1 (a) Simplify $a \times b \times 4$

$a \times b \times 4 = 4ab$ (1)

$4ab$

(1)

(b) Simplify $4x + 3 - x + 5$

$4x + 3 - x + 5$

Group unknowns together and integers together

$= 4x + x + 5 + 8$

$= 3x + 8$ (1)

$3x + 8$

(2)

(Total for Question 1 is 3 marks)

2 (d) Simplify $4e^2f \times 5ef^3$

$4e^2f \times 5ef^3$

$= (4 \times 5) \cdot (e^{2+1}) \cdot (f^{1+3})$ (1)

separate products into individual terms

$= 20e^3f^4$ (1)

$20e^3f^4$

(2)

(Total for Question 2 is 7 marks)

3 Simplify $e + e + e + e$

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

$4e$

(Total for Question 3 is 1 mark)

4 (b) Expand and simplify $4(x + 3) + 7(4 - 2x)$

$4(x+3) + 7(4-2x)$ distribute to all terms in the bracket (1)

$4x + 12 + 28 - 14x$

collect like terms

$40 - 10x$ (1)

$40 - 10x$

(2)

(Total for Question 4 is 2 mark)

5 Simplify $2m \times 3$

$2m \times 3$

$= 6m$ (1)

$6m$

(Total for Question 5 is 1 mark)

6 Simplify $3 \times w \times 5 \times t$

$= 3 \times w \times 5 \times t$

$= (3 \times 5) \times w \times t$ – arrange the terms to their group. (number with number) (unknown with unknown)

$= 15tw$ (1)

15tw

(Total for Question 6 is 1 mark)

7 (a) Simplify $4c + 7d + 3c - d$

Group c and d terms together

$4c + 3c + 7d - d$

$\therefore 7c + 6d$ (1)

$7c + 6d$ (1)

.....

(2)

(Total for Question 7 is 2 mark)

8 (a) Simplify $\frac{15a}{3}$

divide

✓ (1)

$5a$

(1)

(b) Simplify $19 + 5b + 4c - 7b + c$

collect 'like' terms

→ put the letters together

$19 + 5b - 7b + 4c + c$ ✓ (1)

$19 - 2b + 5c$

✓ (1)

$19 - 2b + 5c$

(2)

(Total for Question 8 is 3 mark)

9 Simplify $3 \times 4t$

$(3 \times 4)\, t$

$= 12\, t$ (1)

$12\, t$

(Total for Question 9 is 1 mark)

10 Simplify $m + m + m + m$

$m + m + m + m = 4m$

$4m$ (1)

(Total for Question 10 is 1 mark)

11 (a) Simplify $(m^2)^3$

$(a^b)^c = a^{bc}$

$(m^2)^3 = m^{2\times 3} = m^6$

m^6 (1)

(1)

(b) Simplify $x^5 \times x^8$

$a^b \times a^c = a^{b+c}$

$x^5 \times x^8 = x^{(5+8)}$

$= x^{13}$

x^{13} (1)

(1)

(Total for Question 11 is 2 mark)

12 (a) Simplify $2c \times 3d$

integers can be multiplied together

$2 \times c \times 3 \times d = \overbrace{2 \times 3} \times c \times d$

$= 6 \times c \times d = 6cd$

$6cd$ (1)

(1)

(Total for Question 12 is 1 mark)

13 Simplify $7a + a - 5a$

$= 7a + a - 5a$

$= 8a - 5a$

$= 3a$

$3a$ (1)

(Total for Question 13 is 1 mark)