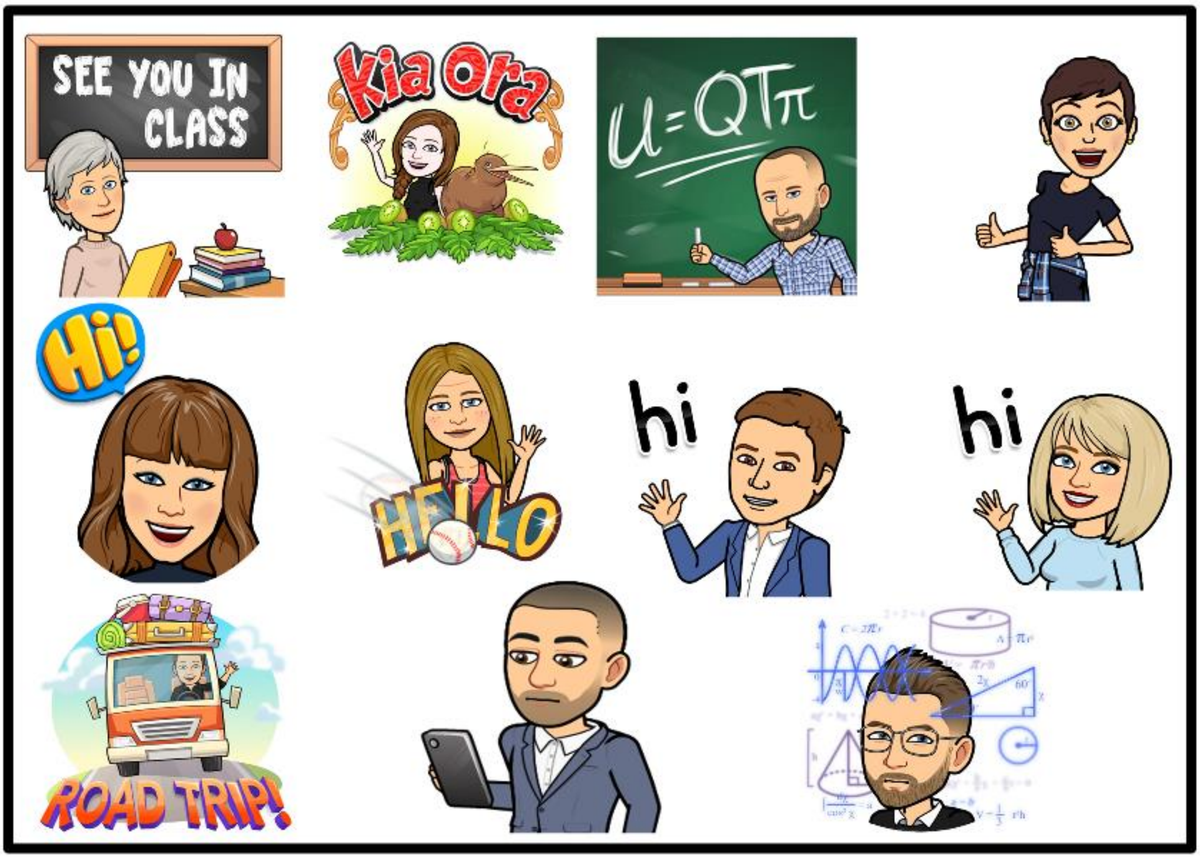
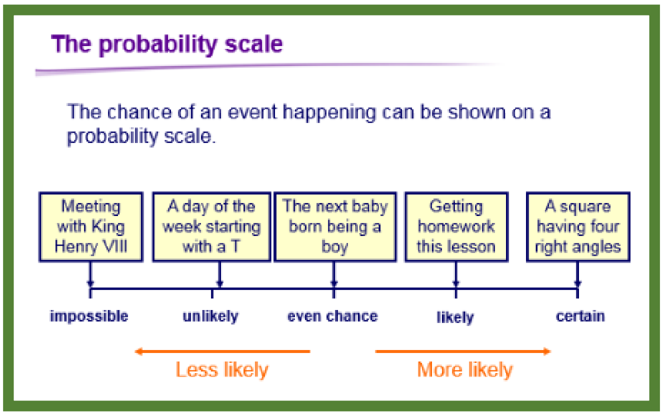
BOOKLET 7

Year 8

Probability



Probability Scale (Lesson 1)



The probability scale

The chance of an event happening can be shown on a probability scale.

Meeting with King Henry VIII

A day of the week starting with a T

The next baby born being a boy

Getting homework this lesson

A square having four right angles

impossible

unlikely

even chance

likely

certain

Less likely

More likely

If you are stuck on this- watch the video

https://corbettmaths.com/2013/05/12/probability-scale/

Question 1: Which phrase from the box best describes the likelihood of each of these events? You may use each phrase more than one.

