Question 1

a)

(I) The coordinates points are A (-5, 4) and B (4, -2)

$$m = \frac{y2-y1}{x2-x1} = \frac{y}{x}$$

(II)

run is increase in ***x*** is 9

rise is increase in **y** is – 6

Step 1 subtract the coordinates then divide the **rise** by the **run**

$$m = \frac{4-(-5)}{-2-4} = \frac{9}{6}$$

the gradient is

$$\frac{rise}{run} = \frac{-6}{9} = \frac{-2}{3}$$

b)

(I) the slope is $\frac{2}{5}$ the points are **(-4, 4)**

The formula is

Y = mx + c

The slope is

Y = $\frac{2}{5}(-4) + c$

The Y is 4 from the point we have

4 = $\frac{2}{5}$ (-4) + c

4 = -1.6 + c

move 1.6 to the LHS and invert the operator

2

4 + 1.6 = c

Add the numbers to get c

5.6 = c ✓ ✓

but where is the final equation?

$y = \frac{2}{5}x + \frac{28}{5}$

or $y = 0.4x + 5.6$ ×

Check the equation

4 = $\frac{2}{5}(-4) + 5.6$

4 = - 1.6 + 5.6

4 = 4

(ii) the formula is **y = mx + c** and the points are (-3, 4)

4 = $\frac{2}{5}$ (- 3) + c

you already know c

4 = - 1.2 + c

Substituting $x = -3$ into the equation gives

$y = 0.4(-3) + 5.6$

$= -1.2 + 5.6$

$= 4.4$

Since $4.4 \neq 4$, the point $(-3, 4)$ is not on the line.

Reference
Unit 6, page 80, Example 2, page 81, Activity 2.

move 1.2 to the LHS and invert the operator

4 + 1.2 = c

c = 5.6

Add the numbers to get c

5.2 = c X X

Check the equation

$4 = \frac{2}{5}(-3) + 5.2$

4 = -1.2 + 5.2

4 = 4

So, the point (-3,4) lies on the line.

(iii) I didn't understand the question

does this help ? The x intercept is the value of x when the line crosses the x axis which is when y = 0

(iii) The x-intercept is the solution of the equation $\frac{2}{5}x + \frac{28}{5} = 0$. So

$$\frac{2}{5}x = -\frac{28}{5}$$

$$2x = -28$$

$$x = -14.$$

The x-intercept is -14.

Reference
Unit 6, page 116, Example 10, Activity 17
Handbook, page 43.

Question 2

(a)

(I) There would be an abnormal distance between the points on the graph and it would be difficult or even impossible to draw a line between the points.

(ii) If variables **x** and **y** are negatively correlated, it means that the variables move in different directions. When **x** is increased then **y** will eventually decrease and if **x** is decreased **y** is increased.

(iii) Coefficient of r = 0.9 means a strong correlation and positive association between two variables

(b) but in context

The variable x represents the time of submission (number of minutes before the cut-off deadline).
The variable y represents the time taken to upload the file in seconds.

(I)

(1) the **(x)** represents the explanatory variable

(2) the **(y)** represents the dependable variable

(ii) a strong negative a downward sloping relationship between **x** and **y**

(iii) y = - 029 × 21 + 21.32 = 15.23 ≈ 15 seconds (to the whole second)

yes but conclusion needed

(iv) the time taken to upload a file closer to the deadline has increased by 15 seconds as stated in question (iii)

No, you cannot conclude that submission times closer to the deadline cause the time it takes to upload a file to increase.

Correlation does not imply causation. Good correlation does not prove a cause and effect relationship. There may be many other factors which affect time taken to upload the file (e.g. number of students trying to submit at the same time, internet speed, size of file, etc.).

