Factorising and Expanding Brackets Mark Scheme

1. (a) $(3x-1)^2$ 2

B1 for (3x – 1)(..x….) cao
B2 for $(3x-1)^2$ cao

(b) $\frac{2x+3}{3x-1}$ 3

$\frac{(3x-1)(2x+3)}{(3x-1)^2} = \frac{(2x+3)}{(3x-1)}$

B1 for correct factorisation of numerator
M1 for cancelling of common factors
A1 cao

[5]

2. (a) $x(x-3)$ 2

B2 for x(x – 3)
(B1 for x (…….))

(b) k^3. 1

B1 for k^3.

(c) (i) $7x-1$ 4

$4x + 20 + 3x - 21$

*M1 for **three** of 4 terms 4x + 20 + 3x – 21 (or better)*
A1 for 7x – 1

(ii) $x^2 + 5xy + 6y^2$

$x^2 + 3xy + 2xy + 6y^2$

*M1 for **three** of 4 terms $x^2 + 3yx + 2xy + 6y^2$*
A1 for $x^2 + 5xy\ 6y^2$

(d) $(p+q)(p+q+5)$ 1

B1 for (p + q)(p + q +5)

[8]

3. (a) k^3. 1

B1 for k^3.

(b) (i) $7x-1$ 4

$4x + 20 + 3x - 21$

*M1 for **three** of 4 terms 4x + 20 + 3x – 21 (or better)*
A1 for 7x – 1

(ii) $x^2 + 5xy + 6y^2$

$x^2 + 3xy + 2xy + 6y^2$

*M1 for **three** of 4 terms $x^2 + 3xy + 2xy + 6y^2$*
A1 for $x^2 + 5xy + 6y^2$

(c) $(p + q)(p + q + 5)$ 1

B1 for $(p + q)(p + q + 5)$

(d) m^8 1

B1 for m^8.

(e) $6r^3t^6$ 2

B2 for $6r^3t^6$
(B1 for .....r^3t^6 or for 6...t^6)

[9]

4. $\frac{2x+3}{x-1}$ 3

$\frac{(2x-3)(2x+3)}{(2x-3)(x-1)}$

B1 for $(2x – 3)(2x + 3)$
B1for $(2x – 3)(x – 1)$
B1 cao

[3]

5. (a) a^7 1

B1 accept a^{4+3}

(b) $15x^3y^4$ 2

B2 cao
(B1 for two of 15, x^3, y^4 in a product)

(c) $x – 1$ 1

B1 cao

(d) $(x + 3)(x – 3)$ 1

B1 cao

[5]

6. (a) a^7 1

B1 accept a^{4+3}

(b) $15x^3y^4$ 2

B2 cao
(B1 for two of 15, x^3, y^4 in a product)

(c) $x – 1$ 1

B1 cao

(d) $(a + 3b)(a – 3b)$ 2

B2 for $(a + 3b)(a – 3b)$
(B1 for $(a \pm 3b)(a \pm 3b)$

[6]

7. (a) $x^2 + 3x - 28$ 2

$x^2 - 4x + 7x - 28$

M1 for 4 terms correct ignoring signs (e.g. x^2, 4x, 7x, 28) or 3 terms with correct signs (e.g x^2, – 4x, 7x , – 28)
A1 cao

(b) $y^4 + 2y^2$ 2

B2 cao
B1 for y^4 or $2y^2$

(c) $p(p + 6)$ 2

B2 for p(p + 6) or p × (p + 6)
(B1 for p(ap + b) where a, b are numbers or p + 6 seen on it's own, or part of an expression)

(d) $3x(2x - 3y)$ 2

B2 (B1 for $3(2x^2 - 3xy)$ or x(6x – 9y) or 3x(…))

[8]

8. $\frac{x}{(2x+3)}$ 3

$\frac{x(2x-3)}{((2x-3)(2x+3))}$

B3 for $\frac{x}{(2x+3)}$
[B1 for x(2x + 3) seen
***AND** B1 for (2x – 3)(2x + 3) seen]*

[3]

9. (a) $(x - 5)(2x - 7)$ 2

$(x - 5)(2x - 10 + 3)$

M1 for (x – 5) (2(x – 5) + 3) or for identifying (x – 5) as a common factor or $2x^2 - 17x + 35$
A1 cao

(b) $\frac{3}{y-4}$ 1

B1 cao

[3]