

HOME LEARNING

Year 11	Probability	Learning Pack 11
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Introduction: To calculate and compare probability

Learning Objective	Worksheet Title
Vocabulary of probability	The language of probability
To calculate out comes	Probability using a spinner
Compare experimental and theoretical probability	Experimental probability
Experimental probability	Experimental probability investigation
To complete a probability tree diagram	Probability tree diagram

More Practice:

- To play a game and decide whether it is skill or chance/luck.
- Think of events which are impossible, certain, likely or unlikely.

Other Activities:

- Aim to spend 10 minutes a day on Times Table Rock Star; Sumdog or Numbots
- Aim to complete 1-2 MyMaths tasks a week (keep retrying until you get a green)
- Learn to play a new game or get better at playing a game you already know (e.g. Monopoly; Chess; draughts; cards; dominoes; etc....)
- Practise one of the times-tables
- Have a go at today's 5-a-day Maths questions: <https://corbettmaths.com/5-a-day/gcse/>

'Please return work you complete to your Maths teacher (jcoleman@bower-grove.kent.sch.uk; acroft@bower-grove.kent.sch.uk; or kwiley@bower-grove.kent.sch.uk) to receive feedback and golden tokens'

The Language of Probability



Section A

Place the words somewhere on the scale, going from impossible to certain.



Section B

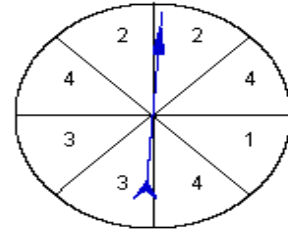
Decide what the chance of each event is by putting the letters in the correct place.

- | | |
|--|---|
| A. It will snow in London in June. | E. The person next to you has three brothers. |
| B. You will blink today. | F. You add a number to 8 and get 5. |
| C. The next person to walk in the room will be male. | G. The pregnant lady on the bus has a girl. |
| D. Your teacher will come to school tomorrow. | H. You will see a pigeon today. |

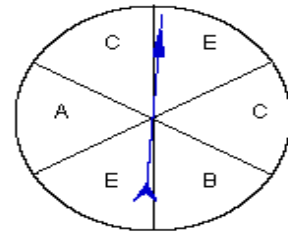


Probability Using a Spinner

- 1) What is the probability of the spinner landing on 1 or 3 ? _____
- 2) What is the probability of the spinner not landing on 3 ? _____
- 3) What is the probability of the spinner not landing on 2 ? _____
- 4) What is the probability of the spinner landing on 1 ? _____
- 5) What is the probability of the spinner landing on 3 ? _____
- 6) What is the probability of the spinner landing on 4 ? _____
- 7) What is the probability of the spinner not landing on 3 or 4 ? _____



- 8) Do you have an equal chance of landing on either B or C ? _____
- 9) What is the probability of the spinner not landing on B or E ? _____
- 10) Do you have an equal chance of landing on either A or C ? _____
- 11) What is the probability of the spinner landing on A or B ? _____
- 12) What is the probability of the spinner not landing on B or C ? _____
- 13) Do you have an equal chance of landing on either A or E ? _____
- 14) What is the probability of the spinner not landing on E ? _____



Experimental Probability vs. Theoretical Probability

Experimental Probability is found by repeating an experiment and observing the outcomes.

$$P(\text{event}) = \frac{\text{number of times event occurs}}{\text{total number of trials}}$$

Example:

A coin is tossed 10 times:
A head is recorded 7 times
and a tail 3 times.

$$P(\text{head}) = \frac{7}{10}$$

$$P(\text{tail}) = \frac{3}{10}$$

Theoretical Probability is what is expected to happen based on mathematics

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes}}$$

Example:

A coin is tossed.

$$P(\text{head}) = \frac{1}{2}$$

$$P(\text{tail}) = \frac{1}{2}$$

Experimental Probability

Center #1: Roll a Dice

What is the theoretical probability that you will roll any number on the dice? _____

Now experiment: Roll the dice 20 times and use tally marks to record your results.

