UNIT 16 *Algebra: Linear Equations* Revision Test 16.1 (Standard)

1. If $a = 6$, $b = 4$ and $c = 7$, solve:

   (a) $a + b$ (b) $c - b$ (c) $2a + b$

   (d) $5c$ (e) $2c - b$ (f) $a + b + c$

   (6 marks)

2. Simplify the expressions:

   (a) $a + a + a$ (b) $a + b + a + b + a$

   (c) $3a + 5a$ (d) $3a + 2b + 2a + 2b$

   (6 marks)

3. What is the output of each of these function machines:

   (a) 4 → [× 5] →

   (b) 3 → [+ 4] → [× 3] →

   (c) 8 → [− 5] → [× 6] →

   (d) 9 → [− 1] → [× 4] →

   (7 marks)

4. What is the input of each of these function machines:

   (a) ? → [+ 6] → 9

   (b) ? → [× 3] → 21

   (c) ? → [− 9] → 7

   (3 marks)

5. Solve these equations:

   (a) $x + 6 = 15$ (b) $x - 7 = 3$

   (c) $3x = 15$ (d) $4x = 24$

   (e) $2x + 1 = 7$ (f) $3x + 5 = 17$

   (8 marks)

UNIT 16 *Algebra: Linear Equations* Revision Test 16.2 (Academic)

1. If $a = 8$, $b = 11$ and $c = -2$, solve:

   (a) $a + b$ (b) $b + c$ (c) $2a + b$

   (d) $3a + b$ (e) $b - c$ (f) $b - 2c$

   (6 marks)

2. Simplify the expressions:

   (a) $3a + 4a$ (b) $5b - 2b$

   (c) $3a + 4b - 2a + 8b$ (d) $8b + 3x + 4x - 11b$

   (6 marks)

3. What is the output of each of these function machines:

   (a) 3 → [+ 7] → [× 8] →

   (b) 6 → [÷ 3] → [× 9] →

   (2 marks)

4. What is the input of each of these function machines:

   (a) ? → [× 4] → 36

   (b) ? → [+ 2] → [÷ 6] → 3

   (c) ? → [÷ 4] → [− 8] → 3

   (d) ? → [× 7] → [+ 4] → 39

   (7 marks)

5. Solve these equations:

   (a) $x + 6 = 3$ (b) $2x + 1 = -5$

   (c) $4x - 5 = 19$ (d) $7x - 3 = 25$

   (e) $4x + 1 = x + 7$

   (9 marks)

UNIT 16 *Algebra: Linear Equations* Revision Test 16.3 (Express)

1. If $a = 7$, $b = -5$ and $c = -3$, solve:

   (a) $4a + c$ (b) $b + c$

   (c) $a(b - c)$ (d) $2(a - 4c)$

   (6 marks)

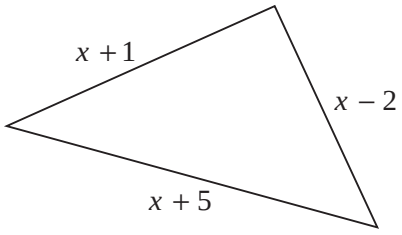
2. Simplify the expressions:

   (a) $3x + 7y - 2x + 4y$ (b) $3a + 5b - 8b + 2a$

   (c) $5a + 7b - 4a - 9b + 2x$

   (6 marks)

3. Write down a formula for the perimeter of this triangle:



   (3 marks)

4. What is the input of each of these function machines:

   (a) ? → [− 6] → [× 2] → 28

   (b) ? → [+ 7] → [÷ 4] → − 3

   (c) ? → [× 6] → [− 9] → 6

   (6 marks)

5. Solve these equations:

   (a) $2x + 1 = 9$ (b) $4x - 7 = -11$

   (c) $8 - 6x = -4$ (d) $x + 4 = 3x + 10$

   (e) $5x + 7 = 16x - 70$

   (9 marks)

Revision Test 16.1 (Standard) Answers

1.	(a)	$6 + 4 = 10$	B1	
	(b)	$7 - 4 = 3$	B1	
	(c)	$12 + 4 = 16$	B1	
	(d)	35	B1	
	(e)	$14 - 4 = 10$		B1
	(f)	$6 + 4 + 7 = 17$	B1	*(6 marks)*
2.	(a)	$3a$	B1	
	(b)	$3a + 2b$	B1	
	(c)	$8a$	B2	
	(d)	$5a + 4b$	B2	*(6 marks)*
3.	(a)	20	B1	
	(b)	21	B2	
	(c)	18	B2	
	(d)	32	B2	*(7 marks)*
4.	(a)	3	B1	
	(b)	7	B1	
	(c)	16	B1	*(3 marks)*
5.	(a)	$x = 9$	B1	
	(b)	$x = 10$	B1	
	(c)	$x = 5$	B1	
	(d)	$x = 6$	B1	
	(e)	$2x = 6$	M1	
		$x = 3$	A1	
	(f)	$3x = 12$	M1	
		$x = 4$	A1	*(8 marks)*

(TOTAL MARKS 30)

Revision Test 16.2 (Academic) Answers

1.	(a)	$8 + 11 = 19$	B1	
	(b)	$11 - 2 = 9$	B1	
	(c)	$16 + 11 = 27$	B1	
	(d)	$24 + 11 = 35$	B1	
	(e)	$11 + 2 = 13$	B1	
	(f)	$11 + 4 = 15$	B1	*(6 marks)*
2.	(a)	$7a$	B1	
	(b)	$3b$	B1	
	(c)	$a + 12b$	B2	
	(d)	$7x - 3b$	B2	*(6 marks)*
3.	(a)	80	B1	
	(b)	18	B1	*(2 marks)*
4.	(a)	9	B1	
	(b)	16	B2	
	(c)	44	B2	
	(d)	5	B2	*(7 marks)*
5.	(a)	$x = -3$	B1	
	(b)	$2x = -6$	M1	
		$x = -3$	A1	
	(c)	$4x = 24$	M1	
		$x = 6$	A1	
	(d)	$7x = 28$	M1	
		$x = 4$	A1	
	(e)	$3x = 6$	M1	
		$x = 2$	A1	*(9 marks)*

(TOTAL MARKS 30)

Revision Test 16.3 (Express) Answers

1.	(a)	$28 - 3 = 25$	B1	
	(b)	$-5 + (-3) = -8$	B1	
	(c)	$7(-5 + 3) = -14$	M1 A1	
	(d)	$2(7 + 12) = 38$	M1 A1	*(6 marks)*
2.	(a)	$x + 11y$	B2	
	(b)	$5a - 3b$	B2	
	(c)	$a - 2b + 2x$	B2	*(6 marks)*
3.	(a)	$p = x + 1 + x - 2 + x + 5$	B1	
		$= 3x + 4$	M1 A1	*(3 marks)*
4.	(a)	20	B2	
	(b)	– 19	B2	
	(c)	$2\frac{1}{2}$	B2	*(6 marks)*
5.	(a)	$2x = 8$		
		$x = 4$	B1	
	(b)	$4x = -4$	M1	
		$x = -1$	A1	
	(c)	$6x = 12$	M1	
		$x = 2$	A1	
	(d)	$-6 = 2x$	M1	
		$x = -3$	A1	
	(e)	$77 = 11x$	M1	
		$x = 7$	A1	*(9 marks)*

(TOTAL MARKS 30)