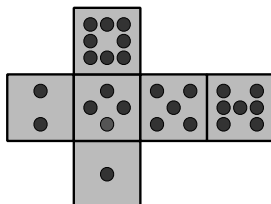


**3.1 Possibility Space Diagrams**

The net of a *Crazy Dice*<sup>TM</sup> is shown :



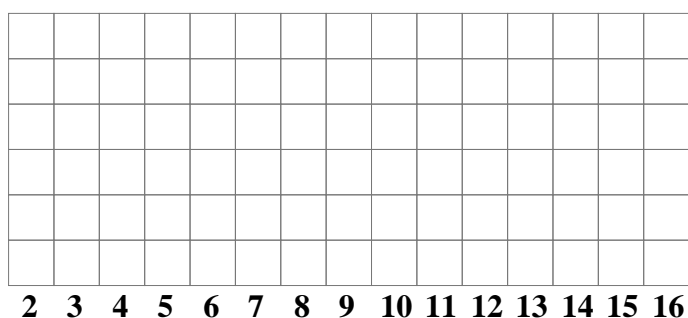
One red and one green *Crazy Dice*<sup>TM</sup> are rolled.  
The pips showing are added together.

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

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

[ 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.

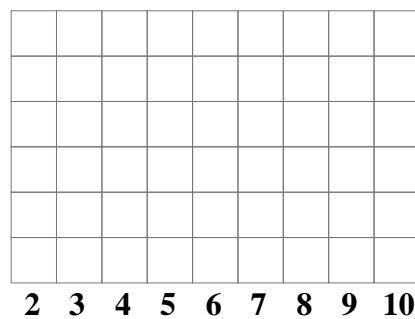
The two dice are rolled and the pips showing added together.

- ( 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.

		<b>R E D</b>					
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>G R E E N</b>	<b>1</b>						
	<b>2</b>				<b>8</b>		
	<b>3</b>						
	<b>4</b>						
	<b>5</b>					<b>25</b>	
	<b>6</b>			<b>18</b>			

[ 3 marks ]

- ( b ) Use your possibility space diagram to determine;

( i )  $p ( \text{ ODD } )$

[ 1 mark ]

( ii )  $p ( > 17 )$

[ 1 mark ]

( iii )  $p ( \text{ square number } )$

[ 1 mark ]

( iv )  $p ( \text{ multiple of } 5 )$

[ 1 mark ]

( v )  $p ( \text{ multiple of } 3 )$

[ 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 ]