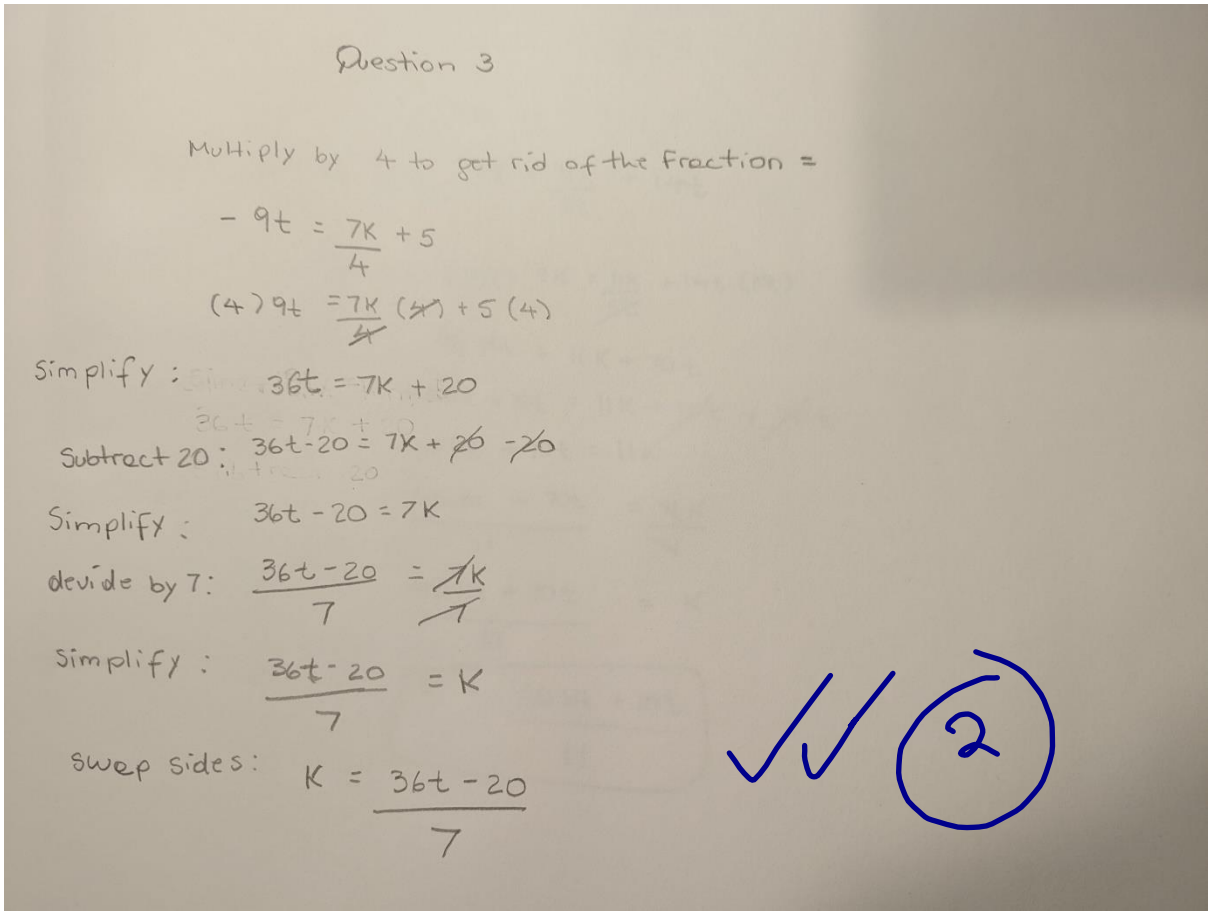
Question 3

(a)

