1. (a) Simplify $4x + 7y + 2x - 3y$

……

(2)

(b) Simplify $2pq + pq$

……

(1)

(Total 3 marks)

2. Factorise $t^2 - 5t$

……

(Total 2 marks)

3. (a) Factorise $3t - 12$

……

(1)

(b) Expand and simplify $3(2x - 1) - 2(2x - 3)$

……

(2)
(Total 3 marks)

4. (a) Expand and simplify

$$3(2x - 1) - 2(2x - 3)$$

……

(2)

(b) Factorise

$$y^2 + y$$

……

(1)
(Total 3 marks)

5. Factorise $x^2 - 3x$

.....

(Total 2 marks)

6. (a) Expand $t(t - 2)$

.....

(1)

(b) Factorise $3y - 12$

.....

(1)
(Total 2 marks)

7. (a) Solve $4(2x + 1) = 2(3 - x)$

$x =$ .....

(3)

(b) Factorise fully

$$2p^2 - 4pq$$

.....

(2)
(Total 5 marks)

8. (a) Factorise $p^2 + 6p$

…….

(2)

(b) Expand and simplify $(x + 7)(x – 4)$

…….

(2)

(Total 4 marks)

9. (a) Expand and simplify $(x + 7)(x – 4)$

…….

(2)

(b) Expand $y(y^3 + 2y)$

…….

(2)

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

…….

(2)

(d) Factorise completely $6x^2 - 9xy$

…….

(2)
(Total 8 marks)

10. Factorise $x^2 - 3x$

.....

(Total 2 marks)

11. (a) Solve $\frac{y}{4} = 5$

$y =$ .....

(1)

(b) Factorise $x^2 + 4x$

.....

(1)

(c) Simplify

(i) $m^2 \times m^5$

.....

(ii) $t^7 \div t^3$

.....

(2)

(d) Expand and simplify $(x + 5)(x + 3)$

.....

(2)

(Total 6 marks)

12. (a) Simplify $a + a + a + a$

.....

(1)

(b) Simplify $3 \times b \times 4$

.....

(1)

(c) Simplify completely $4a + 5b - 2a + b$

.....

(2)

(d) Factorise $x^2 - 6x$

.....

(2)

(Total 6 marks)

13. (a) Simplify fully $4a + 5b - 2a + b$

.....

(2)

(b) Factorise $x^2 - 6x$

.....

(2)

(c) Expand $x(3 - 2x^2)$

.....

(2)

(d) Factorise completely $12xy + 4x^2$

.....

(2)

(Total 8 marks)

14. (a) Expand and simplify $(x + 3)(x - 4)$

.....

(2)

(b) Factorise $x^2 + 7x + 10$

.....

(2)

(c) $p = 3t + 4(q - t)$

Find the value of q when $p = 6$ and $t = 5$

$q =$ .....

(3)
(Total 7 marks)

15. (a) Factorise $x^2 - 5x$

.....

(2)

(b) Expand $3(5x - 2)$

.....

(1)
(Total 3 marks)

16. (a) Factorise $x^2 - 5x$

.....

(2)

(b) Factorise completely $3a^2 - 6a$

.....

(2)

(c) Make q the subject of the formula $P = 2q + 10$

$q =$ .....

(2)

(d) Expand and simplify $(y + 3)(y – 4)$

.....

(2)

(Total 8 marks)

17. (a) Simplify $4a + 3c – 2a + c$

.....

(1)

(b) $S = \frac{1}{2}at^2$

Find the value of S when $t = 3$ and $a = \frac{1}{4}$

$S =$ .....

(2)

(c) Factorise $x^2 - 5x$

.....

(2)

(d) Solve $7x - 19 = 3(x - 3)$

$x =$ .....

(3)

(Total 8 marks)

18. (a) Expand $x(3x - 5y)$

.....

(2)

(b) Factorise $x^2 - 36$

.....

(1)
(Total 3 marks)

19. (a) Simplify $4a + 3c - 2a + c$

.....

(1)

(b) $S = \frac{1}{2}at^2$

Find the value of S when $t = 3$ and $a = \frac{1}{4}$

S = ...

(2)

(c) Factorise $x^2 - 5x$

.....

