OGUN DIGICLASS

CLASS: SECONDARY SCHOOL

SUBJECT: MATHEMATICS

TOPIC: PROBABILITY

Probability

Rolling a 14

Heads

The sun will rise

Impossible — more unlikely — Even chance — more likely — Certain

…how likely something is…

Probability is how likely something is to happen. You might also hear it called **chance**.

Probability can be expressed as fractions, decimals or percentages, or on a probability scale.

What is Probability

- Probability or chance is **how likely** something is to happen:

- If something has a **low** probability, it is **unlikely** to happen.

- If something has a **high** probability, it is **likely** to happen.

Geeta has this spinner.
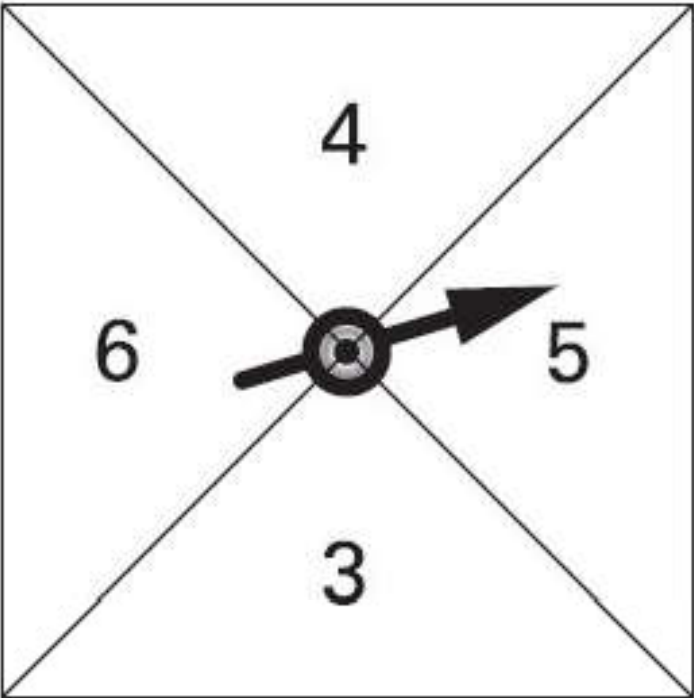
What is her chance of spinning the numbers in the boxes below?
Match each box to the correct word.

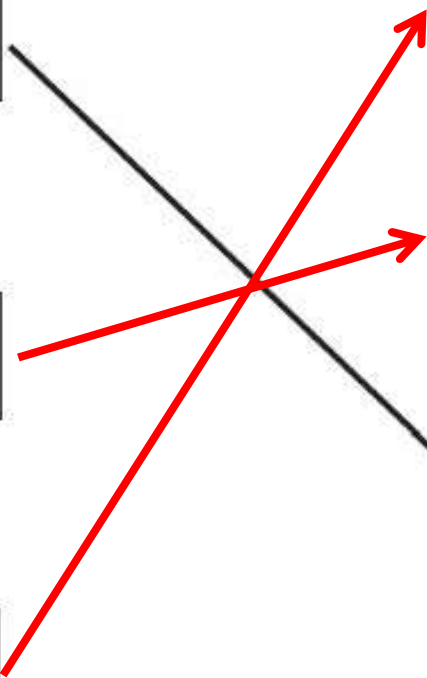One has been done for you.

an odd number

2

a number less than 10

certain

impossible

even chance

likely

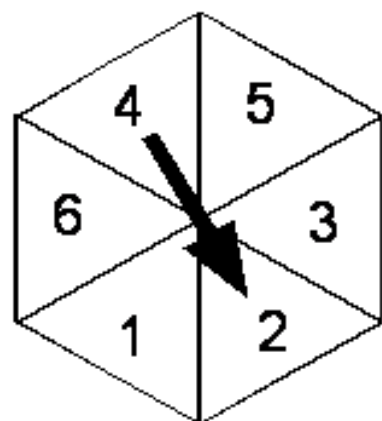# The Language of Probability
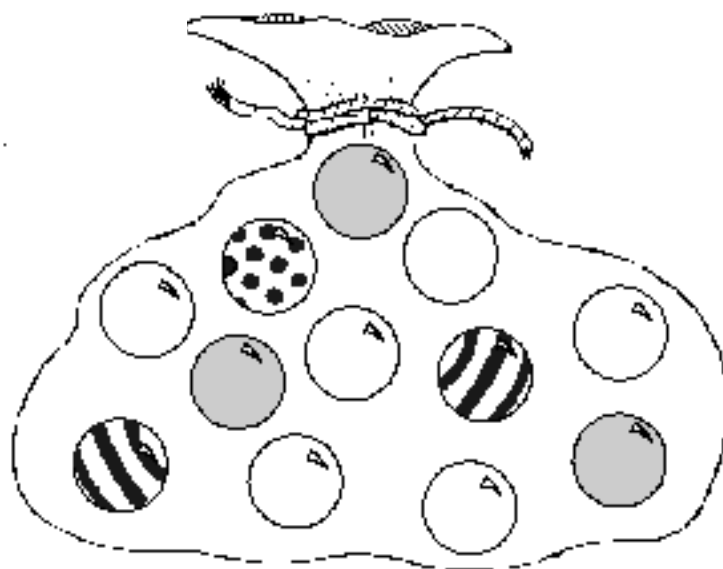
Certain

