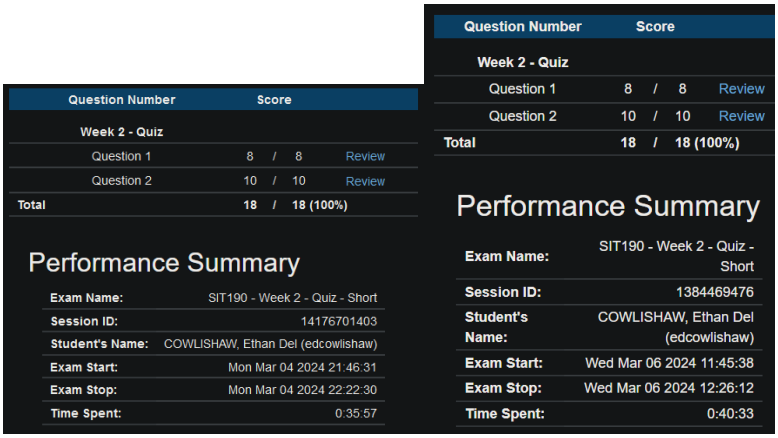


Question Number	Score	
Week 2 - Quiz		
Question 1	8 / 8	Review
Question 2	10 / 10	Review
Total	18 / 18 (100%)	

Performance Summary

Exam Name:	SIT190 - Week 2 - Quiz - Short
Session ID:	14176701403
Student's Name:	COWLISHAW, Ethan Del (edcowlishaw)
Exam Start:	Mon Mar 04 2024 21:46:31
Exam Stop:	Mon Mar 04 2024 22:22:30
Time Spent:	0:35:57

Question Number	Score	
Week 2 - Quiz		
Question 1	8 / 8	Review
Question 2	10 / 10	Review
Total	18 / 18 (100%)	

Performance Summary

Exam Name:	SIT190 - Week 2 - Quiz - Short
Session ID:	1384469476
Student's Name:	COWLISHAW, Ethan Del (edcowlishaw)
Exam Start:	Wed Mar 06 2024 11:45:38
Exam Stop:	Wed Mar 06 2024 12:26:12
Time Spent:	0:40:33

2a) I achieved full marks on both quizzes. I completely forgot how to do the $x = 5$ and $y = 4$ questions while in the second quiz attempt.

2b) I aim to consult with Jonathan so I can understand how to best answer them. I will also perform a brief review on these simple types of graphs.

2c) The question was to do with finding the gradient of $x = 5$ and $y = 4$. I performed my strategy answered in 2b to complete the second quiz successfully.

4) I did not perform as fast as I would have hoped in the second attempt. I spent an extra ~4 minutes on those questions I felt I should have understood. My strategy did work in a way though as I understood the question on a deeper level. I should focus on speed.

Task 2 - Equation of a Line

\1. Convert $3x - 5y = -10$ into $y = mx + c$
-> $3x - 5y = -10$
-> $-5y = -10 - 3x$
-> $y = \frac{-10-3x}{-5}$
-> $y = 2 - \frac{-3x}{5}$
-> $y = \frac{3}{5}x + 2$