Impossible Unlikely Even Chance Likely Certain

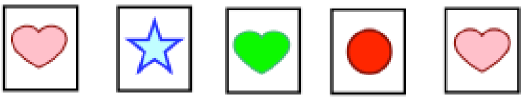
(a) Rolling a 9 on an ordinary six sided dice.
(b) A newborn baby being a boy.
(c) A day picked at random ending with the letter y
(d) Getting a tail when a coin is flipped.
(e) It snowing in London in May.
(f) Rolling a number greater than 1 on an ordinary six sided dice.

Question 2: Which word from the box best describes the likelihood of each of these events?

Impossible Unlikely Even Likely Certain

(a) You throw a coin and get a Heads.
(b) You take a green counter from a bag that only contains black counters.
(c) May 18th 2018 is the day after May 17th 2017.

Question 3: Here are some cards



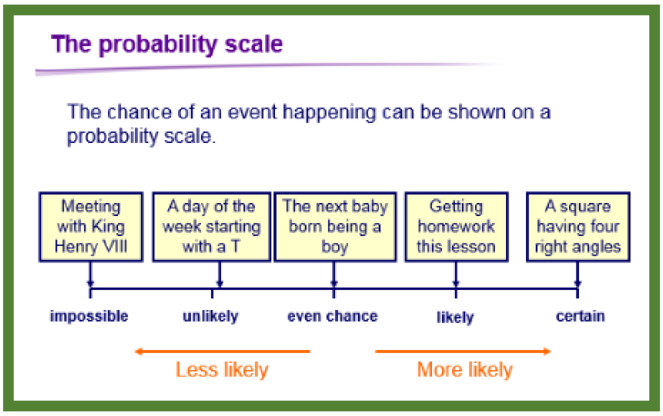
Impossible Unlikely Even Likely Certain

A card is picked at random.

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

(a) The card has a blue star on it.
(b) The card has a heart on it.
(c) The card has a shape on it that is symmetrical.

Probability Scale (Lesson 2)



The probability scale

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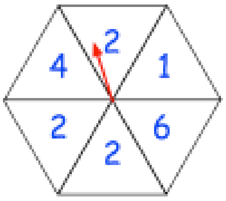
Question 4: A fair spinner has six equal sections.



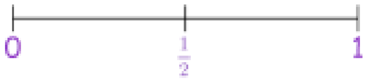
Impossible Unlikely Even Likely Certain

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

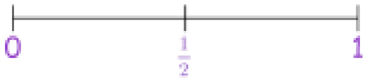
(a) The arrow landing on an even number
(b) The arrow landing on 4.
(c) The number landing on 2.

Question 5: Francesca rolls an ordinary 6-sided dice.

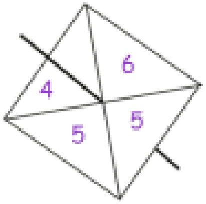
(a) Mark with a cross the probability that Francesca gets an 8.



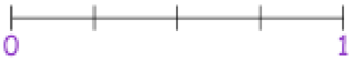
(b) Mark with a cross the probability that Francesca gets an odd number.



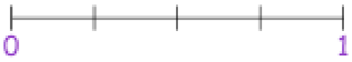
Question 6: A fair 4-sided spinner is spun once.



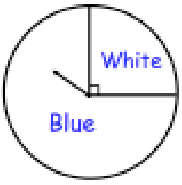
(a) On the probability scale, mark with a letter A, the probability that the spinner will land on the number 4.



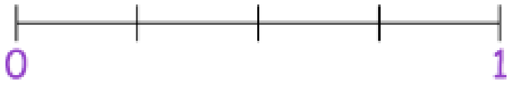
(b) On the probability scale, mark with a letter B, the probability that the spinner will land on the number 5.



Question 7: The diagram shows a fair spinner.



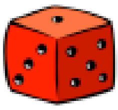
(a) Which colour is the arrow least likely to land on?



(b) Mark the probability scale with an arrow to show the probability of landing on white. Label the arrow, W.

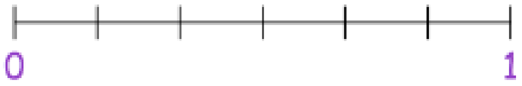
(c) Mark the probability scale with an arrow to show the probability of landing on blue. Label the arrow, B.

Question 8: A fair six sided dice is rolled once.

