

P6	EXCEPTIONAL PERFORMANCE MEET WITH MR RAMSDEN
P5	BRILLIANT WORK / EFFORT ABOVE & BEYOND REWARD FROM DEPUTY HEADS + ASSISTANT HEADS
P4	RECOMMENDATION TO HOD / HOY HOD / HOY REWARD »»» PRAISE
P3	SUSTAINED EXCELLENCE POSTCARD »»» LETTER »»» PHONE CALL + PRAISE POINTS
P2	ABOVE & BEYOND IN LESSON/OUT PRAISE POINT
P1	POSITIVE LEARNING BEHAVIOURS VERBAL PRAISE + ENCOURAGEMENT "Thank You For..."

LHS POSITIVE BEHAVIOUR FOR LEARNING

Title: XXXXXXXX

Aims:
1. XXXXXXXXXXXX

DNA:

Thank you for being ready to learn!

N1	SLIPPING INTO NEGATIVE LEARNING BEHAVIOURS PUT IT RIGHT - YOUR TEACHER WILL HELP YOU "I need you to..."
N2	REPETITION OF NEGATIVE LEARNING BEHAVIOURS TEACHER EXPLAINS NEGATIVE BEHAVIOURS »»» FINAL WARNING »»» BEHAVIOUR POINT TIME TO MOVE ON »»» PUT IT RIGHT
N3	UNACCEPTABLE NEGATIVE LEARNING BEHAVIOUR SAFEROOM »»» PUT IT RIGHT »»» PHONE HOME »»» DEPARTMENT DETENTION / SDS
N4	ESCALATION OF NEGATIVE LEARNING BEHAVIOUR ON CALL SUPPORT »»» REFERRAL TO HOD »»» MEET PARENTS »»» SUBJECT REPORT »»» SDS
N5	REPETITION OF SEVERE NEGATIVE BEHAVIOUR FOR LEARNING INTERNAL EXCLUSION + HOY INTERVENTIONS + HEAD'S DETENTION
N6	SUSTAINED UNACCEPTABLE NEGATIVE BEHAVIOUR DESPITE INTEVENTIONS EXCLUSION + EXTERNAL AGENCIES + SUPPORT PACKAGES




▶ WHY A LEVEL BIOLOGY ??



Growing cases of cancer and still no cure

Rapid population growth and not enough food to feed everyone

Animals globally continue to become extinct

WHY BIOLOGY IS THE MOST IMPORTANT SUBJECT IN SIXTH FORM

Bacteria resistant to all forms of antibiotic and no development into new antibiotic drugs

Stem cell developments to improve quality of life for those with genetic disorders

Outbreaks of deadly viruses sweeping across countries

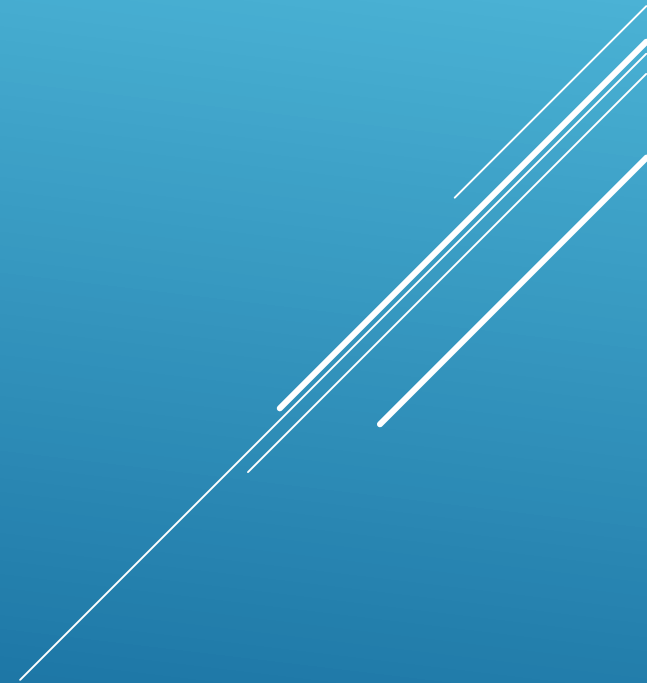
Development of early screening tests for genetic disorders

A LEVEL BIOLOGY INDUCTION DAY 2024

WALT:

- Outline of the AS & A level biology courses
- Biology department expectations and what it takes to be successful
- Sample application of level of skills required of the AS/A level biology course

▶ AS Level biology course outline



▶ FOUR UNITS OF STUDY (AS Level)