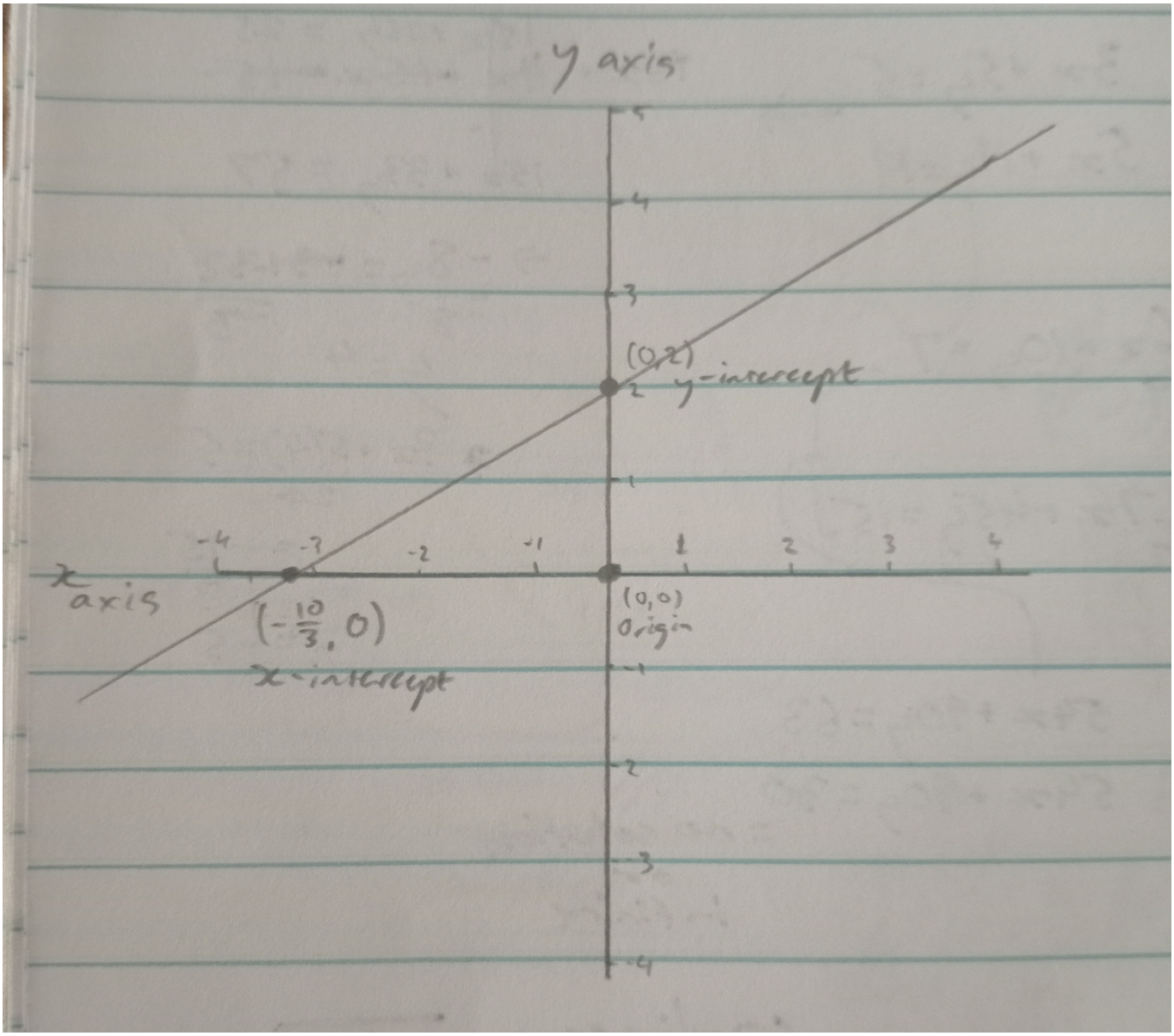
\2. Give the gradient of this line and explain how it was found.
The gradient is $\frac{3}{5}$, rise is 3 and run is 5 per x increase. I found it through the known format $y = \text{gradient} \times x + \text{y-intercept}$

\3. Give the y-intercept of this line and explain how it was found.
The y-intercept is $+2$, found through the known format of $y = \text{gradient} \times x + \text{y-intercept}$.

\4. Find the x-intercept, showing all working.
$y = \frac{3}{5}x + 2$
-> We set y to zero to find where x will intercept the x-axis
-> $0 = \frac{3}{5}x + 2$
-> $-2 = \frac{3}{5}x$

-> $-2(5) = 3x$
-> $\frac{-10}{3} = x$
-> $x = \frac{-10}{3}$

\5. Sketch the line, identifying the x-axis, y-axis, x-intercept, y-intercept, and the origin



Task 3 - Simultaneous equations

Q1

$$\begin{cases} (1): 3x - 7y = -2 \\ (2): \ 5x + 3y = 4 \end{cases}$$

Elimination method

Solving for y:
$3x - 7y = -2$
-> times 5 = $15x - 35y = -10$

$5x + 3y = 4$
-> times 3 = $15x + 9y = 12$

$15x - 35y = -10$
minus
$15x + 9y = 12$
-> $-44y = -22$
-> $y = \frac{-22}{-44}$
-> $y = \frac{1}{2}$

Solving for x:
$3x - 7\left(\frac{1}{2}\right) = -2$
-> $3x - 3.5 = -2$
-> $3x = -2 + 3.5 = 1.5$
-> $x = \frac{1.5}{3}$
-> $x = \frac{1}{2}$