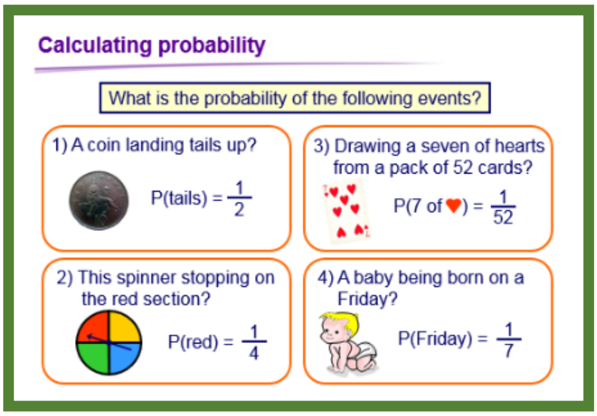


Mark the probability of each of the following events onto the probability scale.

A: The dice lands on an even number.
B: The dice lands on the number 5
C: The dice lands on a number less than 5.



Calculating Probability (Lesson 3)



Calculating probability

What is the probability of the following events?

1) A coin landing tails up?

P(tails) = $\frac{1}{2}$

3) Drawing a seven of hearts from a pack of 52 cards?

P(7 of ♥) = $\frac{1}{52}$

2) This spinner stopping on the red section?

P(red) = $\frac{1}{4}$

4) A baby being born on a Friday?

P(Friday) = $\frac{1}{7}$

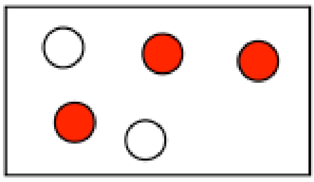
If you are stuck on this- watch the video

https://corbettmaths.com/2018/11/30/probability-videos/

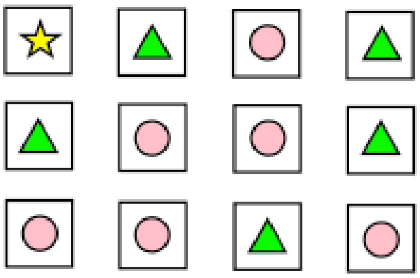
Question 1: Theo has 3 red sweets and 2 white sweets.
He picks a sweet at random.

(a) Write down the probability that Theo picks a red sweet.

(b) Write down the probability that Theo picks a white sweet.



Question 2: Leah has 12 cards, each with a shape on it.
She takes a card at random.



(a) What is the probability that Leah takes a card with a star on it?

(b) What is the probability that Leah takes a card with a triangle on it?

(c) What is the probability that Leah takes a card with a circle on it?

Question 3: Ralph has 9 cards, each with a number on it.

1 2 3 4 5 6 7 8 9

He picks a card at random.
Write down the probability that the chosen card is

(a) the number 8

(b) an even number

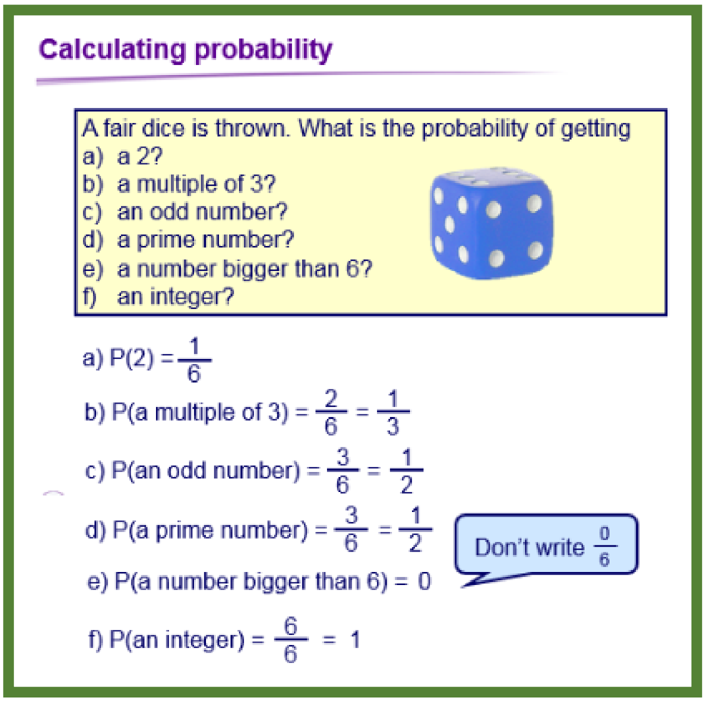
(c) a number less than 7

(d) a multiple of 4

(e) a square number

(f) a prime number

Calculating Probability (Lesson 4)