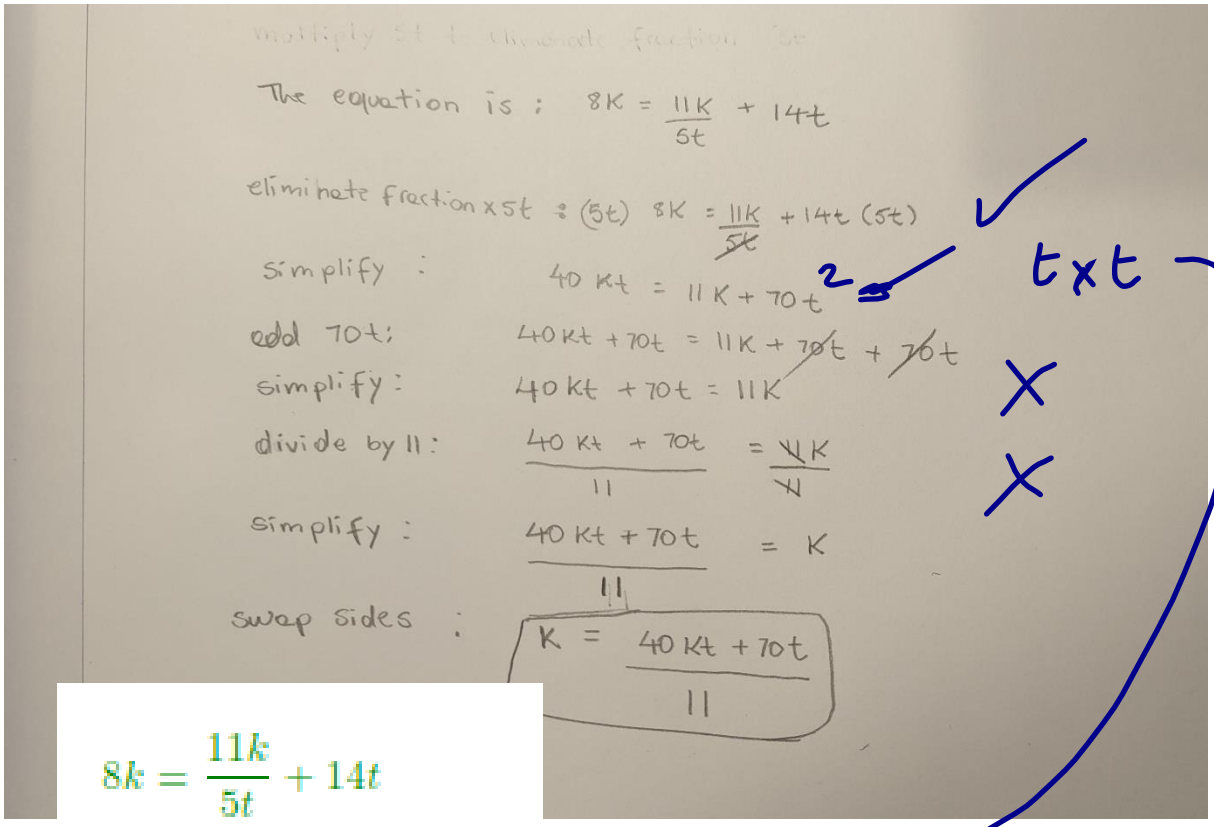
Substituting $x = 21$ into $y = -0.29x + 21.32$ gives
$y = -0.29 \times 21 + 21.32$,
so $y = 15.23$.
The model predicts that a file submitted 21 minutes before cut-off will take 15 seconds (to the nearest second) to upload.

Reference
Unit 6, page 136, Activity 28.

GMC


Question 3
Multiply by 4 to get rid of the fraction =
$-9t = \frac{7K}{4} + 5$
$(4)9t = \frac{7K}{4}(4) + 5(4)$
Simplify: $36t = 7K + 20$
Subtract 20: $36t - 20 = 7K + 20 - 20$
Simplify: $36t - 20 = 7K$
devide by 7: $\frac{36t-20}{7} = \frac{7K}{7}$
Simplify: $\frac{36t-20}{7} = K$
swap sides: $K = \frac{36t-20}{7}$
√√ (2)

(b)



