2. *Linear*

1	(0,3), (3,0) $\frac{3-0}{0-3}=-1$ $\frac{y-0}{x-3}=-1 \qquad y=-x+3$ $y<-x+3$ $x\geq 1$ $y\geq 0$	B_1 B_1 B_1	
2.	(a) $x \geq -4$ (b) $y = -x$ $y + x \leq 0$ (c) Grad = $\frac{0 - {}^{-}9}{8 - {}^{-}9}$ $= ¾$ $y = mx + c$ $0 = ¾ (8) + c$ $c = -6$ $y = ¾ x – 6$ $y – ¾ x > -6$	B1 B1 M1 M1	
		04	
3.	$2x + 3 \geq 5x – 3$ $-3x \geq -6$ $x \leq 2$ $5x – 3 > -8$ $5x > -5$ $x > -1$ $-1 < x \leq 2$ Integral values 0,. 1, 2	B1 B1 B1	
		03	
4.	a) $4x – 9 < 6 + x$ $x < 5$ $8 – 3x < x + 4$	M1	

	$1 < x$ b) $1 < x < 5$	 M1 A1	
5.	$-2x + 1 < x - 5$ $-3x < -6$ $x > 2$ $x - 5 < 5 - x$ $2x < 10$ $x < 5$ $\therefore 2 < x < 5$	M_1 $\frac{A_1}{2}$	
7	-3x + 2 < x + 6 x > 1 x + 6 ≤ 17 − 2x x ≤ 3⅔ 2, 3	 B_1 B_1 $\frac{B_1}{3}$	
8.	$\frac{3a+2}{4} \le \frac{2a+3}{5} \le \frac{4a+15}{6}$ $\frac{3a+2}{4} \le \frac{2a+3}{5}$ $5(3a+2) \le 4(2a+3)$ 15a + 10 ≤ 8a + 12 7a ≤ 2 a ≤ 0.2857 $\frac{2a+3}{5} \le \frac{4a+15}{6}$ 6(2a + 3) ≤ 5(4a + 15) -8a/-8 ≤ 57/-8 a ≤ -7.125; -7.125 ≤ a ≤ 0.28 Integral values -7, -6, -5, -4, -3, -2, -1	 1 M1 B1 B1	
		03	

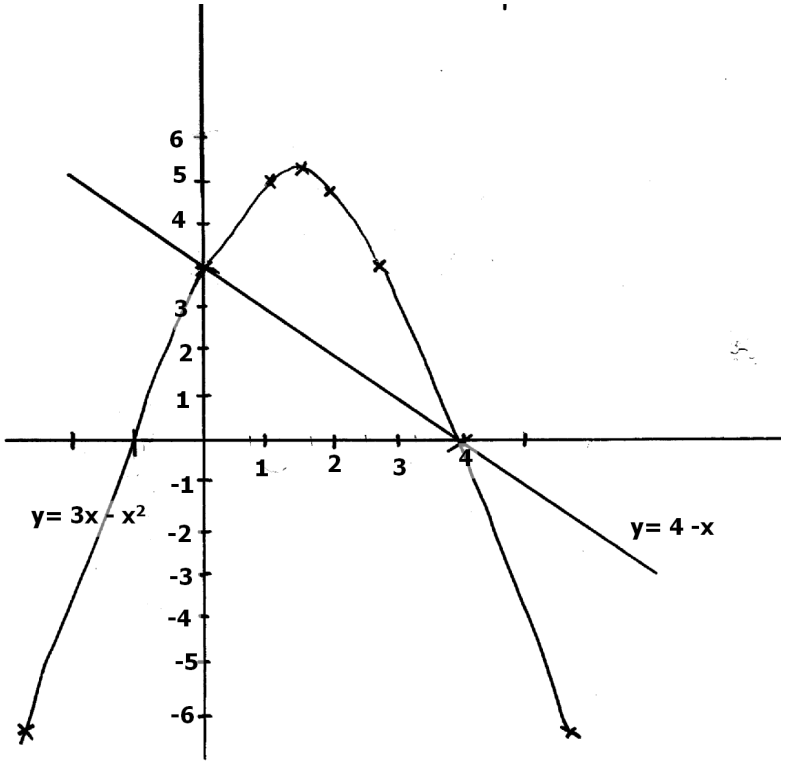
9. ½ x – 2 ≤ 3 – 2 ; 3x -2 < + ½ x
O ≤ $^7/_2$x $^5/_2$x < 4

$O \leq x$ - B1 $x < {}^{8}/_{5}$ B1

$x = 0, 1$ A1

3

10.	$y \leq 2, x > -3$ (3,-3) & (-3,1) $M = \frac{1+3}{-3-3} = \frac{4}{-6} = -\frac{2}{3}$ $y = -\frac{2}{3}x + c$ $-3 = -\frac{2}{3} \times 3 + c$ $-3 = -2+c$ $c = -1$ $y = {}^{1}/_{3}x - 2$, inequality $y < {}^{1}/_{3}x - 2$ Equn $y = -\frac{2}{3}x - 1$ (3,-3) & (4,2) $M = \frac{2--3}{4-3} = \frac{5}{1} = 5$ Equn $y > -\frac{2}{3}x - 1$ $Y = 5x + c$ $-3 = 5(3) + c$ $-3 - 15 = c$ $C = -18$ $Y = 5x - 18$ inequality $y \geq 5x - 18$	B1 B1 B1	Both B0 if any one is wrong For ✓ Ineq
		03	
11.	$-4x + 2y \leq 4$ $y \geq 0$ $x + y \leq 4$	**B1** **B1** **B1**	
		03	
12.	$3y + 2x \angle 6$ $4y - 3x \geq -12$ $y + 3x \geq -3$	**B1** **B1** **B1**	
		03	
13.	<table><tr><td>X</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>1.5</td></tr><tr><td>Y</td><td>-6</td><td>0</td><td>4</td><td>6</td><td>6</td><td>4</td><td>0</td><td>-6</td><td>6.255</td></tr></table>	**B2** **S1** **P1** **C1** **L1**	For all values ✔