Verification
$3(0.5) - 7(0.5) = 1.5 - 3.5 = -2 = -2$

Substitution method

$3x - 7y = -2$
$5x + 3y = 4$

Re-arranging for x
$3x - 7y = -2$
-> $3x = -2 + 7y$
-> $x = \frac{-2+7y}{3}$

Substituting into equation 2 to find y
$5x + 3y = 4$
-> $5\left(\frac{-2+7y}{3}\right) + 3y = 4$
-> $\frac{-10+35y}{3} + \frac{9y}{3} = 4$
-> $\frac{-10+44y}{3} = 4$
-> $-10 + 44y = 12$
-> $44y = 22$
-> $y = \frac{1}{2}$

Finding x
$5x + 3\left(\frac{1}{2}\right) = 4$
-> $5x + \frac{3}{2} = 4$
-> $5x = \frac{8}{2} - \frac{3}{2} = \frac{5}{2}$
-> $x = \frac{5}{2} \div \frac{10}{2}$
-> $x = \frac{5}{2} \times \frac{2}{10}$
-> $x = \frac{10}{20}$
-> $x = \frac{1}{2}$

Reflection

I found the elimination method magnitudes easier than the substitution method. I spend literal hours trying to find what I was doing wrong with it. It truly challenged me on my understanding of how to manipulate equations, taking it slow, and double-checking answers. Often I reached answers incongruent with the elimination method and CAS calculators like $y = \frac{23}{18} = 1.2778$. The result of all these wrong answers was a poor understanding of how fractions are added together. I learnt a few lessons, like now knowing to simplify often and to not 'double-up' on multiplications.

Q2

$$\begin{cases} 2x - 8y = -3 \\ 3x - 2y = -5 \end{cases}$$

Elimination method

$2x - 8y = -3$
$3x - 2y = -5$
-> times 4 to $12x - 8y = -20$

$2x - 8y = -3$
minus
$12x - 8y = -20$
-> $-10x = 17$
-> $x = \frac{17}{-10}$
-> $x = -\frac{17}{10}$

Finding y
$2(-\frac{17}{10}) - 8y = -3$
-> $-\frac{34}{10} - 8y = -3$
-> $-8y = \frac{-30}{10} + \frac{34}{10}$
-> $-8y = \frac{4}{10}$
-> $y = \frac{4}{10} \div \frac{-80}{10}$
-> $y = \frac{4}{10} \times \frac{10}{-80}$
-> $y = \frac{40}{-800}$
-> $y = -\frac{1}{20}$

Verification
$2\left(\frac{-17}{10}\right) - 8\left(\frac{-1}{20}\right) = -3$
-> $\frac{-34}{10} + \frac{2}{5} = \frac{4}{10}$
-> $-34 + 4 = -\frac{30}{10}$
-> $-3 = -3$

Substitution method

$2x - 8y = -3$
$3x - 2y = -5$

Isolating x

$2x - 8y = -3$

-> $2x = -3 + 8y$

-> $x = \frac{-3+8y}{2}$

-> $x = \frac{-3}{2} + 4y$

Finding y

$3x - 2y = -5$

-> $3\left(\frac{-3}{2} + 4y\right) - 2y = -5$

-> $-\frac{9}{2} + 12y - 2y = -5$

-> $10y = -\frac{10}{2} + \frac{9}{2}$

-> $10y = -\frac{1}{2}$

-> $y = -\frac{1}{20}$

Finding x

$2x - 8y = -3$

-> $2x - 8\left(-\frac{1}{20}\right) = -3$

-> $2x + \frac{8}{20} = -3$

-> $2x = -\frac{60}{20} - \frac{8}{20}$

-> $2x = -\frac{68}{20}$

-> $x = -\frac{34}{20}$

-> $x = \frac{-17}{10}$

Reflection

This time, I struggled with both methods, finding them equally as challenging. I keep making silly little mistakes like missing a negative sign that I am blindsided by later on in the equation. As I do have a CAS calculator, I can confirm if my answers are actually correct and find where I went wrong. I will be better at these as I go on so I'm not too worried.

Q3.

$$\begin{cases} 9x - 3y = 21 \\ 21x - 7y = 49 \end{cases}$$

I chose the elimination method

$9x - 3y = 21$

-> times 7 = $63x - 21y = 147$

$21x - 7y = 49$

-> times 3 = $63x - 21y = 147$

$63x - 21y = 147$

$63x - 21y = 147$

-> $0x + 0y = 0$

There are infinite solutions as the lines are co-linear, meaning on each point of one of the lines, the other point is also there, leading to infinite points of intersection.