

# 5MATH(C) Take Home Packet

Nimbin Central School

Stage 5 Maths

Teacher Josh Howard

Included:

1. Josh's Self-Study Tips
2. Cornet Note-Taking System
3. Textbook Guide
4. Chapter 3 of Text Book (Depending on the student, one should aim to attempt 1-3 sub units per week of study)
5. Extension Work (Simple and Compound Interest)
6. Answers

# Josh's Self-Study Tips

## Introduction:

Maths is a particularly lucky subject for home study, because the textbooks comprehensively explain the material that needs to be taught. If you have this packet it might be because you do not have access to online resources. If you do you have access to online resources there will be a Google classroom for this unit and there will also be tutorial times set aside using the conferencing software Zoom, with which I will work with small groups of students and get them through tricky bits in the material. That said, if you do not have access to the Internet, I prepared for you some advice and pointers on how to make the most of the textbook.

## Getting the Most out of the Text Book:

**Patience:** Probably the most important thing to getting the most out of a Maths textbook is the virtue of patience, patience with yourself, patience with the text, patience with your parents, and most importantly patient with the process. The textbook is written in mathematical jargon and may be difficult to grasp that first. This can cause anxiety, which is the actual kryptonite to learning. So, if you feel too frustrated in a moment stop for five minutes, have a break, breathe and come back to it. Keep in mind that even though you will read and take notes on the textbook explanations before attempting the questions, you often won't truly understand the explanations until after you have answered some of the questions. I know this seems strange but this is actually normal. Remember Austins butterfly, and look at each attempt to understand as a 'draft'.

**Look up new words often and regularly:** When you are reading the explanations in the Maths textbook you will be introduced to new words. Now that you are studying at home you have all the time in the world, so I encourage you to take your time to look up all of these words and make sense of them in the sentences they are used in. Keep in mind that many words have different meaning in maths so you'll have to 'scroll down' to find their particular meaning in the context of mathematics. Feel assured that most people wouldn't be able to read these textbook explanations and have them make sense on the first reading. So, take as much time as you need to break it up into small bits and just learn each section as you go.

**Break up the learning into small and manageable chunks:** Start with one question. See if you can answer it based on the explanations you have read. If not check the answer and see if you can backwards engineer how they got that answer. If that fails ask a parent or sibling to help you. Often when you ask a question out loud the answer becomes obvious even without someone helping you, it's just nice to have someone to talk to about it. If that fails put it aside, have a break and come back to it later. Rinse, repeat. If it persists, try the next question and see if something clicks. When you understand what the first question is asking and how to answer it correctly, move onto the next question. Remember each question attempted, earnestly attempted, no matter if you get it right or wrong, is valuable learning.

**Use the Cornell note taking system to better understand the explanations:** we have been practising this method for all of our maths students for the last year and a half. Attached in the following pages are some explanations on how to use this method most effectively.

**Set your own learning needs:** use the *Understanding* questions at the beginning of each unit to gauge your understanding of the material.

- If you are able to answer these questions with complete is you should be able to skim through the fluency questions and then go straight to the *Problem Solving* and *Reasoning* questions.
- If you get about half of these *Understanding* questions correct and struggle to get the others then try and do as many of the *Fluency* questions as you can. Once you get the hang of it move on and try to complete at least half of the *Problem Solving* and *Reasoning* questions.
- If you completely don't understand it at all and can't answer any of them then go back to the *Break up learning into small manageable chunks* above and try those steps again and again.

## Cornell Note Taking

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Taking effective notes is an essential part of the academic experience.

Effective notes:

- help students organize and process data and information
- help students remember what is said in class
- can help students complete assignments and prepare for assessments when outside of class

Cornell note taking stimulates critical thinking skills and helps students recall by getting them to process their notes 3 times ... writing is a great tool for learning.

Cornell notes were developed in 1949 at Cornell University and were designed in response to frustration over student test scores ... meant to be easily used a test study guide.

Cornell note taking has been adopted by most major law schools as the preferred note taking method.