(2)

(d) Expand and simplify $(x + 3)(x + 4)$

.....

(2)

(e) Factorise $y^2 + 8y + 15$

.....

(2)

(Total 9 marks)

20. (a) Simplify $5bc + 2bc - 4bc$

.....

(1)

(b) Simplify $4x + 3y - 2x + 2y$

.....

(2)

(c) Simplify $m \times m \times m$

.....

(1)

(d) Simplify $3n \times 2p$

.....

(1)

(e) Factorise $5m + 10$

.....

(1)

(Total 6 marks)

21. (a) Factorise $5m + 10$

.....

(1)

(b) Factorise $y^2 - 3y$

.....

(1)
(Total 2 marks)

22. (a) Factorise fully $4x^2 - 6xy$

.....

(2)

(b) Factorise $x^2 + 5x - 6$

.....

(2)
(Total 4 marks)

23. Factorise

$3m + 15$

……

(Total 1 mark)

24. (a) Factorise

$m^2 - m$

……

(1)

(b) Solve

$7(p - 2) = 3p + 4$

$p =$ ……

(3)

(Total 4 marks)

25. Factorise $x^2 + 6x$

……

(Total 2 marks)

26. Factorise $3y + y^2$

.....

(Total 2 marks)

27. Factorise $9x + 12$

……..
(Totak 1mark)

28. Factorise $x^2 - 10x$

……..……..
(Total 1 mark)

29. (a) Expand $y(y + 5)$

.....
(1)

(b) Factorise $10x - 6$

.....
(1)
(Total 2 marks)

30. Factorise $p^2 + 6p$

……
(Total 2 marks)

31. Factorise completely $6q + 12$

.....

(Total 2 marks)

32. (a) Expand $3(4x – 5)$

.....

(1)

(b) Factorise $5y + 40$

.....

(1)

(Total 2 marks)

33. Factorise $x^2 – 6x$

.....

(Total 1 mark)

34. (a) Factorise $7y + 14$

…….

(1)

(b) Solve $5(x - 2) = 40$

$x =$ ……

(3)

(Total 4 marks)

35. Factorise $x^2 - 5x$

$4x$	$x(x - 5)$	$5x^2$	$x(2 - 5)$	$x^2(x - 5)$
☐	☐	☐	☐	☐
A	**B**	**C**	**D**	**E**

(Total 1 mark)

36. Factorise $y^2 + 4y$

$5y$	$y(y + 4)$	$4y^3$	$y(y + 4y)$	$y + 4$
A	**B**	**C**	**D**	**E**

(Total 1 mark)

37. Factorise completely $6x^2 - 9xy$

$3x(2 - 3y)$	$3x(2x - 3y)$	$3(x^2 - 3xy)$	$x(6x - 9y)$	$2x - 3y$
A	**B**	**C**	**D**	**E**

(Total 1 mark)

38. Factorise $8d - 2$

$6d$	$2d(4d - 1)$	$2(4d - 2)$	$2(4d + 1)$	$2(4d - 1)$
A	**B**	**C**	**D**	**E**

(Total 1 mark)

39. Factorise completely $10x^2 + 6xy$

$2(5x^2+3xy)$	$2x(5+3y)$	$5x(2x+3y)$	$2x(5x+3y)$	$x(10x+6y)$
A	**B**	**C**	**D**	**E**

(Total 1 mark)

40. (a) Factorise $2a + 6$

.....

(1)

(b) Factorise completely $5x^2 + 10xy$

.....

(2)

(Total 3 marks)

41. (a) Factorise $5x + 10$

.....

(1)

(b) Expand and simplify $(x - 3)(x + 5)$

.....

(2)
(Total 3 marks)

42. Factorise $x^2 - 4x$

$x(x - 4x)$	$x(x - 4)$	$x(x^2 - 4x)$	$(x + 2)(x - 2)$	$2(x - 2)$
A	**B**	**C**	**D**	**E**

(Total 1 mark)

43. Factorise completely $6x^2 - 9xy$

$x(6x - 9y)$	$3(2x^2 - 3xy)$	$3x(2 - 3y)$	$3x(2x - 3y)$	$3x(2x - 9y)$
A	**B**	**C**	**D**	**E**

(Total 1 mark)

44. (a) Expand

$2(3c - 2)$

.....