$$8k = \frac{11k}{5t} + 14t$$

$$5t(8k) = 5t(\frac{11k}{5t} + 14t)$$

$$40kt = 11k + 70t^2$$

$$40kt - 11k = 70t^2$$

$$k(40t - 11) = 70t^2$$

$$k = \frac{70t^2}{40t - 11}$$

Question 4

I didn’t do question 4 I still not understanding the concepts

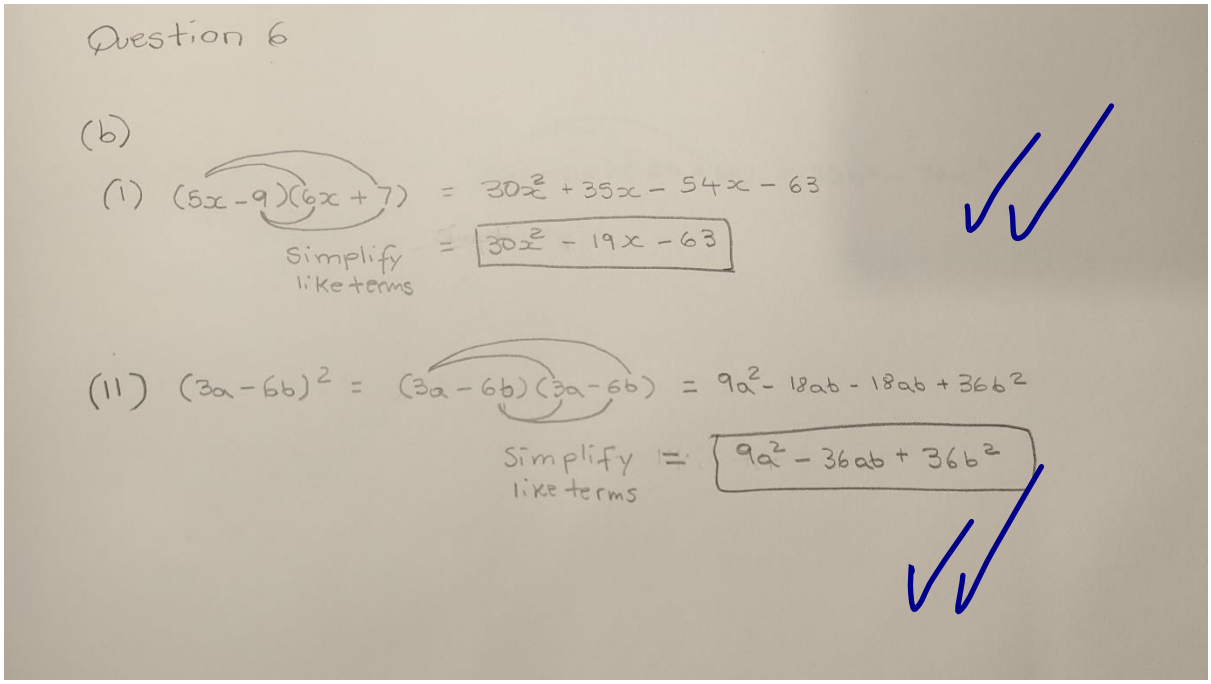
Question 5

I couldn’t make question 5 I still trying to understand these concepts

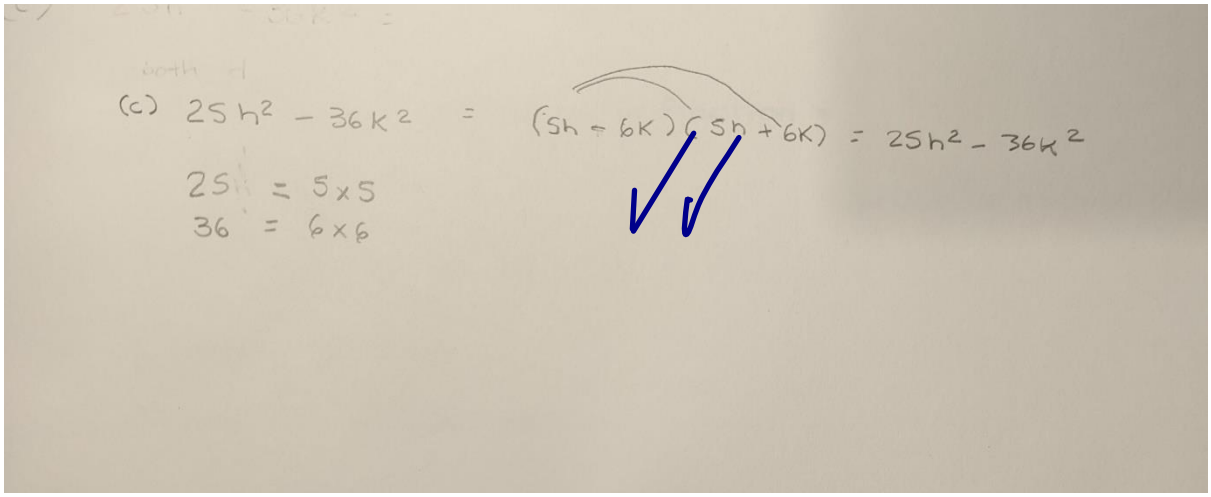
Question 6

(a) I haven’t done question a I don’t understand most of it.

