Using Digital Note-taking to enhance teaching and learning effectiveness

An Effective Way to Promote Self-Regulated Learning

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Stewards Pooi Kei College

- Location: Shatin
- A secondary school committed to nurturing students to be tomorrow's leaders.
- Four Core Values:
  Servant Leader, **P**ositive Thinker
  Keen Learner, **C**onfident Explorer

How can we empower students to take ownership of their learning while fostering collaboration and peer support?

Self-Regulated Learning (SRL)

- SRL is the process where **learners take control of their own learning** by **setting goals, self-monitoring, reflecting, and adjusting their approach** to achieve better outcomes.

Self-Regulated Learning (SRL)

Self-Learning (Pre-Study)

Students learn the materials by using the Pre-Study materials.

Collaborative Learning

Students learn by working in groups to solve problems or complete tasks.

Mutual Learning (Cross-Group)

Students share and present knowledge and insights across groups, fostering broader understanding.

Guided Learning

Guided learning with teacher facilitation to summarize the students' presentation outcome.

Before the utilisation of Digital Notes

Self-Learning - Pre-Study Video

YouTube GB

Search

3.1 Solving Quadratic Equations by the Factor Method

The figure shown a trapezium with an area of 20 square units, find the value(s) of x.

$$\frac{[x+(x+6)](9-x)}{2} = 20$$

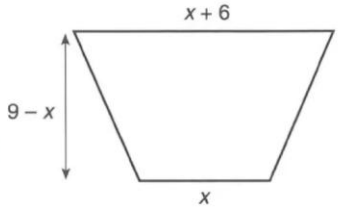
$$(2x+6)(9-x) = 40$$

$$-2x^2+12x+54=0$$

$$2x^2-12x-54=0$$

$$x^2-6x-27=0$$

$$(x-9)(x+3)=0$$



In junior forms, we learnt how to solve linear equations in one unknown. In the previous example, we can use some skills to help us solve the equation with higher degree. Equations, with only one unknown and the highest degree of the unknown is 2, are called *quadratic equations in one unknown*. Now we will explore several methods for solving quadratic equation.

A quadratic equation in one unknown is an equation of the form $ax^2+bx+c=0$, where $a \neq 0$. In the above quadratic equation, a is called the coefficient of x^2, b is called the coefficient of x, and c is called the constant.

Chapter 3 Quadratic Equations in One Unknown (Part 1)

How can I keep track of students' pre-study progress?

Mathematics (Secondary 2)

Pre – Study Worksheet

Ch 2.6 Factorization of Polynomial (Part B)

Note:

Name:_____( ) Class:_____ Date: _____

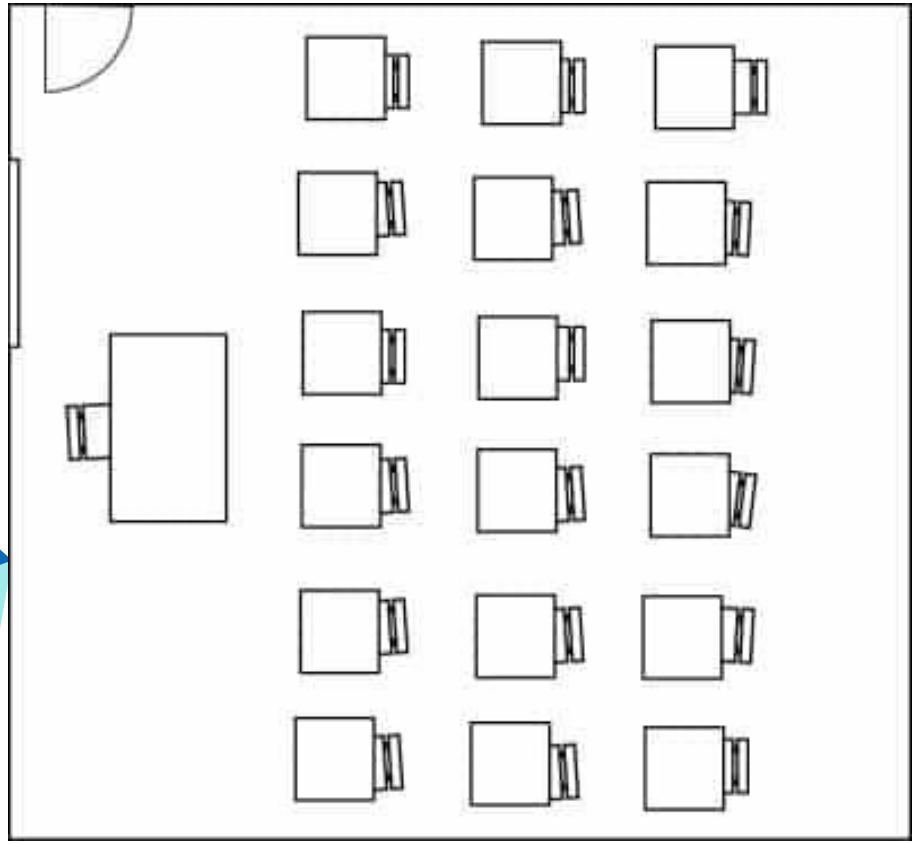
Note and Example

https://youtu.be/nmFUzZEolIU

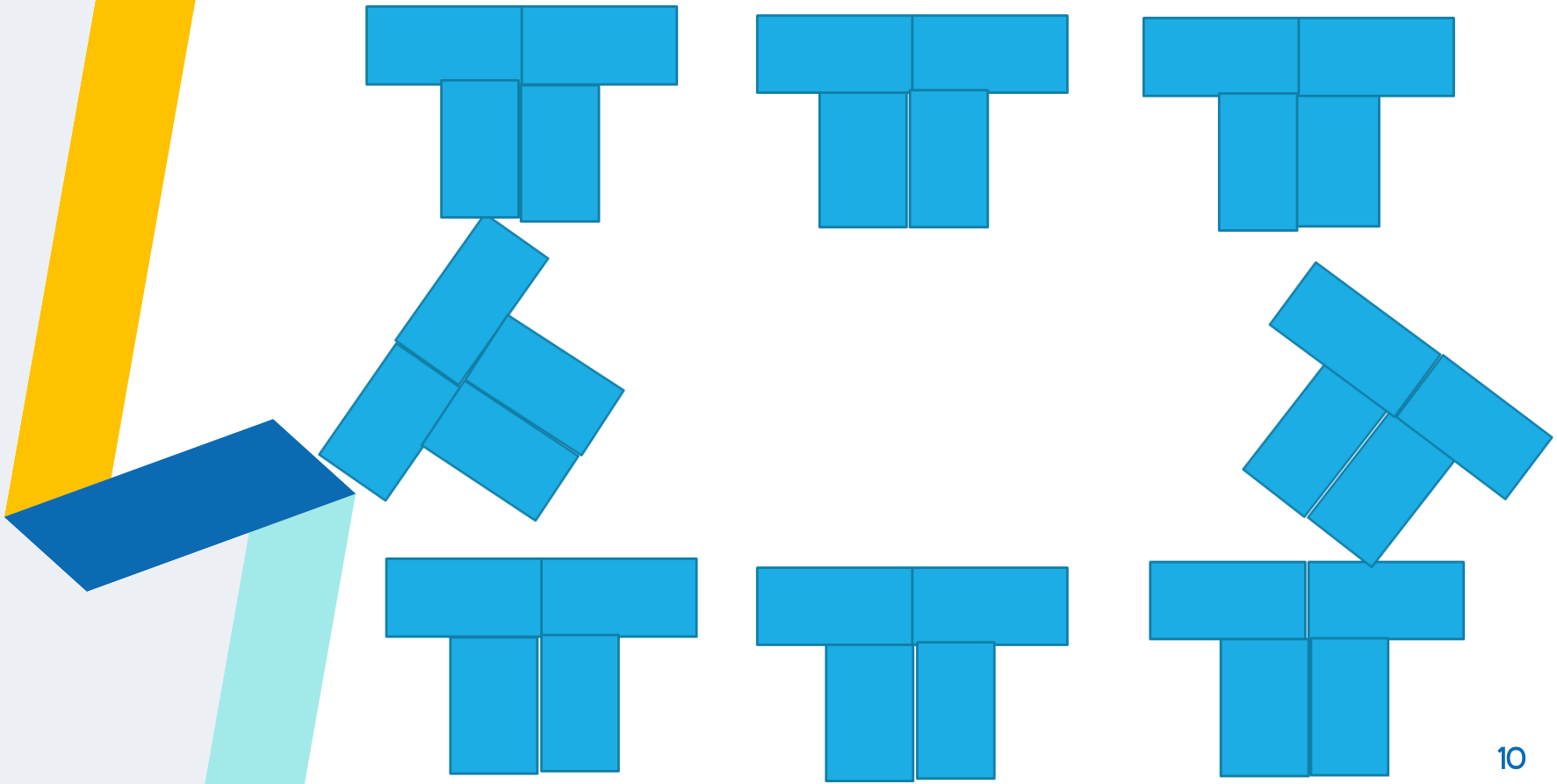
Instant Drill (P.83)

Factorize $2x^2 - xy - 2x + y$.