Very likely

Even chance

Not likely

Impossible

You can spin any number from 1 to 6 on this spinner.

Write a number that is **impossible** to spin.
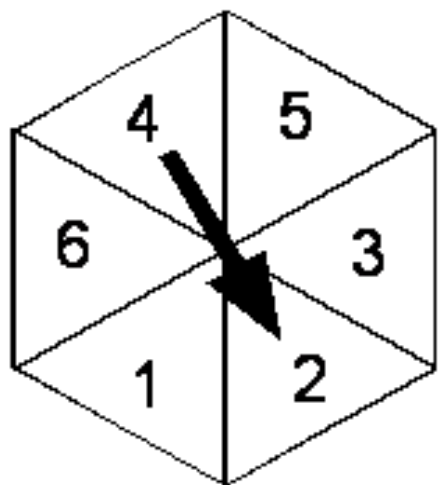

Key	
	striped
	spotty
	white
	grey

These marbles are hidden in a bag. The bag is shaken.
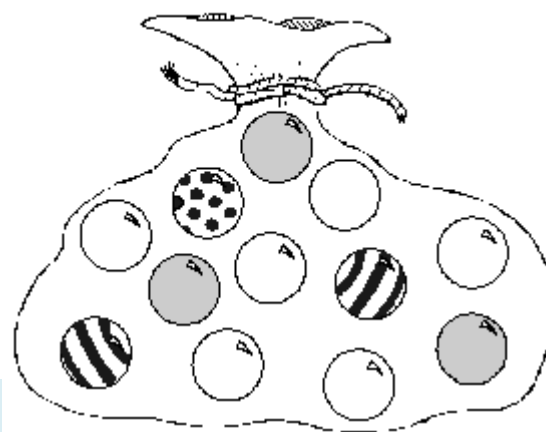
Pete pulls out one marble without looking.

(a)   Which kind of marble is Pete most likely to pull out?

(b)   Explain how you know.

You can spin any number from 1 to 6 on this spinner.

Write a number that is **impossible** to spin.

Any number less than 1 or greater than 6.

Key	
	striped
	spotty
	white
	grey

These marbles are hidden in a bag. The bag is shaken.

Pete pulls out one marble without looking.

(a)   Which kind of marble is Pete most likely to pull out?

(b)   Explain how you know.

White, because there are more white marbles than any other colour.

How to Express Probability

- Probabilities are most commonly shown as **fractions**:

    - The probability of getting 'tails' when you toss a coin is a 1 in 2 chance, or ½

    - The probability of getting a 3 when you roll a dice is a 1 in 6 chance, or $\frac{1}{6}$

Can you tell me what the probability is as a fraction?

1. What is the probability of rolling a 4 with a dice?
2. What is the probability of rolling an odd number with a dice?
3. A bag contains 7 buttons. 3 of them are green. What is the probability of picking a green button from the bag?
4. A bag contains 3 red and 5 green marbles. What is the probability of picking a red.

Can you tell me what the probability is as a fraction?

1. What is the probability of rolling a 4 with a dice? – 1/6

2. What is the probability of rolling an odd number with a dice? – 3/6 or 1/2

3. A bag contains 7 buttons. 3 of them are green. What is the probability of picking a green button from the bag? – 3/7

4. A bag contains 3 red and 5 green marbles. What is the probability of picking a red. – 3/8

How to Express Probability

- Probabilities can also be shown as **decimals** or **percentages**:

  - The probability of getting 'tails' when you toss a coin is a 1 in 2 chance, or ½ or 0.5 or 50%

  - A probability of $^3/_4$ can also be shown as 0.75 or 75%

Can you tell me what the probability is?