(1)

(b) Factorise

$xy + 3x$

.....

(1)

(Total 2 marks)

45. (a) Simplify

$8e - 3f - e - 3f$

.....

(2)

(b) Expand

$2(3c - 2)$

.....

(1)

(c) Factorise

$xy + 3x$

.....

(1)

(Total 4 marks)

46. Factorise $x^2 + 3x$

$5x$	$3x^3$	$x(x + 3)$	$x(x + 3x)$	$x^2(x + 3)$
A	**B**	**C**	**D**	**E**

(Total 1 mark)

47. (a) Expand and simplify $4(2x + 5) + 2(3x – 2)$

.....

(2)

(b) Factorise $y^2 – 4y$

.....

(1)
(Total 3 marks)

1. (a) $6x + 4y$ 2

B1 for either 6x or 4y
B1 cao

(b) $3pq$ 1

B1 cao (not 3 × p × 2)

[3]

2. $t(t-5)$ 2

B2 cao
[B1 for t*(…)]*

[2]

3. (a) $3(t\text{-}4)$ 1

B1 cao

(b) $2x + 3$ 2

$6x - 3 - 4x + 6 = 2x + 3$
B1 for either $6x - 3$ *or* $-4x + 6$
B1 cao

[3]

4. (a) $2x + 3$ 2

$6x - 3 - 4x + 6 = 2x + 3$
B1 for either $6x - 3$ *or* $-4x + 6$
B1 cao

(b) $y(y + 1)$ 1

B1 cao

[3]

5. $x(x - 3)$ 2

B2 for $x(x - 3)$
(B1 for $x(x\ldots\ldots)$*)*
$\frac{25}{60}$ *wrongly cancelled gets B1 ISW*

[2]

6. (a) $t^2 - 2t$ 1

B1 oe

(b) $3(y - 4)$ 1

B1 Accept $3 \times (y - 4)$ *or* $3(y - 4)$

[2]

7. (a) 0.2 3

$8x + 4 = 6 - 2x$
$8x + 2x = 6 - 4$

M1 for at least one correct expansion
A1 ft for "+ 2x" and "– 4" oe
A1 0.2 oe

(b) $2p(p - 2q)$ 2

M1 for p or 2p as a common factor with (two terms) and at least one term that is algebraic eg in working
A1 cao
SC B1 p-2q or 2p-4q or (2p + 0)(p × 2q)

[5]

8. (a) $p(p + 6)$ 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)

(b) $x^2 + 3x - 28$ 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

[4]

9. (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 $3x(\ldots)$)

[8]

10. $x(x - 3)$ 2

B1 $(x - 3)$ or x (linear expression)
B1 cao

[2]

11. (a) 20 1

B1 cao

(b) $x(x + 4)$ 1

B1 cao

(c) (i) m^7 2

B1 cao

(ii) t^4

B1 cao

(d) $x^2 + 5x + 3x + 15 = x^2 + 8x + 15$ 2

M1 for 3 of 4 terms $x^2 + 5x + 3x + 15$, signs not needed
A1 for $x^2 + 8x + 15$

[6]

12. (a) $4a$ 1

B1 accept $4 \times a$, $a \times 4$, $a4$

(b) $12b$ 1

B1 accept $12 \times b$, $b \times 12$, $b12$

(c) $2a + 6b$ 2

B2 cao
(B1 for 2a or 6b seen)

(d) $x\,(x - 6)$ 2

B2 cao
(B1 for x (ax + b) where a, b are numbers not equal to 0 or x – 6 seen on its own, or as part of an expression)

[6]

13. (a) $4a - 2a + 5b + b = 2a + 6b$ 2

B2 cao
(B1 for 2a or 6b seen)

(b) $x(x - 6)$ 2

B2 cao
(B1 for x(ax + b) where a, b are numbers not equal to zero or x – 6 seen on its own, or part of an expression)

(c) $3x - 2x^3$ 2

B2 cao
(B1 for 3x or $2x^3$)

(d) $4x(3y + x)$ 2

B2 cao
(B1 for $2(6xy + 2x^2)$ or $4(3xy + x^2)$ or x(12y + 4x) or 2x(6y + 2x) or 4x( ))

[8]

