CHAPTER 2: LINEAR INEQUALITIES

CHAPTER ANALYSIS

- Solving linear inequalities in one variable and representing the solution on the number line.
- Simultaneous Linear Inequalities

RECAP OF LINEAR INEQUALITIES FROM SECONDARY 2

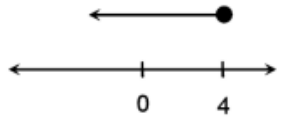
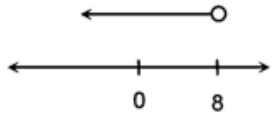
Things to take note of:

- The values on your number line increases from left to right (smaller number on the left, bigger number on the right)
- Try to have equal intervals on your number line (try not to skip numbers such as going from 1 to 4 without labelling 2 and 3 in between)

Linear Inequalities Symbols

Symbol	Name
$>$	Greater than
$<$	Less than
$\geq$	Greater than or equal to
$\leq$	Less than or equal to

Linear Inequalities on a Number Line

Symbol	Definition	Diagram Representation
●	Number under the dot is included in the solution	
○	Number under the circle is **NOT** included in the solution	

SOLVING OF SIMULTANEOUS LINEAR INEQUALITIES

Things to take note of:

- Separate the equation into two different lines of inequalities when you are unable to isolate the unknown in the middle

Example:

$$2 < 2x < 20$$

- When you end up with two inequalities like the example question, draw a number to represent your solutions to find the optimal solution.

Solve the inequality

$$-\frac{17-8x}{4} < 2 - \frac{4-3x}{2} < 5\frac{1}{3}$$

Hence, state the smallest prime number that satisfies the inequality

[S4 AHS P1/2018 PRELIM Qn 4]

Solution

$$-\frac{17-8x}{4} < 2 - \frac{4-3x}{2} < 5\frac{1}{3}$$

$$-\frac{17-8x}{4} < 2 - \frac{4-3x}{2}$$
$$-\frac{17-8x}{4} < \frac{8-2(4-3x)}{4}$$
$$-\frac{17-8x}{4} < \frac{8-8+6x}{4}$$
$$-(17-8x) < 6x$$
$$2x < 17$$
$$x < 8\frac{1}{2}$$

$$2 - \frac{4-3x}{2} < 5\frac{1}{3}$$
$$\frac{4-(4-3x)}{2} < \frac{16}{3}$$
$$9x < 32$$
$$x < 3\frac{5}{9}$$

$$\therefore x < 3\frac{5}{9}$$

The smallest prime number is 2

MORE EXAMPLES

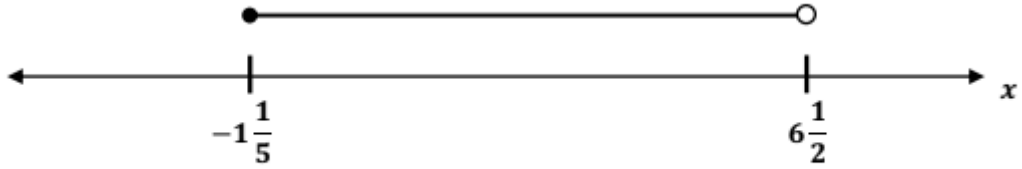
Worked Example A7.5.2

Solve the linear inequality and represent their solution on the number line provided

$$\frac{4}{3}x - 14 \leq 3(x-4) < 7.5$$

Hence, write down the smallest integer which satisfies the inequality above

[S4 SMSS P2/2019 MYE Qn 20]



The smallest integer which satisfy the inequality is -1

-Represent your solutions from the two inequalities that you have found on a number to obtain the optimal solution

Solution

$$\frac{4}{3}x - 14 \leq 3(x-4) < 7.5$$

$$\frac{4}{3}x - 14 \leq 3(x-4)$$
$$4x - 42 \leq 9x - 36$$
$$5x \geq -6$$
$$x \geq -1\frac{1}{5}$$

