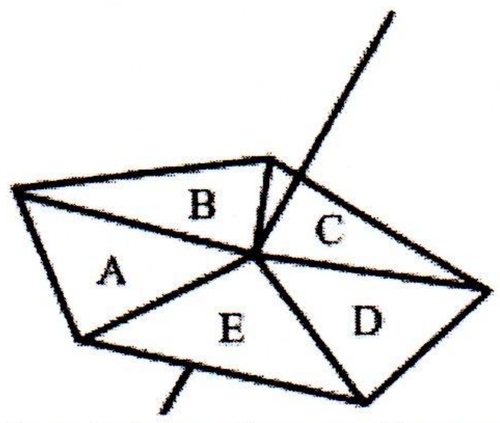
(a) Work out the probability that a ribbon chosen at random will be yellow.

P(Yellow) :_____

There are 500 ribbons in the box.
(b) Work out the number of red ribbons.

_____

3) Here is a five-sided spinner.
The sides of the spinner are labelled A, B, C, D and E.
The spinner is biased.



The table shows the probability that the spinner will land on A or B or C or E.

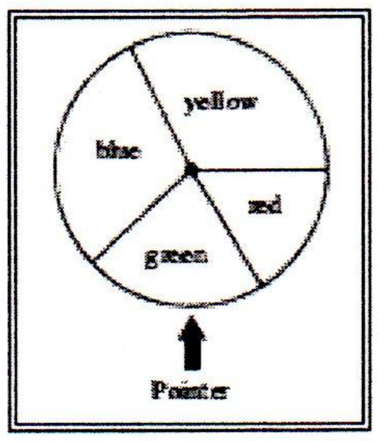
Letter	A	B	C	D	F
Probability	0.25	0.20	0.10		0.30

a) Work out the probability that the spinner will land on D.

b) Tania is going to spin the spinner 100 times.
Work out an estimate for the number of times the spinner will land on A.

_____

4) This coloured wheel spins round.
The sectors are coloured yellow, red, green and blue.



Harry spins the wheel.
When the wheel stops spinning, Harry writes down the colour shown by the pointer.
The probability that the wheel will stop at yellow or red or green is given in the table.

Colour	yellow	red	green	blue
Probability	0.35	0.1	0.3	

(a) Work out the probability that the wheel will stop at blue.

.....

(b) Work out the probability that the wheel will stop at either yellow or red.

.....

Hannah is going to spin the wheel 200 times.
(c) Work out an estimate for the number of times the wheel will stop at green.

5) There are 500 plastic shapes in a box.
The shapes are circles, triangles, squares and rectangles.
A shape is chosen at random from the box.
The table shows some of the probabilities of shapes being chosen.

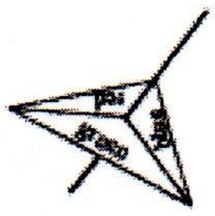
Shape	Probability
Circle	0.2
Square	
Triangle	
Rectangle	0.1

The probability of choosing a triangle is equal to the probability of choosing a square. Calculate the number of triangles in the box.

Number of triangles:_____

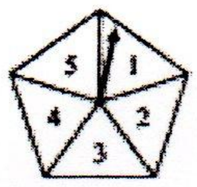
Finding possible outcomes

1) The diagram shows a 3-sided spinner and an ordinary dice.



The spinner has 1 green side, 1 blue side and 1 red side.
Alex spins the spinner once and rolls the dice once.
Write down all the possible outcomes.
One has already been done for you.
(g, 1) _____
_____
_____

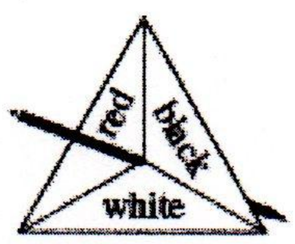
2) Ishah spins a fair 5-sided spinner.
She then throws a fair coin.

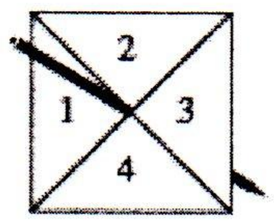


(a) List all the possible outcomes she could get.
The first one has been done for you.
(1,H)_____

Ishah spins the spinner once and throws the coin once.
(b) Work out the probability that she will get a 1 and a head.
.....

3) Ann has two fair spinners.
Spinner 1 Spinner 2





Ann spins both spinners and records the colour and number.
She repeats this a number of times.
(a) Design a two-way table to show the possible results.

b) Work out the probability that she will get red and 3, _____