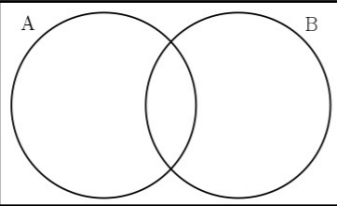


MATHEMATICS - YEAR 10 HIGHER - BLOCK 1

A VENN DIAGRAMS AND SET NOTATION

1	Venn Diagram	
2	Universal set	A set containing all of the elements we are interested in, denoted ξ

B MULTIPLE EVENT PROBABILITY

1	Systematically listing outcomes	A way of listing outcomes for an event so that none of the outcomes are missed out																																											
2	Sample space diagram	<p>A table drawn to show all possible outcomes. For example:</p> <table border="1" data-bbox="625 1242 1127 1502"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="6">Score on 1st Dice</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <th rowspan="4">Score on 2nd Dice</th> <th>1</th> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <th>2</th> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <th>3</th> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> </tr> <tr> <th>4</th> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> </tr> </tbody> </table>			Score on 1 st Dice						1	2	3	4	5	6	Score on 2 nd Dice	1	2	3	4	5	6	7	2	3	4	5	6	7	8	3	4	5	6	7	8	9	4	5	6	7	8	9	10
		Score on 1 st Dice																																											
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	3	4	5	6	7	8	9																																						
	4	5	6	7	8	9	10																																						
3	The 'and' rule for independent events	To find the probability of two or more things happening, multiply their probabilities together. The events must be independent.																																											
4	Tree diagram	<p>A way of showing the probability of two or more events.</p> <p>Each branch will always sum to 1</p> <p>Multiply probabilities along the branches</p>																																											

C VECTORS

1	Vector	A vector is a straight arrow, pointing in one direction. It has a size and direction.
2	Column notation	<p>A column vector is written: $\begin{pmatrix} x \\ y \end{pmatrix}$</p> <p>$x$ is movement along the x axis (horizontal)</p> <p>y is movement along the y axis (vertical)</p>
3	Vector notation	<p>Vectors can be written using letters, e.g. \mathbf{a}</p> <p>The vector $\overrightarrow{AB} = \mathbf{a}$</p>
4	Negative vectors	<p>If the vector $\overrightarrow{AB} = \mathbf{b}$, the vector $\overrightarrow{BA} = -\mathbf{b}$</p> <p>The vectors are equal in size, but point in the opposite direction.</p>
5	Adding and subtracting vectors	<p>Add the x parts of the vector and add the y parts. For example: $\begin{pmatrix} 4 \\ 5 \end{pmatrix} + \begin{pmatrix} 3 \\ -1 \end{pmatrix} = \begin{pmatrix} 7 \\ 4 \end{pmatrix}$</p>
6	Multiplying a vector by a scalar	<p>Multiply the x and y parts of the vector by the scalar. For example: $3 \begin{pmatrix} 4 \\ 5 \end{pmatrix} = \begin{pmatrix} 12 \\ 15 \end{pmatrix}$</p>

D TRANSFORMATIONS

1	The 4 transformations	<ul style="list-style-type: none"> • Translation • Rotation • Reflection • Enlargement
2	Translation	<p>Requires:</p> <ul style="list-style-type: none"> • A column vector
3	Rotation	<p>Requires:</p> <ul style="list-style-type: none"> • The degrees turned (90° or 180°) • The direction (clockwise/anti-clockwise) • The centre of rotation
4	Reflection	<p>Requires:</p> <ul style="list-style-type: none"> • The equation of the mirror line
5	Enlargement	<p>Requires:</p> <ul style="list-style-type: none"> • A scale factor • The centre of enlargement