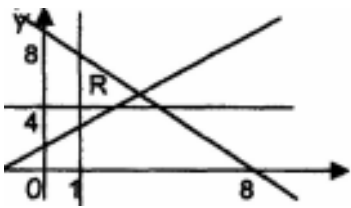
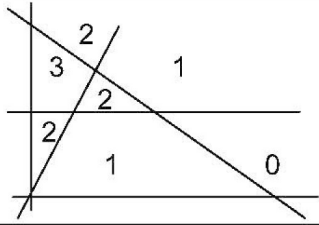


# Linear Programming 1 Answers

1)

20	(a) $m = -1$ $c = 8$ (b) 	1,1	2*
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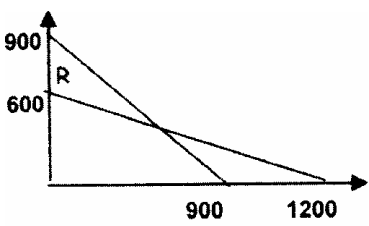
2)

12		Mark <b>unshaded</b> region  <b>SC1</b> correct region shaded and no label <b>SC2</b> correct region shaded and labelled
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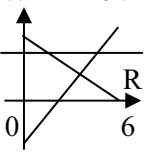
3)

$y > 0$ o.e. $x < 2$ o.e. $y > \frac{1}{2}x$ o.e. $y < 2x + 4$ o.e.	<b>B1</b> <b>B1</b> <b>B1</b>  <b>B2</b>	<b>For all four, condone strict inequalities and only penalise first incorrect sign, which may be = or an inequality sign</b>  If B0, B1 for $2x$ or for $4$ if other co-efficient is not zero $y < \frac{1}{2}x + 4$ gets zero
		<b>[9]</b>

4)

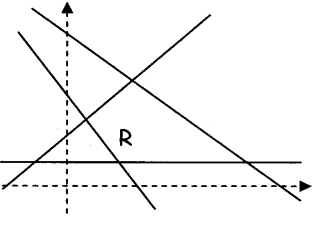
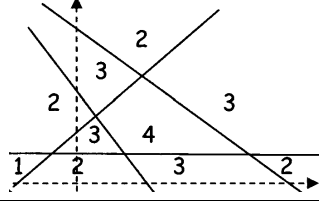
<b>(a)</b> $600x + 1200y \geq 720000$ <b>(b)</b> $x + y \leq 900$ <b>(c)</b>  <b>(d)</b> 300	1 1 4  1ft	seen   <b>W1</b> drawing $x + y = 900$ <b>W1</b> drawing $x + 2y = 1200$ <b>W1</b> R is below $x + y = 900$ <b>W1</b> R is above $x + 2y = 1200$ The lines must be in the right place Accurate to one small square  Correct or ft from their labelled R, accuracy $\pm 10$ on the lowest y value in R
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5)

draw $2x - y = 4$ draw $x + y = 6$ draw $y = 4$ correct region identified by R	2 1 1 1	<b>W1</b> Line through (2,0) or (0,-4) 
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# Linear Programming 1 Answers

6)

	4	Mark the position of the letter R (or the worst unshaded region if R is missing) as follows 
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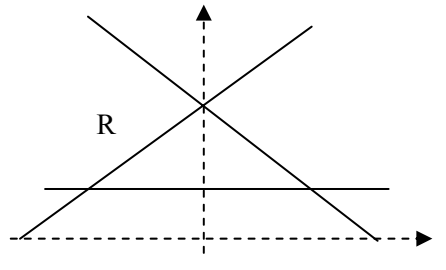
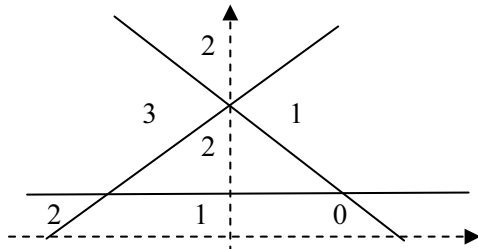
7)

$x \geq 0$	1	<b>L1</b> $x \geq 0$
$y \geq \frac{1}{2}x$ oe	2	<b>L1</b> $y \geq \frac{1}{2}x$
$x + y \leq 4$ oe	2	<b>L1</b> $x + y \leq 4$ where R is any one of $= < > \leq \geq$ <b>B2</b> all inequalities correct or <b>B1</b> 2 correct

8)

(a)	$20x + 100y \leq 1200$	1	
(b)(i)	$x + y \geq 40$	1	
(ii)	$y \geq 2$	1	
(c)	$x + y = 40$ cao	L1	Each line ruled and long enough to enclose required region.
	$y = 2$ cao	L1	If <b>L0</b> , <b>SC1</b> if freehand but otherwise accurate and enclose region
	Required region only region left not shaded or otherwise clearly indicated cao	R2	<b>SC1</b> if one boundary error – see diagrams
(d)	5 cao	1	
(e)	50 cao, 2 cao	2	<b>B1 B1</b>
	270 ft	1ft	<b>ft</b> $5 \times \text{their } x + 10 \times \text{their } y$

9)

	3	Give the mark for R shown in region below 
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