14. (a) $x^2 - 4x + 3x - 12 = x^2 - x - 12$
$= x^2 - x - 12$ 2

M1 for exactly 4 terms correct ignoring signs (eg x^2, 4x, 3x, 12) or 3 correct terms out of 4 terms with correct signs (eg 3 out of 4 of x^2, –4x, +3x, –12)
A1 cao

(b) $(x + 2)(x + 5)$
$(x + 2)(x + 5)$ 2

B2 cao
(B1 for exactly one of (x + 2), (x + 5))

(c) $6 = 15 + 4q - 20$ $\quad 6 - 15 = 4(q - 5)$
$p - 3t = 4q - 4t$ $\quad 6 - 3 \times 5 = 4(q - 5)$

2 ¾ 3

M1 for correct substitution of p and t.
M1 for correct expansion of 4(q – t) oe (eg 4q – 20, 4q – 4t)
A1 11/4 or 2 ¾ or 2.75
or
M1 for correct substitution of p and t.
M1 for $\frac{p - 3t}{4} = q - t$ *oe*
A1 11/4 or 2 ¾ or 2.75

[7]

15. (a) $x(x - 5)$ 2

B2 for x(x – 5)
(B1 for x (linear expression in x))

(b) $15x - 6$ 1

B1

[3]

16. (a) $x(x - 5)$ 2

B2 for x(x – 5)
(B1 for (linear expression in x))

(b) $3a(a - 2)$ 2

B2 for 3a(a – 2)
(B1 for 3($a^2 - 2a$*) or* $a(3a - 6)$ *or* $3a$*(linear expression in* a*))*

(c) $2q = P - 10$ 2

$= 1/2\ (P - 10)$

M1 for correctly isolating 2q or – 2q or for correctly dividing both sides by 2 or for a correct step which may follow an incorrect first step
*A1 for ½ (*P *– 10) oe*

(d) $y^2 - y - 12$ 2

B2 for $y^2 - y - 12$
(B1 for 3 out of 4 terms in $y^2 + 3y - 4y - 12$*)*

[8]

17. (a) $2a + 4c$ 1

B1 cao Accept 2(a + 2c)

(b) $½ \times ¼ \times (3)^2 = ½ \times ¼ \times 9 = 1.125$ 2

M1 for substitution: $½ \times ¼ \times 3^2$ oe

A1 1.125, $1\frac{1}{8}, \frac{9}{8}$ oe

(c) $x(x - 5)$ 2

B2 Accept x(x + –5)
(B1 for x(linear expression in x) or x-5 seen)

(d) $7x – 19 = 3x – 9$
$7x – 3x = –9 + 19$
$4x = 10$
2.5 3

M1 for expansion of brackets: 3x – 9
M1 for rearrangement of their two terms eg 7x – 3x = –9 + 19 or an indication of how this should be done for both variable and number term.
A1 for 2.5 Accept $\frac{5}{2}, \frac{10}{4}$ oe

[8]

18. (a) $3x^2 – 5xy$ 2

B2 for $3x^2 – 5xy$
(B1 for $3x^2$ or 5xy seen)

(b) $(x – 6)(x + 6)$ 1

B1 for (x – 6)(x + 6) oe

[3]

19. (a) $2a + 4c$ 1

B1 2a+4c or 2(a +2c)

(b) $½ \times ¼ \times (3)^2 = ½ \times ¼ \times 9 = 1.125$
1.125 2

M1 for substitution: $½ \times ¼ \times 3^2$ oe
A1 1.125, $1\frac{1}{8}, \frac{9}{8}$, oe

(c) $x(x - 5)$ 2

B2 , accept x(x + –5)
(B1 for x(linear expression in x) or x-5 seen)

(d) $x^2 + 3x + 4x + 12$
$x^2 + 7x + 12$ 2

B2 for fully correct
(B1 for 3 out of 4 terms correct in working including signs, OR 4 terms correct, with incorrect signs).