Traditional Seating Plan



Collaborative Learning — Seating Plan

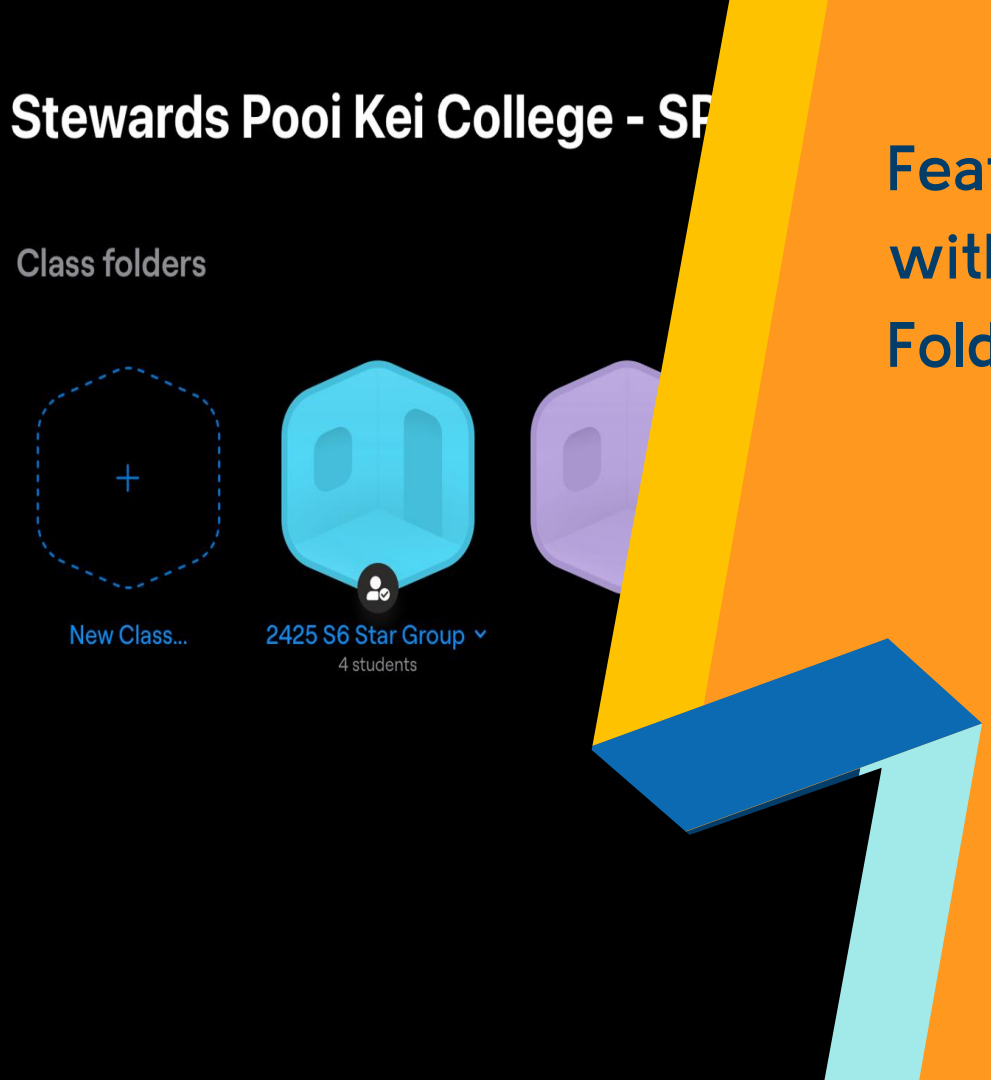


Mutual Learning (Cross-Group) & Guided Learning

- Students write their solutions on the board or project their solutions on the board for discussion.
- Teachers consolidate students' ideas and pinpoint the key concepts.