1. BIOCHEMISTRY

2. CELL BIOLOGY

3. ORGANISMS EXCHANGE OF SUBSTANCES WITH ENVIRONMENT

4. GENETICS

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▶ A Level biology course outline

▶ Four units of study;

5. ENERGY TRANSFER IN AND BETWEEN ORGANISMS

6. ORGANISMS RESPONSE TO CHANGE IN BOTH INTERNAL AND EXTERNAL ENVIRONMENTS

7. GENETICS, POPULATIONS, EVOLUTION & ECOSYSTEMS

8. CONTROL OF GENES EXPRESSION

▶ Assessment of A Level biology May 2026



3 X 2 HOUR EXAMINATIONS WORTH 2X35% AND 30% OF THE COURSE

PAPER 1:

WILL COVER ALL UNITS (1-4) OF AS BIO COURSE & ASSESSMENT OF PRACTICAL SKILLS

PAPER 2:

UNITS 5-8 OF A LEVEL COURSE INCLUDING PRACTICAL SKILLS

PAPER 3:

UNITS 1-8, ALL OF AS & A LEVEL COURSES INCLUDING PRACTICAL SKILLS AND A 25 MARK SYNOPTIC ESSAY

Assessment breakdown and weightings

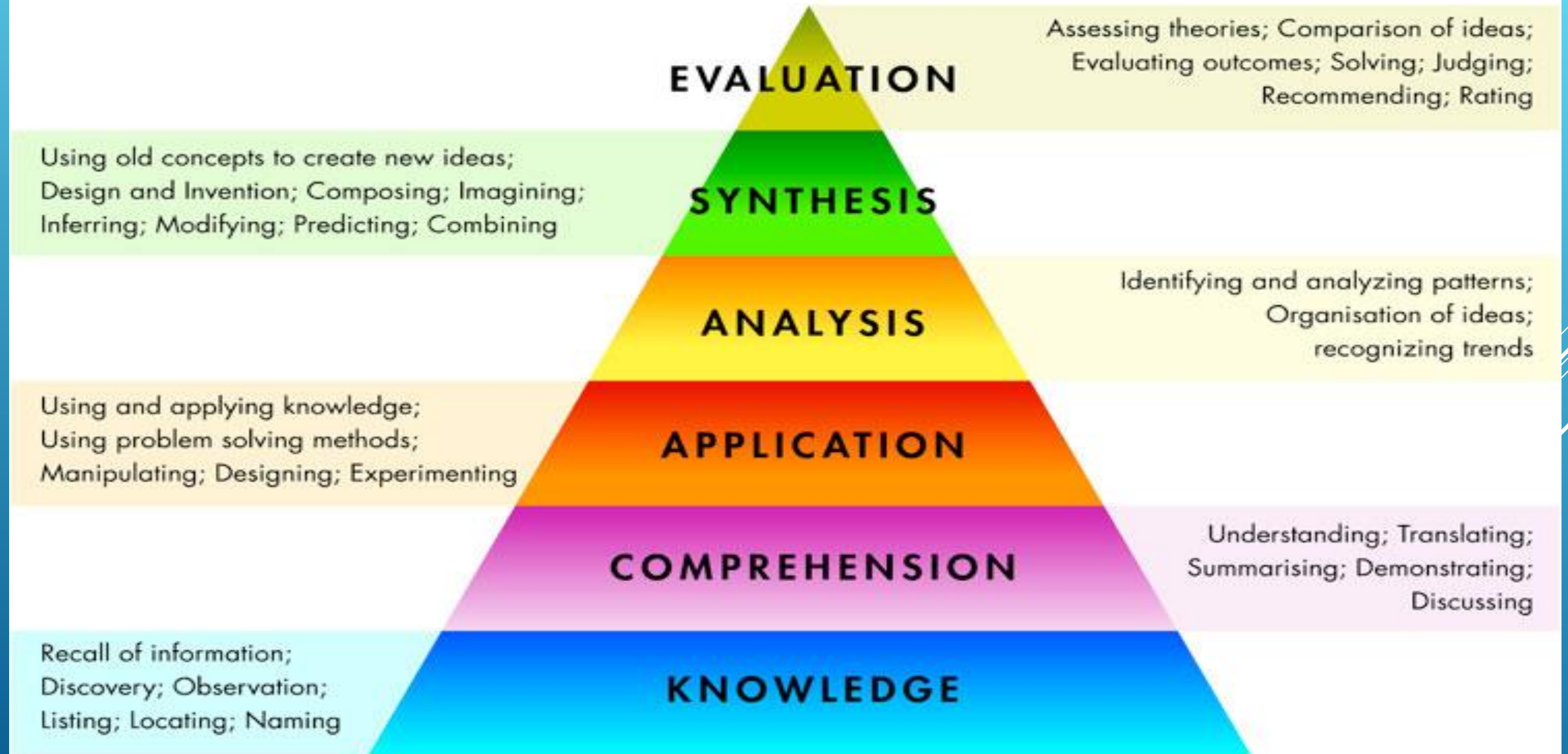
THE FOLLOWING WEIGHTINGS APPLY

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1. 35-40% Knowledge and understanding of concepts and techniques
2. 40-45% Knowledge and understanding of concepts including data handling, qualitative and quantitative data handling
3. 20-25% Analysis, interpretation & evaluation of scientific information. Judgements & conclusions regarding practical's and practical designs

SO WHERE DOES THIS FIT ON THE
DIFFERENT LEVELS OF LEARNING??

B L O O M S T A X O N O M Y



- ▶ The Maths.....
- ▶ Assessment weighting 10% of your total final grade.

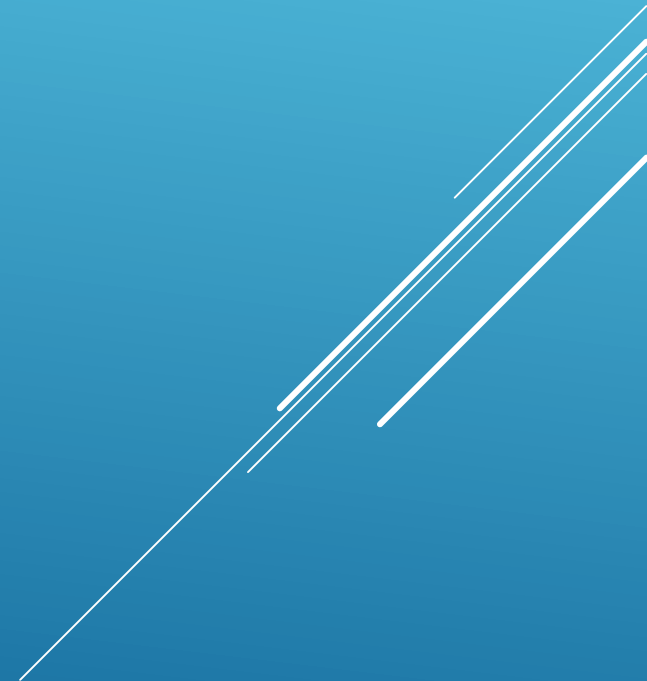
- ARITHMETIC & NUMERICAL COMPUTATION

DATA HANDLING

ALGEBRA

GRAPHS

GEOMETRY & TRIGONOMETRY



▶ WALT:

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- 

- ▶ For every hour of lesson time you will spend 1 hour of independent study
- ▶ Be organised, notes, E/L, filing of notes into a designated biology folder
- ▶ Perfect attendance.....
- ▶ Initiative..... seek assistance early, be proactive in YOUR LEARNING