#	Tallies	Total
1		
2		
3		
4		
5		
6		

P (1) = _____ P (odd) = _____
P (2) = _____ P (1-3) = _____
P (3) = _____ P(not 2) = _____
P (4) = _____
P (5) = _____
P (6) = _____

Center #2: Flip a Coin

What is the theoretical probability when flipping a coin, that you will flip heads? _____

Now experiment: Flip the coin 20 times and use tally marks to record your results.

	Tallies	Total
Heads		
Tails		

P (heads) = _____
P (tails) = _____

Experimental Probability

Roll your dice 50 times and record the outcome you get each time. Do this as a tally chart in the table below.

Number on dice	1	2	3	4	5	6
Frequency						
Experimental probability						

Calculate the theoretical probabilities below. Then, using your results, calculate the experimental probabilities below.

Theoretical probability

$$P(\text{rolling a 2}) =$$

$$P(\text{rolling a 5}) =$$

$$P(\text{rolling 2 or 3}) =$$

$$P(\text{greater than 4}) =$$

$$P(3 \text{ or less}) =$$

$$P(\text{odd number}) =$$

$$P(\text{square number}) =$$

$$P(\text{prime number}) =$$

Experimental probability

$$P(\text{rolling a 2}) =$$

$$P(\text{rolling a 5}) =$$

$$P(\text{rolling 2 or 3}) =$$

$$P(\text{greater than 4}) =$$

$$P(3 \text{ or less}) =$$

$$P(\text{odd number}) =$$

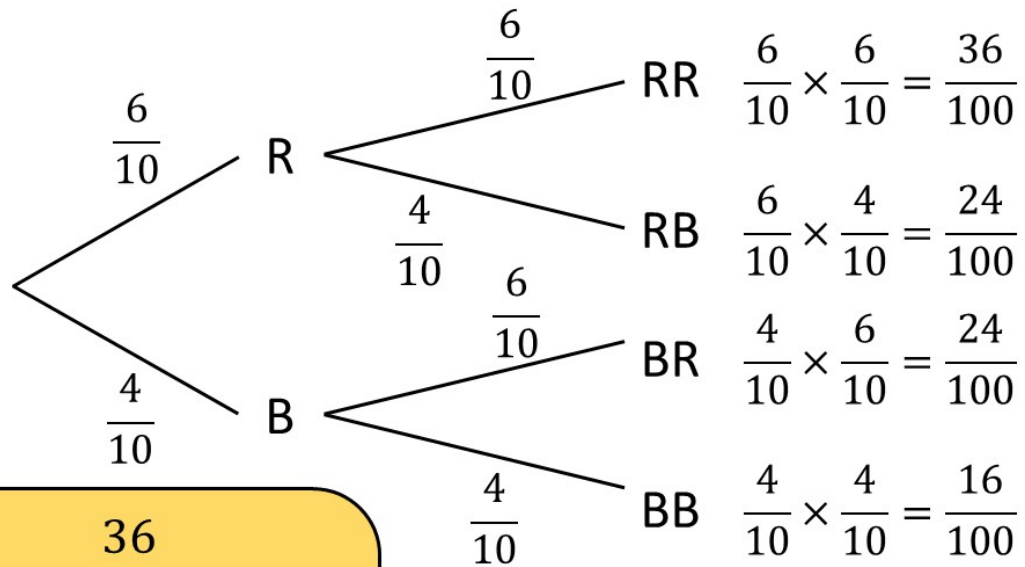
$$P(\text{square number}) =$$

$$P(\text{prime number}) =$$

Probability tree diagram

A bag contains 6 red cubes and 4 black cubes.
Jane randomly draws a cube. She **replaces it** and picks another.

What is the probability she picks two red cubes?



$$\frac{36}{100}$$

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The probability a team wins their first match is 0.4. If they win, the probability of winning their second match is 0.6. If they lose, the probability of winning their second match is 0.3. What is $P(\text{Lose then Win})$?