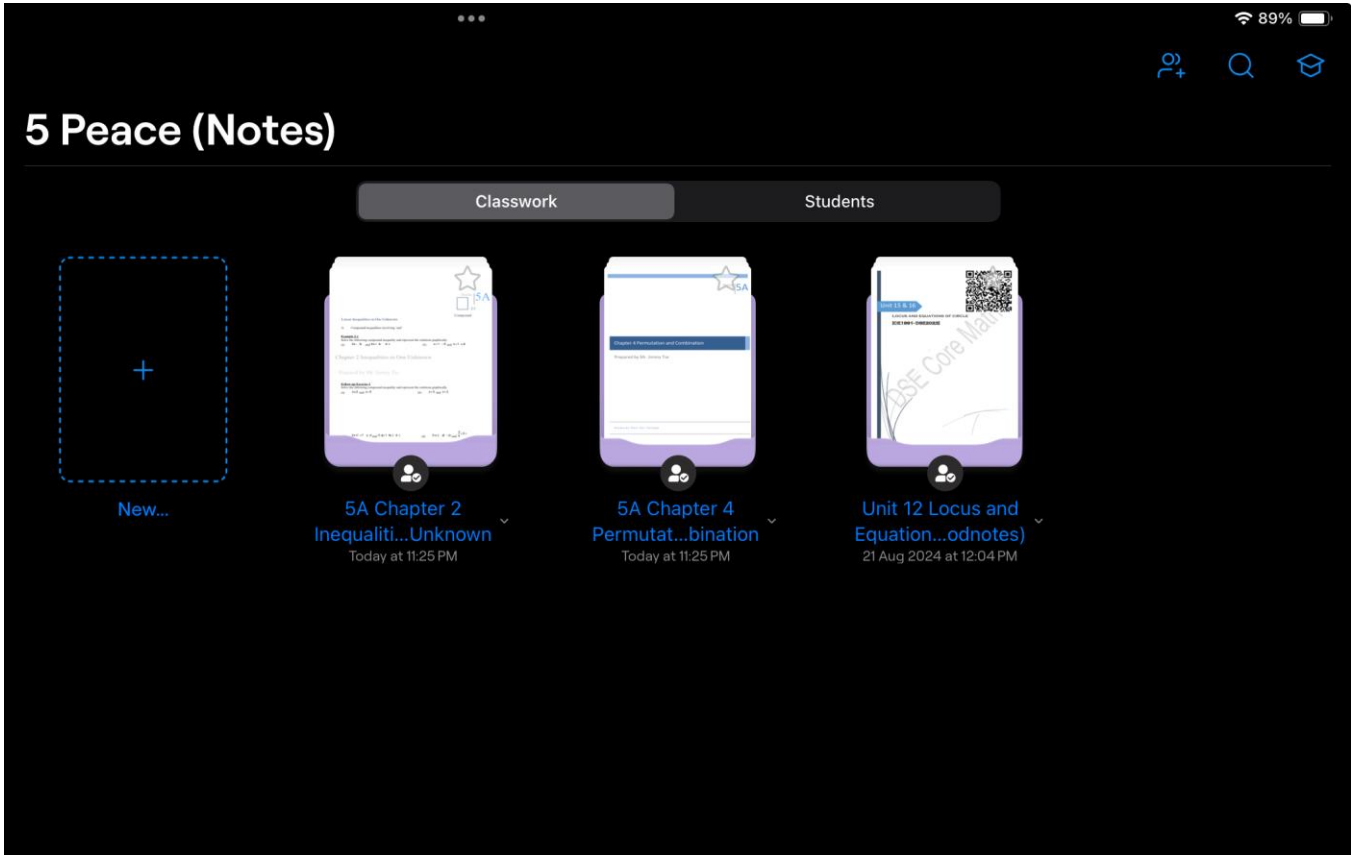
Goodnotes Classroom

The new way to connect with each student, making lessons more collaborative and engaging