- ▶ Entry test in September Theory AND Maths skills and following unit assessments.
Minimum target grade Required. 'Head start' text listed on discovery list.
- ▶ Passion, resilience, perseverance & engagement....Love, Live Biology!!!... don't do the subject just because you need a 4th subject and biology was your best GCSE science mark. Find another subject!!!!

▶ WALT:

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- ▶ Many animals show turn alternation.
- ▶ If an animal is forced to turn in one direction it is more likely to turn in the opposite direction next time it has a choice.
- ▶ This investigation you are required to study whether this is the case with a well known invertebrate.....

SKILLS WE ARE LOOKING FOR YOU TO DISPLAY

1. 35-40% KNOWLEDGE AND UNDERSTANDING OF CONCEPTS AND TECHNIQUES
2. 40-45% KNOWLEDGE AND UNDERSTANDING OF CONCEPTS INCLUDING DATA HANDLING, QUALITATIVE AND QUANTITATIVE DATA HANDLING
3. 20-25% ANALYSIS, INTERPRETATION & EVALUATION OF SCIENTIFIC INFORMATION. JUDGEMENTS & CONCLUSIONS REGARDING PRACTICALS AND PRACTICAL DESIGNS



MAGGOTS

- ▶ You are to carry out an investigation into whether maggots have a turn alternation, that is, if they turn left then the next time, they will turn right then left again and so on and so on.
- ▶ You are to;
- ▶ Carry out investigation (Part one then Part two)
- ▶ Collect results data appropriately
- ▶ Carry out a statistical test on your data to confirm your results as significant... or not
- ▶ Conclude whether maggots have an instinctive turn alteration
- ▶ You will also be required to consider aspects of your method and why you carried out the procedures that you did

▶ HYPOTHESIS:

MAGGOTS WHEN REQUIRED TO TURN
WILL ALTERNATE BETWEEN LEFT AND
RIGHT


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WHAT IS THE NULL HYPOTHESIS?