(b) I haven’t done question b

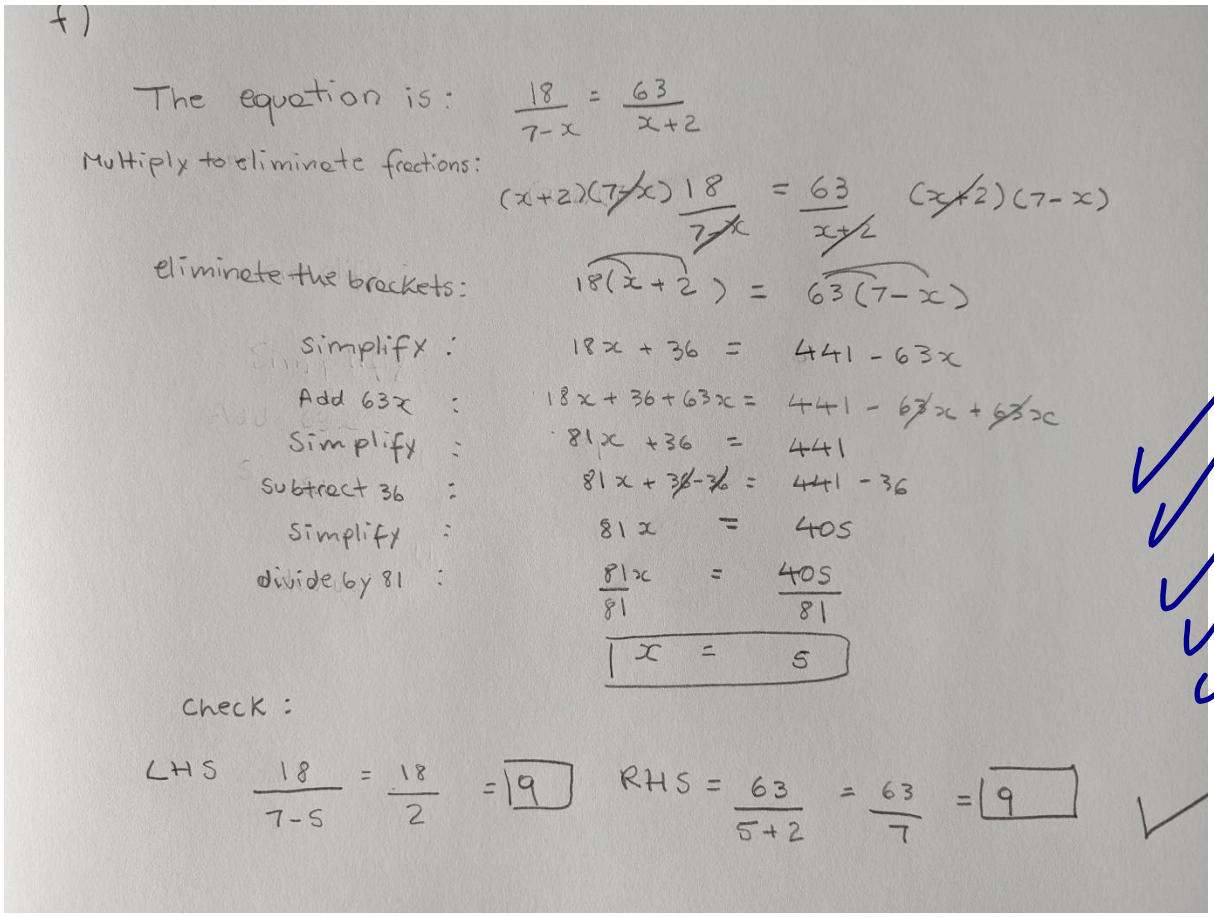

Question 6
(b)
(I) (5x - 9)(6x + 7) = 30x² + 35x - 54x - 63
Simplify like terms
= 30x² - 19x - 63
(II) (3a - 6b)² = (3a - 6b)(3a - 6b) = 9a² - 18ab - 18ab + 36b²
Simplify like terms
= 9a² - 36ab + 36b²

(c)


(c) 25h² - 36k² = (5h - 6k)(5h + 6k) = 25h² - 36k²
25 = 5 x 5
36 = 6 x 6

(e) I haven't done question e

(f)



Dear Sue thank you very much for your generous TMA extension, but I won't be able to complete

I still have issues but that's my fault I was neglecting math a doing other things.

On this TMA I fail to complete it.

Joao: What you attempted was done well so please don't give up . Make a plan to do a bit extra each week and you can catch up. I am here to help .

You have good algebra skills as seen in Q6 f) with an excellent check of the solution well done but I think you are sometimes having a hard time interpreting what the question is asking you to do and getting started. I am happy to talk through questions in general with you so you can understand what is being asked if that would help. You have the maths skills now you have to figure out how to apply them to a question.