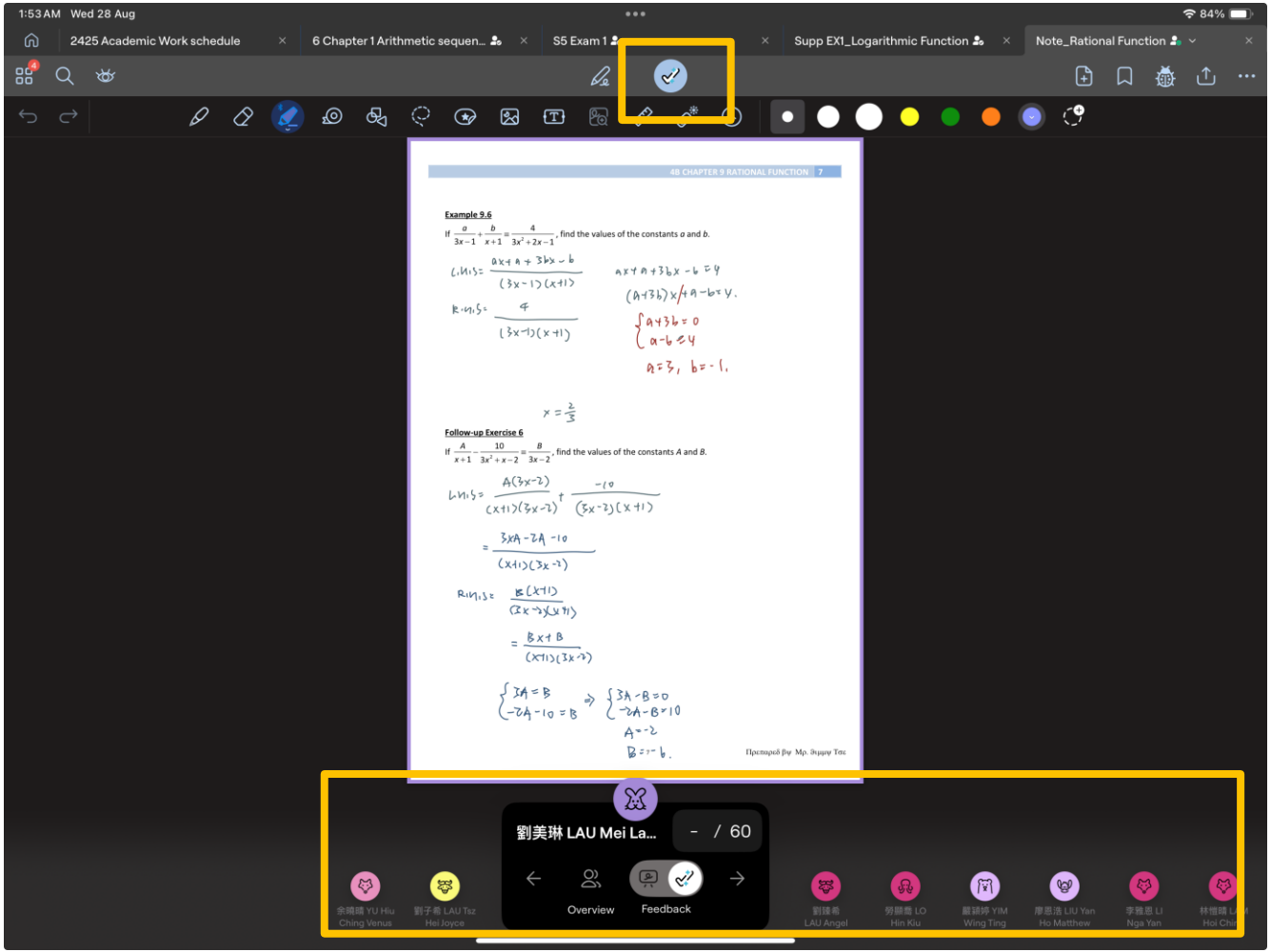


Feature 1: Easily share materials with students using the Class Folder

Create Class Folders to instantly share all materials with students



Feature 2: View all students' answers to any question at a glance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84%
2425 Academic Work schedule
6 Chapter 1 Arithmetic sequen...
S5 Exam 1
Supp EX1_Logarithmic Function
Note_Rational Function
4B CHAPTER 9 RATIONAL FUNCTION 7
Example 9.6
If $\frac{a}{3x-1}+\frac{b}{x+1}=\frac{4}{3x^2+2x-1}$, find the values of the constants a and b.
Follow-up Exercise 6
If $\frac{A}{x+1}-\frac{10}{3x^2+x-2}=\frac{B}{3x-2}$, find the values of the constants A and B.
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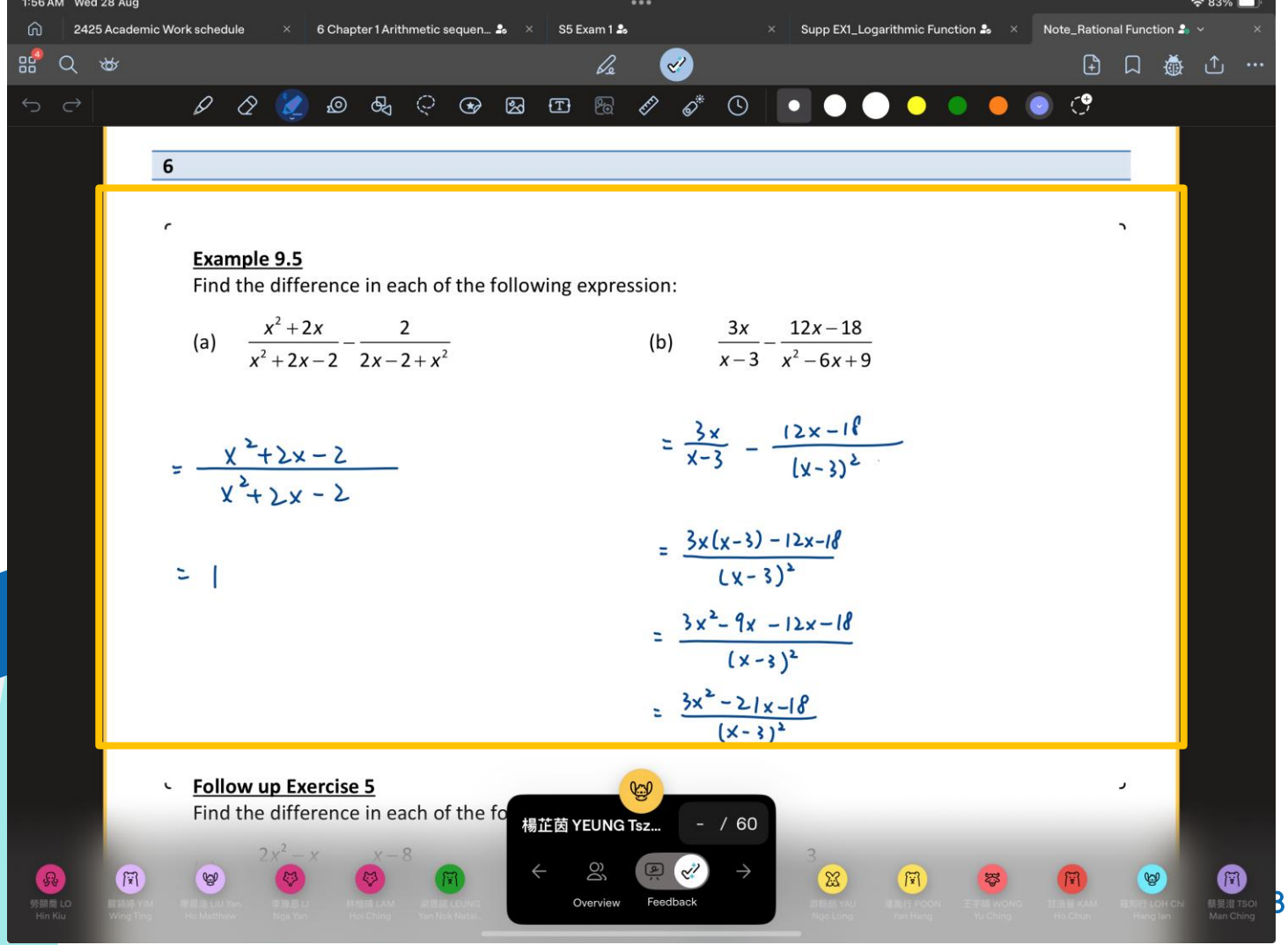
Overview
Feedback