1. What is the probability, as a decimal, of getting 'heads' when you toss a coin?
2. Something that has an even chance of happening has a probability of _what_ percentage?
3. A bag contains just 5 buttons, all of which are blue. What is the probability of picking a red button from the bag?
4. A bag contains 4 white buttons. How many black buttons must be added so there is an even chance of picking a white button?

Can you tell me what the probability is?

1. What is the probability, as a decimal, of getting 'heads' when you toss a coin? 0.5

2. Something that has an even chance of happening has a probability of _what_ percentage? 50%

3. A bag contains just 5 buttons, all of which are blue. What is the probability of picking a red button from the bag? 0

4. A bag contains 4 white buttons. How many black buttons must be added so there is an even chance of picking a white button? 4

How to work out probability…

Work out the probability of throwing an **even** number on a dice.

1. Count up the total number of possible results.

   – When throwing a dice, for example, there are 6 possible numbers the dice can land on (1, 2 ,3 ,4, 5, 6).

2. Then count up the number of results you are interested in.

   – In this example, you are only interested in throwing a 2, 4 or 6 (all the even numbers on a dice). So you are interested in **3** numbers.

3. The probability of getting an even number on a dice is 3 chances out of 6 chances which you write as $^3/_6$.

Probability Scales

② ⑤ ③ ④ ①

Unlikely *Likely*

Impossible   Even Chance   Certain
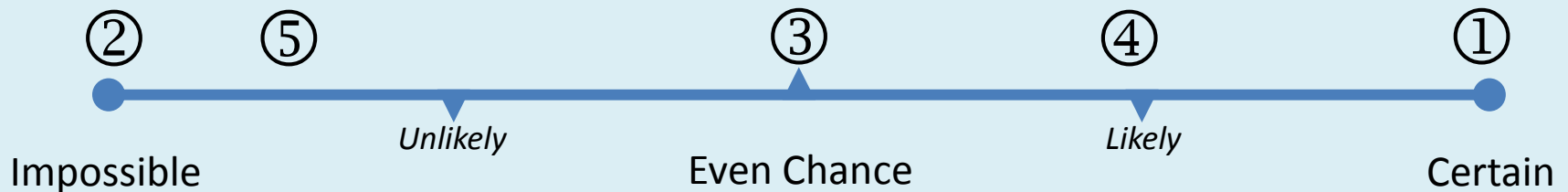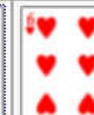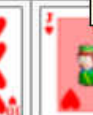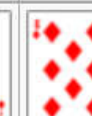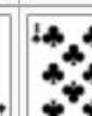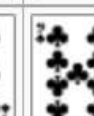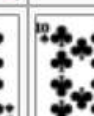
1. The sun will rise tomorrow.
2. You will live to be 500.
3. You spin a coin and get a head.
4. You will see a bus on your way home.
5. You will see an ambulance on your way home.

Useful Information

- 52 Playing Cards in a pack

- 4 Suits (Clubs, Spades, Diamonds and Hearts)

- 13 cards in each suit (A,2,3,4,5,6,7,8,9,10,J,K,Q)

Suit	Ace	2	3	4	5	6	7	8	9	10	Jack	Queen	King
Spades													
Hearts													
Diamonds													
Clubs													

- A regular dice has the numbers 1,2,3,4,5&6

Extension Activity

1. You are going to toss a coin in the air a total of **30** times.

Every time the coin lands you are going to record whether you get a '**head**' or a '**tail**'.

Write H for 'head' and T for 'tail' in the table below.

How many times did you get a 'head' (H)? _____

How many times did you get a 'tail' (T)? _____

Extension Activity

2. You are going to roll a dice a total of **30** times.

Every time you roll you are going to record the score on the dice.

Write the score you get each time in the table below.

Number of 1s: _____   Number of 4s: _____

Number of 2s: _____   Number of 5s: _____

Number of 3s: _____   Number of 6s: _____

The Probability that a Corona patient (C) survives when administered with a newly discovered drug is 0.27 and the Probability that a typhoid patient (T) survive when injected with a newly discovered drug is 0.85.

- What is the Probability that each of the 2 patients survive?

- Neither of the two patients survive or at least one of the two patients survive.

Leave your answers correct to 2 significant figures