

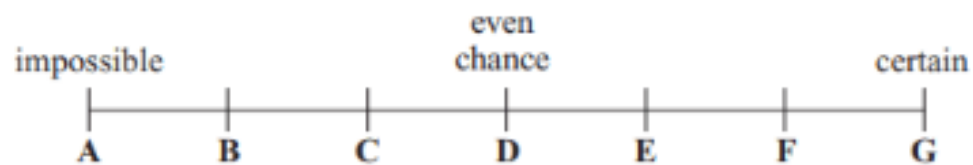
Probability

11+ Level Question Sheet 2

1) Petra has a bag containing 24 counters that are green, blue and red.

- 50% of the counters are green.
- Here are twice as many blue counters as red counters in the bag.

She picks one counter at random from the bag.



From the probability scale shown, write down the letter which represents the probability that her counter is;

- a) Green
- b) not blue
- c) Yellow

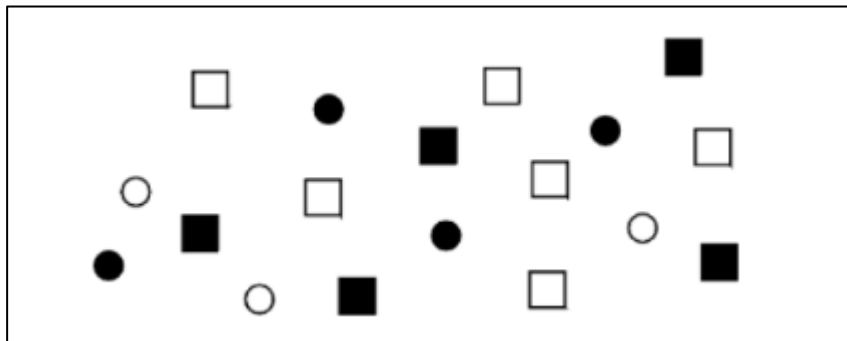
2) A fair die has six faces marked 0p, 0p, 0p, 0p, 0p and 50p.

In a game at a village fete, players pay 10p to roll the die and they win the amount shown on the top face of the die.

During the fete, the game is played 60 times.

- a) How many times would you expect a player to win 50p?
- b) How much money do the players pay altogether to roll the die?
- c) Does the game expect to make a profit or a loss and by how much?

3) The diagram shows 18 shapes



One of the shapes in the diagram is chosen at random.

- a) Write down the probability that the shape will be;
 - i) A black square
 - ii) A white square or a black circle

4) John experiments by rolling a single dice and a spinner simultaneously. He rolls an ordinary dice with a possible score of 1, 2,3,4,5 or 6. At the same time he also spins a spinner with a possible score of 0, 1, 2 or 3. His total score is worked out by multiplying the two individual score together.

Complete the table below to show all 24 equally likely final scores

Score	1	2	3	4	5	6
0						
1			3			
2						12
3				12		

If he repeats this experiment lots and lots of times, what fractions of the total scores are,

a) 0

b) 12 or more?

5) (In this question note that 1 is NOT a prime number.)

The diagram below shows an ordinary die.



Consider the following events when a single die is rolled:

- A: “the score on the die is either a 5 or a 6”
- B: “the score on the die is an even number”
- C: “the score on the die is a prime number”
- D: “the score on the die is a multiple of 3”

Write one of the following phrases in the spaces below to make each statement correct.

- “has the same chance of happening as”
- “is more likely to happen than”
- “is less likely to happen than”

- A B
- B C
- C D

6) If you roll an ordinary six-sided die what is the probability of obtaining

- i) a) a six
- b) an even number

- ii) a) If I roll the die 60 times how many times would you expect to get a 2 or 3?
- b) If I roll a red die and a blue die together in how many different ways can I get a total of 7?

7) Jada picks one of these cards at random.



Here are some possible outcomes:

A) The number on the card will be a factor of 24.

B) The number on the card will be a multiple of 2.

C) The number on the card will be a multiple of 3.

D) The number on the card will be a multiple of 5.

E) The number on the card will be a square number

a) Which of the outcomes (A, B, C, D, E) is most likely to happen?

b) Which of these outcomes is least likely to happen?

c) Which two of these outcomes are equally likely to happen?

8) Tristan is given six bags of fruit.

Bag A contains 2 apples, 4 oranges and 3 pears.

Bag B contains 3 apples, 1 orange and 2 pears.

Bag C contains 4 apples, 5 oranges and 3 pears.

Bag D contains 4 apples, 6 oranges and 4 pears.

Bag E contains 6 apples, 4 oranges and 3 pears.

Bag F contains 7 apples, 7 oranges and 7 pears.

He is allowed to choose one of these bags and then pick just one piece of fruit from that bag at random.

a) Which bag should he choose if he is to **maximise** his chance of picking an apple?

b) Which bag should he choose if he is to **minimise** his chance of picking a pear?

9) A box of celebrations contains one Twix, one Snickers, one Milky Way and ten Bounty chocolates. Jane chooses a chocolate at random. Put a ring around the correct answer in the list to show the probability that the chocolate will be:

a) A bounty

Impossible - Unlikely - Even Chance - Likely - Certain

b) A Twix

Impossible - Unlikely - Even Chance - Like - Certain

c) A Galaxy

Impossible - Unlikely - Even Chance - Likely - Certain

10) An example of an 'even' or '50 – 50' chance is the probability of throwing a fair coin and getting a head.

Which of the following situations represent an 'even' chance?

a) You put your socks on the correct feet

EVEN / NOT EVEN

b) You obtain a 2 when rolling a fair six sided dice

EVEN / NOT EVEN

c) You get an even number when rolling a 10 sided dice

EVEN / NOT EVEN

d) You get a prime when rolling a six sided dice

EVEN / NOT EVEN

11) There is an even chance that I will pick a toffee from a large bag of sweets containing toffees, jellies and chocolates.

If the bag contains 17 jellies and 8 chocolates, how many toffees are there?