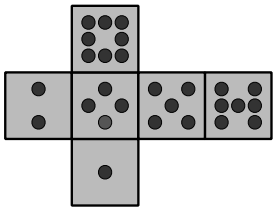
Lesson 3

GCSE Mathematics
Probability

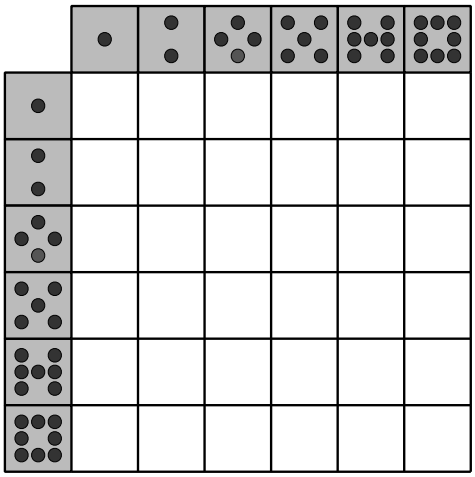
3.1 Possibility Space Diagrams

The net of a *Crazy Dice*™ is shown :



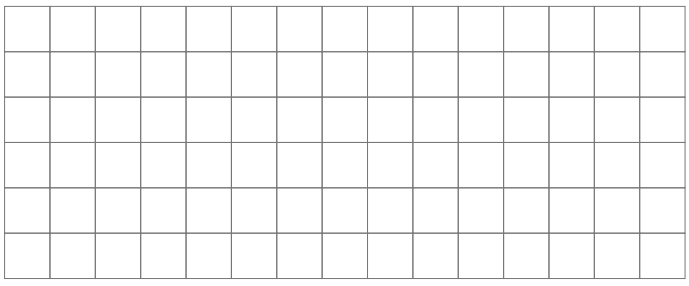
One red and one green *Crazy Dice*™ are rolled.
The pips showing are added together.

(a) Complete this possibility space diagram to show the thirty-six possible results.



[4 marks]

(b) Plot a bar chart of the probabilities.



[2 marks]

(c) **(i)** Which score occurs most often ?

[1 mark]

(ii) Which of the possible scores are least likely to be rolled ?

[1 mark]

(iii) What's the probability of rolling a square number ?

[1 mark]

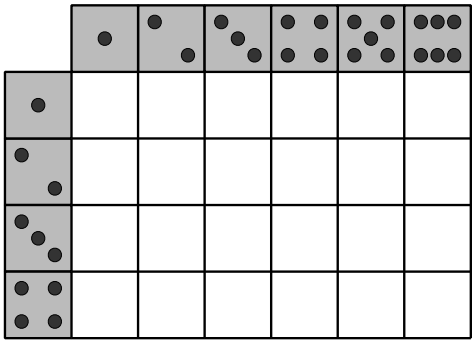
3.2 Exercise

Do NOT use a calculator
Marks Available : 40

Question 1

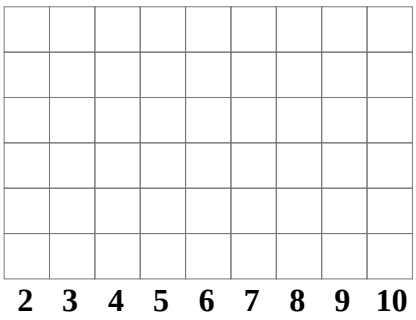
A cubical die has its six faces numbered from 1 to 6.
A tetrahedral die has its faces numbered from 1 to 4.
The two dice are rolled and the pips showing added together.

(a) Complete this possibility space diagram to show the 24 possible results.



[3 marks]

(b) Plot a bar chart of the probabilities.



[2 marks]

(c) Working with vulgar fractions, and NOT cancelling down, what is ;

(i) $p\,(6)$

[1 mark]

(ii) $p\,(< 6)$

[1 mark]

(iii) $p\,(> 6)$

[1 mark]

(iv) What should your part (i), (ii) and (iii) answers sum to ?

[1 mark]

Question 2
Two tetrahedral (four-faced) dice are thrown, and their scores are added together.

(a) Draw a possibility space for the experiment.

[4 marks]

(b) Find the probability that the result is:

(i) 2

[1 mark]

(ii) 4

[1 mark]

(iii) an even number

[1 mark]

(iv) less than 6

[1 mark]

(c) What is the most likely score ?

[1 mark]

(d) State a score which is *less* likely than 2.

[1 mark]

Question 3
A letter is chosen at random from the phrase "W I B B L Y W O B B L Y".

(a) What is the percentage probability that it is B ?

[1 mark]

(b) Which letters (if any) are likely to be picked with probability $\frac{1}{12}$?

[1 mark]

Question 4

Two dice, one red and one green, are rolled.
The spots on their faces are MULTIPLIED together to give a score.

(a) Complete the possibility space diagram to show what scores are possible.

GREEN \ RED	1	2	3	4	5	6
1						
2				8		
3						
4						
5					25	
6			18			

[3 marks]

(b) Use your possibility space diagram to determine;

(i) p (ODD)

[1 mark]

(ii) p (> 17)

[1 mark]

(iii) p (square number)

[1 mark]

(iv) p (multiple of 5)

[1 mark]

(v) p (multiple of 3)

[1 mark]

Question 5

Brian has 14 pets, 4 of which are dogs and 6 of which are aardvarks.
He is going to chose one of the pets at random to be called Anastasia.

Find the probability that the chosen pet will be:

(a) an aardvark

[1 mark]

(b) not a dog.

[1 mark]

Question 6

One blue and one green cubical (six-faced) dice are thrown.

!!! ==> The score taken is the **HIGHEST** of the two dice <== **!!!**

(a) Draw a possibility space for the experiment.

[5 marks]

(b) Find the probability that the result is;

(i) 6

[1 mark]

(ii) not 6

[1 mark]

(iii) less than 3

[1 mark]

(iv) an odd number

[1 mark]