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## How to Take Cornell Notes

1. Read your text.
2. In the large right hand column of your cornell note paper, take notes like you normally would using any style of note-taking you wish ... outline format, narrative format, symbols, short hand, etc..
3. In the left hand column, create questions about your notes. These questions should elicit critical thinking skills and should reflect: 1) main ideas; 2) topics/information you don't understand or want to discuss with your teacher; 3) information you think would go good on an essay; 4) gaps in your notes (see example #1).
4. In addition to questions, key terms, key people and/or events, academic or content vocabulary can also be included in the left hand column (see example #2).
5. When finished with each page, write a 2-3 sentence summary of your notes at the bottom of the page.

## EXAMPLE #1

Class Notes/Textbook Notes

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

Period: \_\_\_\_\_

Topic: **Propaganda Techniques in Advertising**

Questions/Main Ideas:	Notes:
1. What is the definition of propaganda?	Propaganda: Messages intended to persuade audiences to adopt a certain opinion.
2. What are 4 common techniques used by advertisers?	Advertisers use propaganda using 4 techniques:
	• Testimonial
	• Bandwagon
	• Plain Folks
	• Transfer
3. What is an example of the testimonial technique?	Testimonial Example: Michael Jordan sells Nike shoes.

### Summary, Reflection, Analysis

Advertisers use propaganda to sell products. There are 4 common propaganda techniques used by advertisers.

## EXAMPLE #2

John Q. Student  
Biology 101  
April 1, 2000

Phylum	Arthropods
subphylum	Chelicerata
Chelicerata	2 parts: <span style="margin-left: 20px;">→ prosoma</span> <span style="margin-left: 20px;">(first pair of appendages are for feeding)</span> <span style="margin-left: 20px;">→ opisthoma</span>
examples	scorpions, spiders, mites, ticks
Prosoma + Opisthoma	sensory, feeding, and locomotor tagma
Chelicerae	<ul style="list-style-type: none"><li>• pincerlike or chelate</li><li>• used for feeding</li><li>• first pair of appendages</li></ul>
Pedipalps	<ul style="list-style-type: none"><li>• second pair of appendages</li><li>• used for sensory purposes</li></ul> <div style="margin-left: 100px;">feeding    locomotion    reproduction</div>

Phylum arthropods is made up of subphylum chelicerata. Subphylum chelicerata is characterized by two parts called prosoma and opisthoma. The prosoma and cephalothorax are sensory, feeding, and locomotor tagma. The chelicerae is the first appendage and refers to the pincerlike. The pedipalps are the 2nd pair of appendages, and they are used for sensory purposes: feeding, locomotion, and reproduction.

## Tips for Taking Textbook Notes

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### Think about the Reading:

- consider how the parts relate to the whole; how the text relates to previous ideas
- create questions about new words/terms and/or why emphasized points are important
- examine what you have learned from visuals in the text
- look for the patterns in elements like chapter/subsection headings, summary points, graphics

### Textbook Note Taking:

- include headings, key terms and graphics
- take down only the important ideas ... be brief, but clear
- summarize all information in your own words
- use symbols to highlight important for review
- use textbook review questions to develop study questions

### Reviewing Textbook Notes:

- highlight main ideas
- fill in details for better understanding
- identify unclear information and/or questions
- delete unnecessary information
- review note organization; add symbols or rewrite
- write a summary

### Studying with Textbook Notes:

- cover the right side of your notes and review and answer study questions from the left using the right side as an answer key
- quiz yourself out loud
- cover the right side with blank paper ... write out answers to the left column study questions
- write summaries of the most important material in the summary/reflection section
- write a quiz for others using notes; exchange and correct
- write anticipated test questions beyond those already in the left-hand column and write answers
- look over notes frequently to keep information and questions still unanswered fresh in mind
- recite information from notes
- use notes in study groups to provide a common ground of material for reference and review
- rewrite notes if necessary

Class Notes/Textbook Notes

Name: \_\_\_\_\_  
Class: \_\_\_\_\_  
Date: \_\_\_\_\_  
Period: \_\_\_\_\_

Topic: \_\_\_\_\_

[illegible]

## Summary, Reflection, Analysis






Some student and board examples of how we do Cornell notes:

## 5E-Venn diagrams & 2 way Tables P.243-249

### WTF

- Entries: the data that you enter into each square or circle
- The Venn diagram w 2, 3s is about mutually exclusive events