$$3(x-4) < 7.5$$
$$x - 4 < 2.5$$
$$x < 6\frac{1}{2}$$

$$-1\frac{1}{5} \leq x < 6\frac{1}{2}$$

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SOME STATS

07

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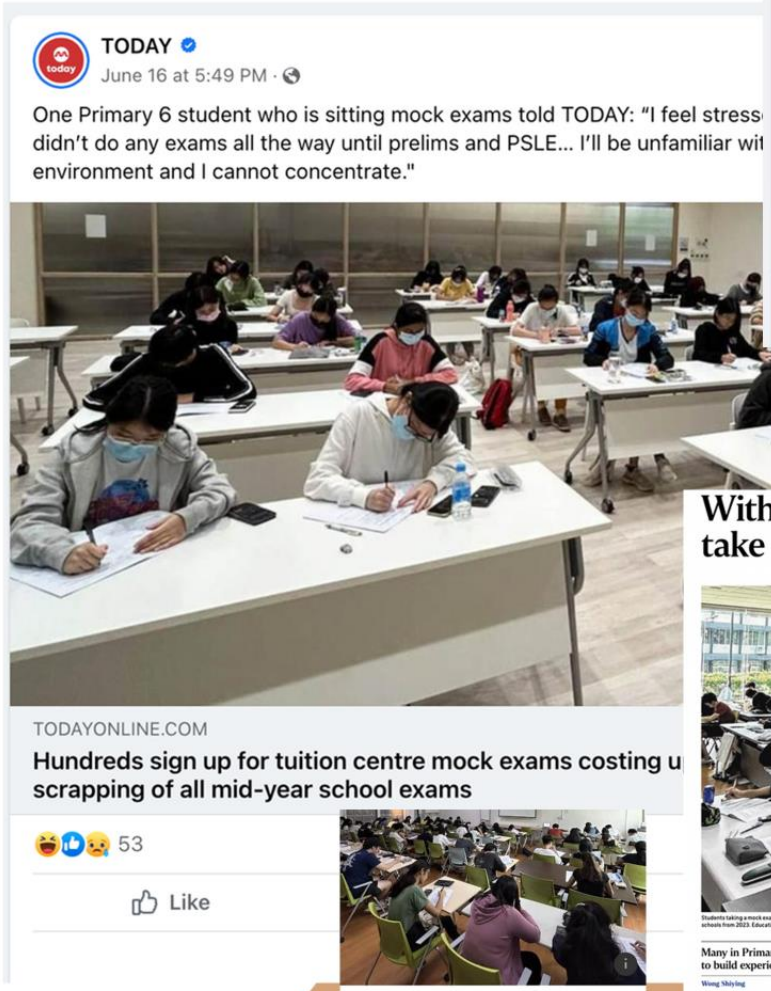
Our **student's needs comes first**!



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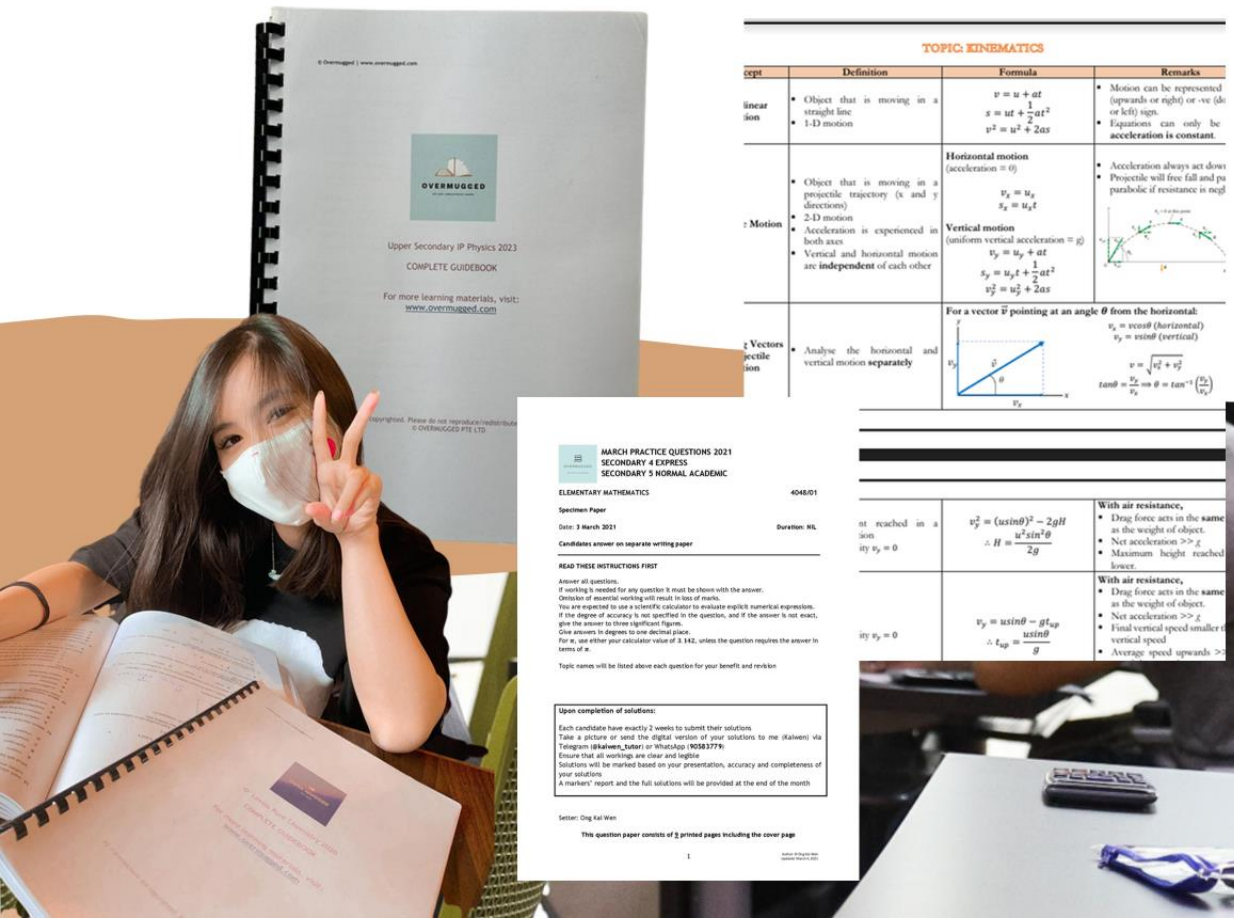