Feature 3: Easily present and provide feedback on students' work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2425 Academic Work schedule
6 Chapter 1 Arithmetic sequen...
S5 Exam 1
Supp EX1_Logarithmic Function
Note_Rational Function
6
Example 9.5
Find the difference in each of the following expression:
(a) $\frac{x^2+2x}{x^2+2x-2}-\frac{2}{2x-2+x^2}$
(b) $\frac{3x}{x-3}-\frac{12x-18}{x^2-6x+9}$
$=\frac{x^2+2x-2}{x^2+2x-2}$
$=1$
$=\frac{3x}{x-3}-\frac{12x-18}{(x-3)^2}$
$=\frac{3x(x-3)-12x-18}{(x-3)^2}$
$=\frac{3x^2-9x-12x-18}{(x-3)^2}$
$=\frac{3x^2-21x-18}{(x-3)^2}$
Follow up Exercise 5
Find the difference in each of the fo
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Overview
Feedback

After the utilisation of Digital Notes

Self-Learning - Pre-Study Video

9.1 Highest Common Factor (H.C.F.) – Part B

Consider the multiples of 4 and 10.

Factor of 4: 1, 2, 4
Factor of 10: 1, 2, 5, 10

= G.C.D.
(greatest common divisor)

It is because 1 and 2 are the common factors of 4 and 10 and 2 is the largest. We call 2 is the H.C.F of 4 and 10.

e.g. Find the H.C.F. of 20 and 90.

$20 = 2 \times 2 \times 5 = 2^2 \times 5$

$90 = 3^2 \times 2 \times 5 = 2 \times 3^2 \times 5$

$2 \times 5 = 10$

Example 9.9

Find the H.C.F. of

(a) a^2b and a^3b^4

$a^2 b$

$a^3 b^4$

$a^2 b$

(b) $3x^2 - 14x + 8$ and $3x^2 + 10x - 8$.

$3x^2 - 14x + 8 = (3x-2)(x-4)$

$3x^2 + 10x - 8 = (3x-2)(x+4)$

$(3x-2)$

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Overview Feedback

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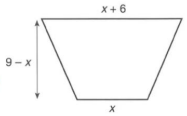

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Chapter 3 Quadratic Equations in One Unknown (Part 1)

- Fully understand students' learning progress before the start of the lessons.

Collaborative Learning

9.2 Addition and Subtraction of Rational Functions

Example 9.3

Without using calculator, simplify the following expressions.

(a) $\frac{1}{18}+\frac{1}{24}$

$18 = 2\cdot 3^2$

$24 = 2^3\cdot 3$

LCM $= 2^3\cdot 3^2$

$= 72$

$= \frac{7}{72}$

(b) $\frac{1}{9a^3b}+\frac{1}{6a^2b^3}$

Any faster way??

$= \frac{6a^2b^3+9a^3b}{54a^5b^4}$

$= \frac{3a^2b(2ab^2+3ab)}{54a^5b^4}$

$= \frac{2ab^2+3ab}{18a^3b^3}$ Simplify it.