B1

B1

B1

B1

b) turning point 1.5, 6.25

c) i) Line y = 0 x =
-1 or x = 4

x = -1 or x = 4

ii) $4 + 3x - x^2 = y$

$4x - x^2 = 0$

$4 - x = y$

x	0	4
y	4	0

x = 0 or x = 4

			10	

14	$\frac{2x}{3}+\frac{3x}{4}\le 9.5+5.5$ $\frac{8x+9x}{12}\le 15$ $17x\ge 180$ $x\le \frac{180}{17}$ $-\frac{x}{3}-\frac{3x}{4}<18-9.5$ $\frac{-4x-9x}{12}<8.5$ $-\frac{13x}{12}<\frac{17}{2}$ $-13x<102$ $x>-\frac{102}{13}$ $-\frac{102}{13}<x\le\frac{180}{17}$ $-7\frac{11}{13}<x\le 10\frac{10}{17}$	M1 M1 A1	
		3marks	

15. *The diagram below shows the graphs of*
$Y = \frac{3}{10}x - \frac{3}{2}$ *, 5x + 6y = 30 and x = 2*

By shading the unwanted region, determine and label the region R that satisfies the three inequalities;

$Y \ge \frac{3}{10}x - \frac{3}{2}$, *5x + 6y ≥ 30 and x ≥ 2* *(2 mks)*

L_1 $y = \frac{3}{10}x - \frac{3}{2}$ *at* *(0, 0)*
$0 \ge 2$ ***

Picking P(0,0)
$0 \ge -\frac{3}{2}$

L_2 *5x + 6y = 30*
At (0, 0) 5x + 6y ≥ 30
*0≥ 30 **

16. *7s + 3t = 2950 ……..(i) x 5*
3s + 5t = 2750 ……..(ii) x 3

$35s + 15t = 14750$
$9s + 15t = 8250$
$26s = 6500$
$s = 250$
$t = \frac{2750 - 3(250)}{5} = 400$
$2t + 2s = 2(400) + 2(250)$
$= shs.\ 1,300$

17. Let the cost of a biro be b
Pencil be p
$2b + 5p = 120 \times 3$
$3b + 2p = 114 \times 2$
$6b + 15p = 360$
$6b + 4p = 228$
$11p = 132$
$P = 121$
$2b + 60 = 120$
$2b = 60$
$b = 30$
$\therefore$ The cost of 1 biro is 30/=
The cost of 1 pencil is 12/=

18. Let son's present age be n yrs
Father's age is 2n yrs
Ten years ago: son's age $\Rightarrow n - 10$
Father's age $\Rightarrow 2n - 10$
Son's present age = 30yrs
Father's present age = 2x 30 = 60yrs

19. $2x + 21 > 15 - 2x$
$4x > 0.6$
$x > -1\frac{1}{2}$
$\Rightarrow -1\frac{1}{2} < x \leq 3$
Values are -1, 0, 1, 2, 3.

$15 - 2x \geq x + 6$
$-3x \geq -9$
$x \leq 3$

20. $y = -2x + 4$
gradient of h line is $\frac{1}{2}$
Equation $\frac{y + 4}{x + 1} = \frac{1}{2}$
$2y + 8 = x + 1$
$2y - x + 7 = 0$

21. $2s + 3t = 1750$
$3s + 2t = 1500$
$2t = 1500 - 600$
$t = 450$

$4s + 6t = 3500$
$9s + 6t = 4500$

$5s = 1000$
$s = 200$
Shirt = sh 200

Trouser = sh 450

22. *Let r = 3.818181…*
100r = 381.818181
99r = 378 = 42
99 11
= $3^{9}/_{11}$

23. *(a) Let cost of pencils be x and biro pens to be y*
4x + 6y = 66
2x + 5y = 51

4x + 6y = 66
4x + 10y = 102
4y = 96
y = 24
Correct substitution
∴x = 3
Pencils = shs.9
Biro pens = 3

(b) 9p + 3b = 228...(i)
b –y = 4
b = 4 + r .....(ii)
substituting for b in .....(i)
p^2 + 5p – 288 = 0

$$p = \frac{-5 \pm \sqrt{25 - 4 \times 1 \times -228}}{2 \times 1}$$

P = 13 (to the nearest whole no.)
b= 4+ 13 = 17

24. *3x – 2 (x + 2) = 21*
X = 25
Large No = 25 + 2 = 27
∴ product = 25 x 27 = 695

25. *x -20 + 3x = 180°C*
4x = 200
x = 50°

Attempt to get x by using +e = 180°
$e = \frac{(2n-4)90}{n}$
number of sides

26. *5x + 4y = 6160*
4(3x + y = 2800
-7x = - 5040
x = 720
y = 640
4(720) + 2(640) = 4160

27. *2x + 3y = 390*
5x + 2y = 810
15x + 6y = 2430
4x + 6y = 780

11x = 1650
x = 150
A pair of trouser =sh150
A shirt = sh30