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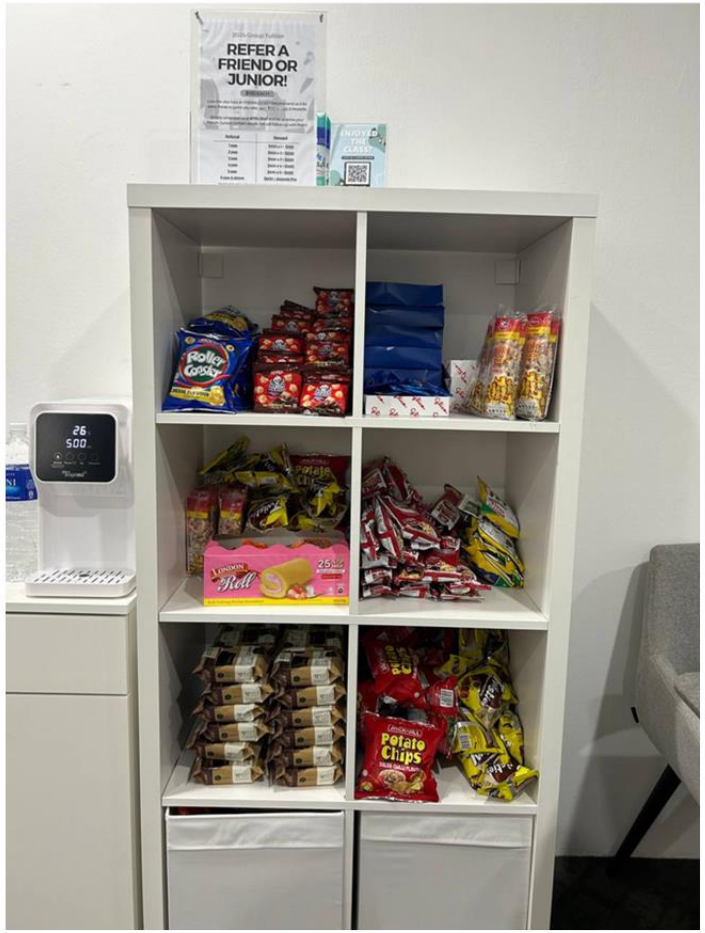

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Topical Recaps

Key highlight: Christmas Party

TERM 2: FEB – APR

Topical Mastery

Key highlight: March Holiday Cohesion Program

TERM 3: MAY – JUL

Prelim/EOY Preparation

Key highlight: Mock Prelim/EOY

TERM 4: AUG – OCT

'O' Levels / 'A' Levels Preparation

Key highlight: Mock Exams, Science Practical Assessment

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Class Schedule:

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