- ▶ It is just a statement that is the opposite of the hypothesis

THERE IS NO ALTERNATION IN WHETHER A
MAGGOT TURNS LEFT OR RIGHT

- ▶ Complete Task One
 - ▶ Complete associated questions
 - ▶ Break Time as & when appropriate
 - ▶ Complete Task Two
 - ▶ Carry out a Chi Squared (χ^2 Test) Statistical test on your results
 - ▶ Use your stats results to write a conclusion as to whether maggots have turn alternations
- 

- ▶ Do practical and appropriate questions associated


RESULTS TABLE???

RESULTS TABLE

Maggot Repeats	Number of <i>turns</i> .	
	Left turn	Right turn
1		
2		
3		
4		
5		


- ▶ So.....looking at your results can you say whether there is turn alternation in maggots?
- ▶ Is there enough evidence?
- ▶ Are your results Significant?
- ▶ Can you be CONFIDENT?

**NO, I HERE YOU SAY...WELL WE THEREFORE
NEED TO CARRY OUT A STATISTICAL TEST TO
SUPPORT YOUR FINDINGS.**

- ▶ Do a Chi Squared test
 - ▶ To compared the observed with the expected (with the hypothesised)
- 

▶ HYPOTHESIS:

MAGGOTS WHEN REQUIRED TO TURN WILL
ALTERNATE BETWEEN LEFT AND RIGHT

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▶ NULL HYPOTHESIS

THERE IS NO ALTERNATION IN WHETHER A
MAGGOT TURNS LEFT OR RIGHT

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▶ Chi-Squared = Sum of $\frac{(\text{Observed no.} - \text{Expected no.})^2}{\text{Expected Number}}$

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

▶ The value of Chi-Squared is then converted in to a probability value

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$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

- ▶ The value of Chi-Squared is then converted into a probability value

THE DATA CRUNCH

Experiment set	Number of <i>turns</i> .	
	Left turn	Right turn
Use 4 other peoples data		
1 your totalled results from the 5 trials		
2		
3		
4		
5		

Any trend? Is there any significant preference?

THE DATA CRUNCH

Experiment set	Number of <i>turns</i> .	
Use 4 other peoples data	Left turn	Right turn
1 your <u>totalled</u> results from the trials	0	5
2	3	2
3	2	3
4	4	1
5		
Mean observed	9	11

Any trend? Is there any significant preference?

- ▶ Count all *Musca domestica* in each half.
- ▶ ? Turned left, ? Turned right. These are 'Observed' (O) values
- ▶ If there was no preference we would Expect same number for each. This is the (E) value based on the Null Hypothesis

CONTINUED

NOW CALCULATE CHI SQUARED (χ^2) ON YOUR RESULTS

Category	O	E	(O-E)	(O-E) ²	(O-E) ² / E
Left turn	??	?	?	?	?
Right turn	??	?	?	?	?
					$\Sigma = ??$

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Doesn't matter if (O-E) is a negative value

DEGREES OF FREEDOM

- ▶ To determine the degrees of freedom, take the number of categories and minus 1.
- ▶ This example; two categories (left & right) minus 1 = 1 df.
- ▶ So we have 1df and $\chi^2 = ???$
- ▶ Now to determine whether your results are statistically *significance* ...

DETERMINE SIGNIFICANCE.

- ▶ Use the values 1df and $\chi^2 = ??$ in the probability table at 5% or $p = 0.05$

	Increase	p values					Decrease	
Df	0.99	0.95	0.90	0.50	0.10	0.05	0.01	0.001
1	0.00016,	0.0039,	0.016,	0.46	2.71,	3.83 ,	6.63,	10.83

Not Significant

Significant

▶ Conclusion:

- ▶ Not significant Option: “There is a greater than 5% probably that the results are due to chance

I therefore accept my null hypothesis

OR

- ▶ Significant Option: “There is a less than 5% probably that the results are due to chance.

I therefore reject my null hypothesis

▶ Summing up induction day...

▶ **SODO MAGGOTS HAVE A TURN ALTERNATION????**

Course outline

How to be successful

Sense of real Biology, keenness ,
positive excitement for Sept 2023

**COLLECT A BIOLOGY PRELIMINARY
SHEET ON WAY OUT**

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