(e) $(y + 3)(y + 5)$ 2

B2 for fully correct
(B1 for (y + a)(y + b) with one of ab = 15, a + b = 8)

[9]

20. (a) $3bc$ 1

B1 for 3bc (accept 3cb or bc3 or cb3 or 3 × b × c oe, but 7bc – 4bc gets 0)

(b) $2x + 5y$ 2

B2 for 2x+5y (accept x2 + y5 or 2 × x + 5 × y or x × 2 + y × 5)
[B1 for 2x or 5y seen; accept 2 × x, x2, 5 × y, y5, etc.]

(c) m^3 1

B1 cao

(d) $6np$ 1

B1 for 6np oe (accept 6pn, np6, pn6 but NOT 6 × p × n)

(e) $5(m + 2)$ 1

B1 for 5(m + 2) or 5(2 + m). Accept (5 – 0)(m + 2) or (3 + 2)(m + 2)

[6]

21. (a) $5(m + 2)$ 1

B1 for 5(m + 2) or 5(2 + m). Accept (5 – 0)(m + 2) or (3 + 2)(m + 2)

(b) $y(y – 3)$ 1

B1 for y(y – 3) or (y – 3)y or (y – 0)(y – 3) or (y – 3)(y + 0)

[2]

22. (a) $2x(2x – 3y)$ 2

B2
(B1 for x(4x – 6y) or 2(2x^2 – 3xy) or 2x(two terms) or 4x(x – 1.5y))

(b) $x^2 – x + 6x – 6 =$
$x(x – 1) + 6(x – 1)$
$(x + 6)(x – 1)$ 2

B2 cao
(B1 (x – 6)(x + 1) or (x – 6)(x – 1) or x(x – 1) + 6(x – 1) or x(x + 6) – (x + 6))

[4]

23. $3(m + 5)$ 1

B1 cao

[1]

24. (a) $m(m – 1)$ 1

B1 cao

(b) 4.5oe 3

$7p – 14 = 3p + 4$
$7p – 3p = 4 + 14$
$4p = 18$

M1 for 7p – 14 = 3p + 4 ***OR*** *p – 2 = 3/7p + 4/7*
M1 for isolating p and non-p terms correctly (ft on one earlier error if demands are equivalent)
A1 cao

[4]

25. $x(x + 6)$ 2

B2 for x(x + 6)
(B1 for x (linear expression in x) or x + 6 seen

[2]

26. $y(3 + y)$ 2

B2
[B1 for (3 + y) seen]

[2]

27. $3\ (3x + 4)$ 1

B1 cao

[1]

28. $x\ (x - 10)$ oe 1

B1

[1]

29. (a) $y^2 + 5y$ 1

B1

(b) $2(5x - 3)$ 1

B1

[2]

30. $p(p+ 6)$ 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)

[2]

31. $6(q + 2)$ 2

B2
(B1 for 2(3q + 6) or 3(2q + 4) or k(q + 2) where k ≠ 6)
[sc B1 For 6(q – 2)]

[2]

32. (a) $12x - 15$ 1

B1 cao

(b) $5(y + 8)$ 1

B1 cao

[2]

33. $x(x - 6)$ oe 1

B1 for x(x – 6) oe

[1]

34. (a) $7(y + 2)$ 1

B1

(b) $5x - 10 = 40$
or $x - 2 = 40 \div 5$
$5x = 40 +$ "10"
or $x =$ "$40 \div 5$"+2 3

M1 for correctly removing brackets or 40 ÷ 5 or 8 seen
M1 for correctly moving constant terms to one side
A1 cao

[4]

35. D

[1]

36. B

[1]

37. B

[1]

38. E

[1]

39. D

[1]

40. (a) $2(a + 3)$ 1

B1 cao

(b) $5x(x + 2y)$ 2

B2 for a fully correct factorization
(B1 for $5(x^2 + 2xy)$ or $x(5x + 10y)$ or $5x$(linear expression in x and y) or $(x + 2y$ only).