### Predictors

- Read data in Venn diagrams & 2way tables
- Extract meaning of data
- ~~Express meaning~~ Express probability notation

Name: Niketa Date: 5/9/19

Key Ideas	Examples & Expressions																
<h3>2 way Table</h3> <p>A two way table lists the number of outcomes or people in different categories, with the final row &amp; column being the total of other entries in that row or column. for example</p> <table border="1"> <thead> <tr> <th></th> <th>Like maths</th> <th>Do not like maths</th> <th>Total</th> </tr> </thead> <tbody> <tr> <th>Like english</th> <td>28</td> <td>33</td> <td>61</td> </tr> <tr> <th>Don't like english</th> <td>5</td> <td>34</td> <td>39</td> </tr> <tr> <th>Total</th> <td>33</td> <td>67</td> <td>100</td> </tr> </tbody> </table>		Like maths	Do not like maths	Total	Like english	28	33	61	Don't like english	5	34	39	Total	33	67	100	<p>A two way table can be used to find Probabilities-</p> <p>eg <math>P(\text{Like maths}) = \frac{33}{100}</math></p> <p><math>P(\text{Like maths \&amp; not english}) = \frac{5}{100} = \frac{1}{20}</math></p>
	Like maths	Do not like maths	Total														
Like english	28	33	61														
Don't like english	5	34	39														
Total	33	67	100														

LI:

To review simplifying algebraic expressions and our algebraic vocabulary.

WTF:

coefficients The number before the pronumeral.

Predictions:

We will be expected to... identify like terms. simplify exps & fractions combine like terms.

KEY IDEAS

EXAMPLES & EXPLANATIONS

Pronumeral

A letter that represents an unknown number value

eg  $x + 5 = 8$

like terms

Algebraic terms that have the same pronumeral to the same power. eg.  $3x$  and  $2x$  are like terms

We can combine like terms using '+' & '-'.

$3x + 2x = 5x$

$3x - 2x = x$

Combining like terms

Combining like terms rule

We simply add or subtract the coefficients of like terms to combine them.

Example 1: Adding & Subtracting Like Terms

Simplify  $5x^2 + 6x - 3x^2 - x$

$5x^2 - 3x^2 + 6x - x$  (Group like terms together.)

$= 2x^2 + 5x$

Example 2: Adding & Subtracting Alg Fractions

Simplify  $\frac{2a}{3} - \frac{a}{6}$

$= \frac{4a}{6} - \frac{a}{6}$  (Multiply  $\frac{2a}{3} \times \frac{2}{2}$  because we want the LCD of 6)

$= \frac{3a}{6}$  (rewrite fractions w/ LCD of 6)

$= \frac{a}{2}$  (combine numerators)

Simplify fraction

LI Today we will be reviewing the language of probability

WTF

PREDICTIONS

Chance Experiment

An activity that may produce a variety of different results, which occur randomly. eg. rolling a 6 sided die is a 'chance experiment'.

Sample Space

The list of all possible of an experiment. eg. 1, 2, 3, 4, 5, 6

event

The collection of outcomes resulting from an experiment. eg.  $P(\text{rolling } 4) = \frac{1}{6} = \frac{1}{6}$

Probability

$P(\text{event}) = \frac{\text{number of watched outcomes}}{\text{total number of possible outcomes}}$

Between 0 and 1

All probability is expressed as a number between 0 and 1.

0 - 1

It can be:

fraction  $\frac{1}{2}$

decimal 0.5

percentage 50%

Zero chance impossible

Low chance unlikely

even chance

High chance likely

complement

The number of times an event does NOT occur. eg.  $P(\text{rolling } > 4) = \frac{1}{3}$

the complement of P

$P(\text{not rolling } > 4) = \frac{2}{3}$

$P(\text{not } A) = 1 - P(A)$

EUCLID'S BOOKWORK

main desert

Q1-Q3

Q4-Q5

Q6-Q11

Pitt four at home

The likelihood of rolling less than 3 on a 6 sided die is one out of three

$P(\text{rolling } < 3) = \frac{2}{6} = \frac{1}{3}$