$= \frac{2b^2}{18a^3b^3}+\frac{3a}{18a^3b^3}$

$= \frac{2b^2+3a}{18a^3b^3}$

Example 9.4

Find the sum in each of the following expressions:

(a) $\frac{1}{x-3}+\frac{2}{x+4}$

$= \frac{x+4+2x-6}{}$

(b) $\frac{x+2}{(x+2)(x-3)}+\frac{2}{x+2}$

$+2+2x-6$

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Overview Feedback

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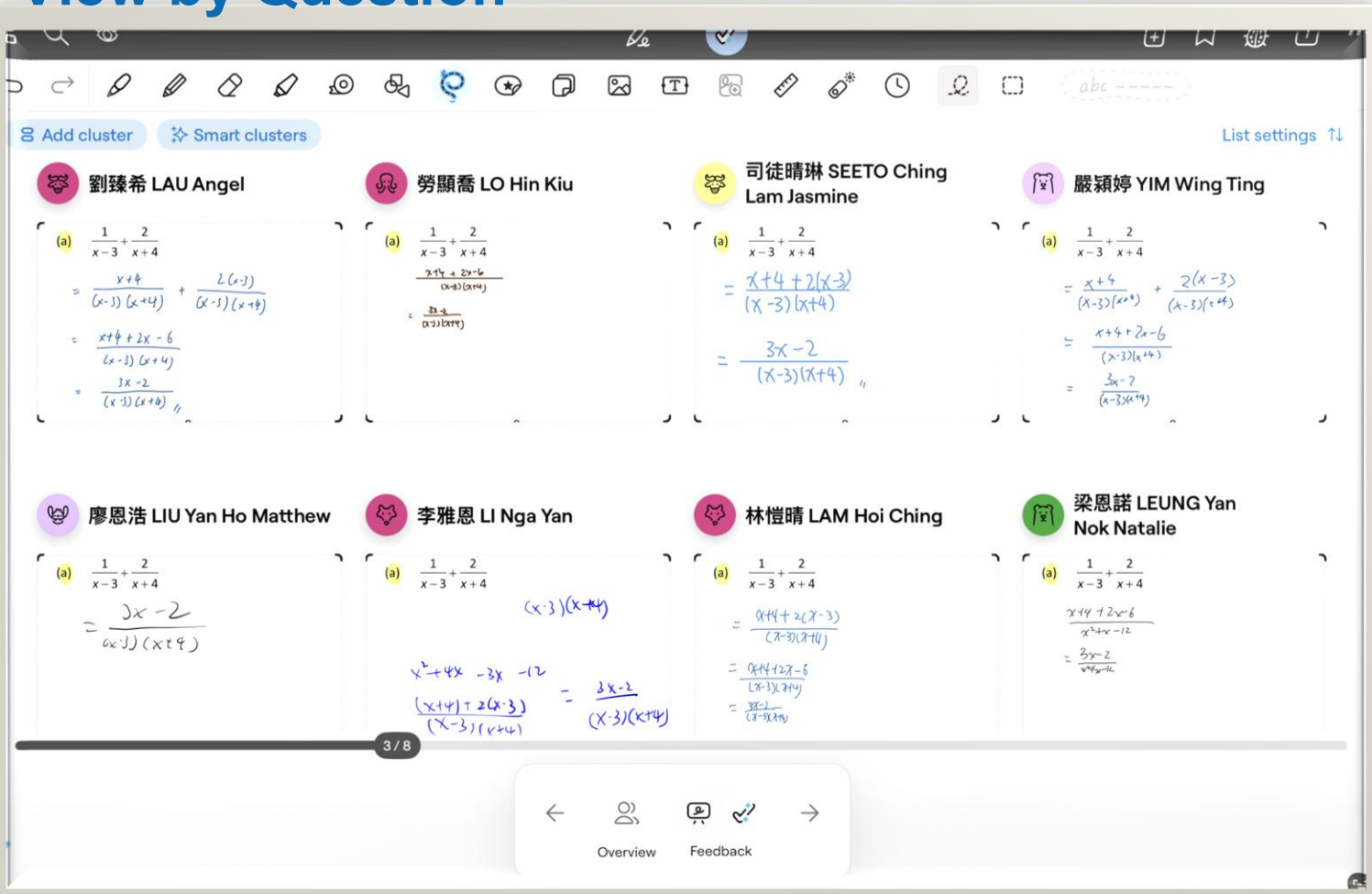
View by Question



Using the Highlighter Tool for tailored tasks to support SRL and cater for learning diversity