MU 123 21J TMA03 Mark Sheet	***NAME : Joao Marcos Calacia***		
Question 1;			
a) i) (-5,4 and (4,-2)	*unit 6 page 64 activity 1:*	1 marks	1
ii) -2/3	*unit 6 page 72example 3:*	2 marks	2
b) i) y= (2/5)x +(28/5)	*unit 6 page 101 example 14:*	3 marks	2
ii) not on line	*unit 6 , page 66 example 2:*	2 marks	0
iii) x= -14	*unit 6 , page 94 example 10:*	2 marks	0
	Total 10 marks		**5**
Question 2			
(a) not following pattern, negative correlation, strong positive	*unit 6, section 4 page 104 Activity 32 (b):*	6 marks	6
(b) i) x time of submission, y time taken to upload	*unit 6 , page 106 activity 24*	2 marks	0
ii) strong negative correlation	*unit 6 , page 109:*	2 marks	2
iii) y=15.23 15 secs to nearest sec with conclusion	*unit 6 , page 110 activity 28:*	3 marks	3
iv) correlation does not imply causation	*unit 6 , page 112-113:*	2 marks	0
	Total 15 Marks		**11**
Question 3			
(a) k=(36t-20)/7	*Unit 7 page 128 , 130 activity 6:*	2 marks	2
(b) $k=70t^2/(40t-11)$	*Unit 7 page 141 ,Strategy and example 13:*	3 marks	1
	Total 5 marks		**3**
Question 4			
(a) **310,430,275,435**		2 marks	0
(b) i) y= 15x+130 for option A,	*Unit 2, sect 3.3 and Unit 7 page 158 Activity 31*	1 mark	0
ii) y=20x+35 for option B		1 mark	0
(c) i) correct lines , correct x and suitable y scale	*unit 7, page 158 activity 6*	4 marks	0
ii) gradient is cost of entry per person and y intercept the fixed cost of the booking fee	*unit 6 , sections 2.3 and2.4*	2 marks	0
(d) (19,415) number attending for which both options cost the same	*unit 7, page 158 activity 132*	2 marks	0
(e) x= 19, y= 415	*unit 7, page 147activity 24:*	4 marks	0
(f) 18 or fewer option B 20 or more option A	*unit 7, page 158 activity 132*	2 marks	0
(g) Option B is now cheaper by £32		2 marks	0
	Total 20 marks		**0**
Question 5			
(a) i) 1200 cm^2(to 2 sf) (hemisphere only) or 1800 cm^2(to 2 sf) (hemisphere and base)	*Unit 8 page 61 table 4*	2 marks	0
ii) 5700 cm^3 (to 2 sf)	*Unit 8 page 61 table 4*	2 marks	0
iii) 42 cm (to 2 sf)	*Unit 8 page 45 example 12*	2 marks	0
iv) 12 cm (to 2 sf)	*Unit 8 page 61 table 4*	4 marks	0
(b) part a student is correct, part b student is incorrect	*Unit 8 Activity 21 page 34,*	4 marks	0
(c) i) 86	*Unit 8 page 11 ,13: corresponding angle*	1 mark	0
ii) 47	*Unit 8 page 11-12: alternating angle*	1 mark	0
iii) 47	*Unit 8 page 14: angles on a straight line*	2 marks	0
iv) proof of isoceles	*Unit 8 page 17*	2 marks	0
	Total 20 marks		**0**
Question 6			
(a) i) a= 3 , d=5, L= 58 n= 12, check	*unit 9 page 78 activity 6*	3 marks	0
ii) 366	*unit 9 page 78 activity 6*	2 marks	0
(b) i) $30x^2-19x-63$	*unit 9 page 83 example 2 Activity 10*	2 marks	2
ii) $9a^2-36ab+36b^2$	*unit 9 page 83 example 2 Activity 10*	2 marks	2
(c) (5h-6k)(5h+6k)	*unit 9 page 95 Activity 20*	2 marks	2
(d) i) (x-9)(x+7)	*unit 9 page 96 example 7 Activity 21:*	4 marks	0
ii) x= 9 or x = -7			
(e) i) y=27	*unit 9 page 96 activity 21f*	2 marks	0
ii) y=0 or y=27		2 marks	0
iii) factorising allows keeping track of both solutions		1 marks	0
(f) x=5 including check	*unit 9, page 110, example 15 activity 32*	5 marks	5
	Total 25 marks		**11**
Question 7			
Good mathematical communication	*maximum of 5 marks for GMC*	5 marks	3
	Total 5 marks		**3**
	TMA TOTAL		**33**