[3]

41. (a) $5(x + 2)$ 1

B1

(b) $(x – 3)(x + 5)$
$x^2 – 3x + 5x – 15$
$x^2 + 2x – 15$ 2

M1 for 3 out of 4 terms of x^2, $–3x$, $5x$, $– 15$ correct
A1 for $x^2 + 2x – 15$

[3]

42. B

[1]

43. D

[1]

44. (a) $6c – 4$ 1

B1 oe

(b) $x(y + 3)$ 1

B1 for $x(y + 3)$ oe or $(x + 0)(y + 3)$ oe

[2]

45. (a) $7e - 6f$ 2

B2 (B1 for 7e or –6f seen)

(b) $6c - 4$ 1

B1 (accept 6 × c – 4, c6 – 4 or equivalent expansion)

(c) $x(y + 3)$ 1

B1

[4]

46. C

[1]

47. (a) $4(2x + 5) + 2(3x – 2)$
$8x + 20 + 6x – 4$
$14x + 16$ 2

M1 for either 8x + 20 or 6x – 4 or 4 × 2x + 4 × 5 or 2 × 3x – 2 × 2 or 14x or + 16
A1 for 14x + 16

(b) $y(y – 4)$ 1

B1

[3]

1. In part (a) many candidates were unable to combine like terms. They introduced indices where there weren't any, or made errors with minus signs. Most candidates answered part (b) correctly, though $2p^2q$ and $2p^2q^2$ were common incorrect answers.

2. Many candidates did not seem to know what was required when asked to factorise $t^2 – 5t$.

3. In part (b) many candidates were unable to combine like terms. They introduced indices where there weren't any, or made errors with minus signs. In part (b) it was inevitable that the minus sign outside the second bracketed expression caused many problems. Part (a) was rarely answered correctly; there was clear evidence that candidates simply did not understand what "factorise" meant.

4. Both parts of this were standard. The major error in part (a) was in the expansion of the second bracket to give $4x - 6$ instead of the correct $4x + 6$

5. This part was very poorly answered with only 0.5% of candidates scoring any marks at all.

6. The expansion in the first part had a low success rate and $t^2 - 2$ was seen more frequently than the correct answer. The factorisation in the final part was beyond all but the strongest candidates.

7. **Paper 4**

The recent deterioration in algebraic manipulative skills was clear in the poor solutions to this question. Few candidates gained any marks in part (b), as there was little understanding of what was meant by "factorise". As a result many candidates failed to attempt the question. In part (a) the only significant marked gained was the first, for expanding one of the brackets. Most candidates who did this then went on to make errors in manipulating the terms, usually with incorrect minus signs. It was disappointing to see some candidates reach $10x = 2$, only to spoil their solution by writing $x = 5$.

Paper 6

(a) The initial stage in solving this equation is to expand both sides. The usual method is then applied to reach $10x = 2$, with the solution $x = 0.2$. Errors included poor expansion of brackets, adding $2x$ instead of subtracting $2x$ and vice versa with the numerical terms and surprisingly going from $10x = 2$ to $x = 5$.

(b) There is a common factor of $2p$ which has to be extracted from the two terms. This, most candidates were able to do. A minority cancelled the $2p$ to leave $2p - q$.

8. More candidates appeared to understand what was required in a factorisation, but many weaker candidates wrote $p(p + 6p)$ or $7p^2$. Most candidates expanded the brackets to get four terms, though either the numerical term or negative signs were incorrect. Some simplified $-4x + 7x$ as $-3x$.

9. This question was generally answered well by the majority of the candidates.
In part (a), some candidates got a little confused with their multiplication and addition- a typical error was $(x + 7)(x - 4) = x^2 + 7x - 4x - 11$. In part (b), some candidates spoilt there answers by writing $y^4 + 2y^2 = 2y^6$, and in part (d), some did not completely factorise the expression.

10. Few candidates understood what was meant by "factorise".

$-4x + 7x$ as $-3x$.

11. Three quarters of candidates answered part (a) correctly. It was disappointing that only 20% of candidates could factorise $x^2 + 4x$ correctly in part (b). Some tried to use two brackets. Many had no idea of what was required. In part (c), more than 60% of candidates answered (i) correctly. A common incorrect answer was m^{10}. Slightly fewer candidates were successful in (ii). It was pleasing that 40% of candidates managed to obtain three or four correct terms in part (b) but mistakes were often made in simplifying the expression. A common error in the expansion was a final term of 8 instead of 15. Common incorrect answers were $x^2 + 15$ and $2x + 8$.

12. Algebra is not the favourite topic for foundation candidates but they are getting better at it. Part (a) was almost always correct but part (b) was less successful. Part (c) had a similar success rate to part (b) and many candidates got a complete correct response. Many lost a mark by failing to include a + sign between two correct terms. However equally many gained a mark for either 2a or 6b contained within their expression whilst some candidates achieved the correct answer and then oversimplified it to 12 ab or 8ab.