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Supplementary Exercise 2
6 Ch. 1 Arithmetic Sequence

x5

x3

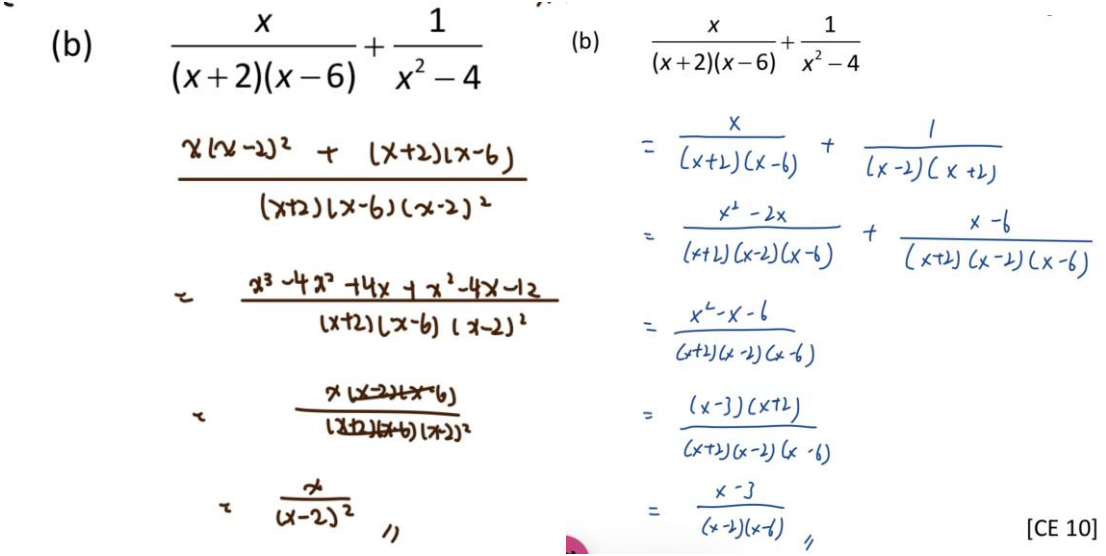
1. Each of the following arithmetic sequences has 12 terms. Find the sum of all the terms of each sequence.
- **(a)** 4, ..., 29
- **(b)** −6, ..., 82
- **(c)** −13, ..., −34

2. In each of the following, the first term a and the common difference d of an arithmetic sequence are given. Find the sum of the first 8 terms of each sequence.
- **(a)** $a = 7$, $d = 15$
- **(b)** $a = -21$, $d = 4$
- **(c)** $a = -36$, $d = -\frac{2}{7}$

3. It is given that the general term of an arithmetic sequence is $118 - 9n$.
- **(a)** Find the 26th term of the sequence.
- **(b)** Find the sum of the first 26 terms of the sequence.

4. Consider the arithmetic sequence −17, −1, 15, ...
- **(a)** Find the 33rd term of the sequence.
- **(b)** Find the sum of the first 33 terms of the sequence.

Mutual Learning & Guided Learning



(b) $\dfrac{x}{(x+2)(x-6)}+\dfrac{1}{x^2-4}$

$\dfrac{x(x-2)^2+(x+2)(x-6)}{(x+2)(x-6)(x-2)^2}$

$=\dfrac{x^3-4x^2+4x+x^2-4x-12}{(x+2)(x-6)(x-2)^2}$

$=\dfrac{x(x-2)(x-6)}{(x+2)(x-6)(x-2)^2}$

$=\dfrac{x}{(x-2)^2}$ //

(b) $\dfrac{x}{(x+2)(x-6)}+\dfrac{1}{x^2-4}$

$=\dfrac{x}{(x+2)(x-6)}+\dfrac{1}{(x-2)(x+2)}$

$=\dfrac{x^2-2x}{(x+2)(x-2)(x-6)}+\dfrac{x-6}{(x+2)(x-2)(x-6)}$

$=\dfrac{x^2-x-6}{(x+2)(x-2)(x-6)}$

$=\dfrac{(x-3)(x+2)}{(x+2)(x-2)(x-6)}$

$=\dfrac{x-3}{(x-2)(x-6)}$ //

[CE 10]

(b) $\dfrac{x}{(x+2)(x-6)}+\dfrac{1}{x^2-4}$

$=\dfrac{x(x-2)+x-6}{(x+2)(x-6)(x-2)}$

$=\dfrac{x-3}{(x-6)(x-2)}$ //

- I can easily pick different groups of students to present their ideas.
- Students learn to analyze the questions in different ways through the presentations of other groups.

Utilising Goodnotes Classroom to Support Self-Regulated Learning

Self-Learning (Pre-Study)

Teachers gain insights into students' foundational understanding of the material.

Collaborative Learning

Teachers can closely monitor group interactions and track students' progress effectively.

Mutual Learning (Cross-Group)

Students enhance their understanding by learning from and teaching each other across groups.

Guided Learning

Teachers can efficiently guide discussions and summarize outcomes using student-generated work.

Thank you!

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