



The Monty Hall Problem

NAME:

CLASS:

DATE:



Basic

1) Describe two events that are:

- a) Impossible b) Certain c) Likely to happen d) Unlikely to happen

2) How many twos would you expect to get if you rolled a die:

- a) 60 times b) 120 times c) 360 times d) 6000 times

3) The probability that it will rain tomorrow has been predicted as $\frac{2}{5}$
What is the probability that it will not rain tomorrow?



The Monty Hall Problem

Basic

4) A child is selected at random from a school.

The probability the child is a boy is $\frac{11}{20}$

The probability that the child is right handed is $\frac{10}{11}$

The probability that the child wears glasses is $\frac{4}{13}$

Find the probabilities that a child selected at random:

a) is a girl

b) is left handed

c) does not wear glasses

5) Two dice are rolled together. Use the table below to list all the possible outcomes.

		First die					
		1	2	3	4	5	6
Second die	1						
	2						
	3						
	4						
	5						
	6						



The Monty Hall Problem

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Core

1) A child is selected at random from a school.

The probability the child is a boy is $\frac{11}{20}$

The probability that the child is right handed is

The probability that the child wears glasses is

Find the probabilities that a child selected at random:

a) is a girl

b) is left handed

c) does not wear glasses

2) Two dice are rolled together. Use the table below to list all the possible outcomes.

First die

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

a) How many possible outcomes are there in total?

b) What is the probability of throwing a double?



The Monty Hall Problem

Core

3) List all the possible outcomes when three coins are flipped.

4) In a lucky dip at a school fete a tub contains 60 prizes: 30 bags of sweets, 20 pens and 10 book vouchers.

What is the probability that the first person to visit the lucky dip

a) wins a bag of sweets?

b) does not win a pen?

c) wins a book voucher?

d) does not win a bag of sweets or a pen?

If the first person wins a pen, what is the probability that the second person wins

e) a pen?

f) a bag of sweets?

5) If the probability that it rains on any day over the next two days is $\frac{1}{5}$, find the probability

a) that it rains on two consecutive days.

b) that it remains dry on two consecutive days.

c) that it rains on only one of the two days.

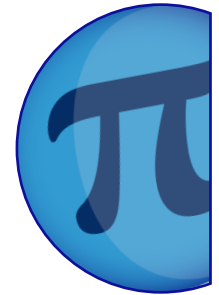


The Monty Hall Problem

NAME:

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Advanced

1) In a lucky dip at a school fete a tub contains 60 prizes: 30 bags of sweets, 20 pens and 10 book vouchers.

What is the probability that the first person to visit the lucky dip

a) wins a bag of sweets?

b) does not win a pen?

c) wins a book voucher?

d) does not win a bag of sweets or a pen?

If the first person wins a pen, what is the probability that the second person wins

e) a pen?

f) a bag of sweets?

2) If the probability that it rains on any day over the next two days is $\frac{1}{5}$, find the probability

a) that it rains on two consecutive days.

b) that it remains dry on two consecutive days.

c) that it rains on only one of the two days.



The Monty Hall Problem

Advanced

3) To be able to drive in the UK you must pass both a theory test and a practical driving test. The probability of passing the theory test is 0.75 and the probability of passing the practical test is 0.6.

a) What is the probability of failing

(i) the theory test?

(ii) the practical test?

b) What is the probability that someone

(i) passes both tests?

(ii) fails both tests?

4) When a coin is flipped three times, find the probability of obtaining

a) three heads

b) three tails

c) only one head



The Monty Hall Problem

ANSWERS

Basic

2) a) 10 b) 20 c) 60 d) 1000

3) $\frac{3}{5}$

4) a) $\frac{9}{20}$ b) $\frac{1}{11}$ c) $\frac{9}{13}$

First die

	1	2	3	4	5	6
Second die	1,1	2,1	3,1	4,1	5,1	6,1
2	1,2	2,2	3,2	4,2	5,2	6,2
3	1,3	2,3	3,3	4,3	5,3	6,3
4	1,4	2,4	3,4	4,4	5,4	6,4
5	1,5	2,5	3,5	4,5	5,5	6,5
6	1,6	2,6	3,6	4,6	5,6	6,6

Core

1) a) $\frac{9}{20}$ b) $\frac{1}{11}$ c) $\frac{9}{13}$

First die

2)

	1	2	3	4	5	6
Second die	1,1	2,1	3,1	4,1	5,1	6,1
2	1,2	2,2	3,2	4,2	5,2	6,2
3	1,3	2,3	3,3	4,3	5,3	6,3
4	1,4	2,4	3,4	4,4	5,4	6,4
5	1,5	2,5	3,5	4,5	5,5	6,5
6	1,6	2,6	3,6	4,6	5,6	6,6

a) 36 b) $\frac{1}{6}$

3) HHH, HHT, HTT, HTH, THH, THT, TTH, TTT

4) a) $\frac{1}{2}$ b) $\frac{2}{3}$ c) $\frac{1}{6}$ d) $\frac{1}{6}$ e) $\frac{19}{59}$ f) $\frac{30}{59}$

5) a) $\frac{1}{25}$ b) $\frac{16}{25}$ c) $\frac{8}{25}$



The Monty Hall Problem

ANSWERS

Advanced

1) a) $\frac{1}{2}$ b) $\frac{2}{3}$ c) $\frac{1}{6}$ d) $\frac{1}{6}$ e) $\frac{19}{59}$ f) $\frac{30}{59}$

2) a) $\frac{1}{25}$ b) $\frac{16}{25}$ c) $\frac{8}{25}$

3) a) (i) 0.25 (ii) 0.4

b) (i) 0.45 (ii) 0.1

4) a) $\frac{1}{8}$ b) $\frac{1}{8}$ c) $\frac{3}{8}$