Calculating probability

A fair dice is thrown. What is the probability of getting
a) a 2?
b) a multiple of 3?
c) an odd number?
d) a prime number?
e) a number bigger than 6?
f) an integer?

a) P(2) = $\frac{1}{6}$

b) P(a multiple of 3) = $\frac{2}{6} = \frac{1}{3}$

c) P(an odd number) = $\frac{3}{6} = \frac{1}{2}$

d) P(a prime number) = $\frac{3}{6} = \frac{1}{2}$

e) P(a number bigger than 6) = 0

f) P(an integer) = $\frac{6}{6} = 1$

Don't write $\frac{0}{6}$

If you are stuck on this- watch the video

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Question 4: There are 12 red roses, 5 yellow roses and 3 white roses in a vase.
Felix takes a rose, at random, from the vase.

(a) Write down the probability that he takes a white rose.
(b) Write down the probability that he takes a red **or** a white rose.
(c) Write down the probability that Felix takes a rose that is **not** red.

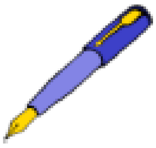
Question 5: Leon throws a biased coin.
The probability of getting tails is 0.4
Work out the probability of getting heads.

Question 6: Edith plants a daffodil bulb.
The probability that the bulb will grow is 0.8
What is the probability that the bulb will **not** grow?

Question 7: Wycombe Wanderers play a match of football.
The probability that they win the match is 0.28
The probability that they draw the match is 0.55
Work out the probability that they lose the match.

Question 8: Evelyn has 80 pens in a drawer.
15 pens are black and the other pens are blue.

Evelyn picks a pen at random from the drawer.



(a) What is the probability that Evelyn picks a black pen?
(b) What is the probability that Evelyn picks a blue pen?

Question 9: There are 20 counters in a bag.

2 of the counters are white.
1 of the counters is pink.
4 of the counters are black.
The rest of the counters are purple.

Carter takes a counter at random from the bag.
Show that the probability that the counter is white or purple is $\frac{3}{4}$

Question 10: There are only pink, yellow, green and blue counters in a bag.
The table shows the probability that a counter taken at random from the bag will be pink, green or blue.

Colour	Pink	Yellow	Green	Blue
Probability	0.5		0.1	0.2

(a) Work out the probability that the counter taken is yellow

There are 40 counters in the bag.

(b) Work out the number of blue counters in the bag.

Lesson 1 Answers

Question 1:

(a) Impossible
(b) Even chance
(c) Certain
(d) Even chance
(e) Unlikely
(f) Likely

Question 2:

(a) Even
(b) Impossible
(c) Impossible

Question 3:

(a) Unlikely
(b) Likely
(c) Certain

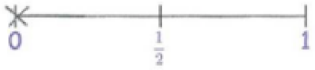
Lesson 2 Answers

Question 4:

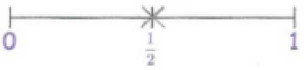
(a) Likely
(b) Unlikely
(c) Even

Question 5:

(a)

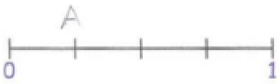


(b)

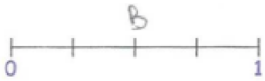


Question 6:

(a)

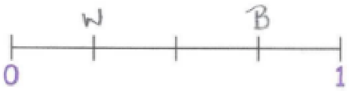


(b)

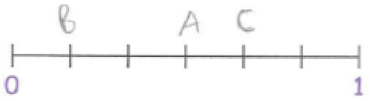


Question 7:

(a) White
(b) & (c)



Question 8:



Lesson 3 Answers

Question 1:

(a) $\frac{3}{5}$ (b) $\frac{2}{5}$

Question 2:

(a) $\frac{1}{12}$ (b) $\frac{5}{12}$ (c) $\frac{6}{12} = \frac{1}{2}$

Question 3:

(a) $\frac{1}{9}$ (b) $\frac{4}{9}$ (c) $\frac{6}{9} = \frac{2}{3}$

(d) $\frac{2}{9}$ (e) $\frac{3}{9} = \frac{1}{3}$ (f) $\frac{4}{9}$

Lesson 4 Answers

Question 4:

(a) $\frac{3}{20}$ (b) $\frac{15}{20} = \frac{3}{4}$ (c) $\frac{8}{20} = \frac{2}{5}$

Question 5: 0.6

Question 6: 0.2

Question 7: 0.17

Question 8:

(a) $\frac{15}{80} = \frac{3}{16}$ (b) $\frac{65}{80} = \frac{13}{16}$

Question 9:

$$\frac{2}{20} + \frac{13}{20} = \frac{15}{20} = \frac{3}{4}$$

Question 10:

(a) 0.2
(b) 8