13. As might be expected, part (a) was answered with the most success. Some candidates, though, confused the signs and gave answers such as $6a - 4b$, $2a - 6b$ or $6a + 6b$ and some oversimplified the correct answer to 8ab. It was disappointing that many candidates could not factorise $x^2 - 6x$ correctly in part (b). Some tried to use two brackets. Many, though, did not understand the meaning of 'factorise'. In part (c) many candidates obtained $3x$ or $3 \times x$ as the first term of the expansion but errors were frequently made with the second term. $x \times 2x^2 = 3x^2$ was a common error. Sometimes good work was spoiled in an attempt to simplify further. Part (d) was not answered well. Those with the right idea often gave a partially factorised expression as the answer and gained 1 mark.

14. In part (a) many were able to gain the first mark for expanding the brackets. Combining terms with negative signs led to problems for many, with many incorrect simplifications. A significant minority spoiled an otherwise correct answer by further incorrect simplification. In part (b) only a minority arrived at the correct answer. The most common incorrect approaches resulted in either $(x+3)(x+4)$, or a partial factorising such as $x(x+7)+10$. In part (c) substitution of values into the equations normally result in a mark being awarded, but award of marks from that point on was rare. Unlike question 11(b), here expansion of the bracket was usually done incorrectly, and manipulation of other terms poor, even though by this stage most of the terms were numeric. Most did not follow the correct order of operations necessary and added the 15 to 4 before attempting to expand. A few attempted to find the answer by trial and improvement but this was rarely successful.

15. Correct solutions to this question were seldom if ever seen. Factorisation is topic not really understood by Foundation candidates but expanding brackets was correctly attempted by about 1% of candidates.

16. As might be expected, part (a) was answered with the most success. Many candidates, though, did not understand the meaning of 'factorise'. Some of those who did identify x as the common factor gave an incorrect expression, often $x - 5x$, inside the bracket. In part (b), partially factorised expressions, i.e. $3(a^2 - 2)$ or more often $a(3a - 6)$, were almost as common as the correct answer. Part (c) was answered very poorly and provided little evidence that candidates were able to set out simple algebraic methods. Some candidates simply interchanged P and q in the formula and many gave incorrect answers such as $P - 10/2$, $P/2 - 10$ or $P - 5$ without any working. Since candidates had to perform two steps to rearrange the formula, a correct step, if seen, would have gained one mark. Part (d) was better attempted than part (c). More than a quarter of the candidates gained one mark but relatively few achieved both marks either through making a sign error in the multiplication or an error in collecting the y terms. Many candidates showed no understanding of what was required and added the two expressions or introduced an equals sign.

17. In part (a) many candidates were able to combine one of the letters, but rarely both. Weaker candidates frequently spoilt their answer by incorrect simplification, for example $4a + 2a = 6a$, and $2a + 4c = 6ac$. In part (b) there was little understand of formulae. Many added the three pats of the formulae, whilst squaring was almost arbitrary. Weaker candidates did not know what to do with the $\frac{1}{2}$. Even with an answer as short as 1.125 there were instances of candidates rounding off this answer to 1 d.p. Part (c) was done well by those candidates who understood what was meant by "factorise". A few candidates gained a mark for multiplying out the bracket in part (d), but most failed to gain any marks. Algebraic methods were very confused, with few manipulating the terms correctly.

18. In part (a), many candidates were able to score at least 1 mark on this question. Common incorrect answers were and(each scoring 1 mark). A small number of candidates expanded the expression to, e.g. $3x \times x - 5x \times y$, then did not go on to simplify it. In part (b), about half the candidates were able to factorise the expression correctly. Common incorrect answers here were $(x - 6)^2$, $x(x - 36)$ and $(x - 6)$.

19. This question gave students the opportunity to display their skills of algebraic manipulation and of algebraic substitution.
Usually candidates were successful on part (a), although there were many wrong answers, mainly from a misunderstanding of the relationship of the sign in a term with the term it acted on.

Part (b) had many cases of poor substitution, where, for example, $\frac{1}{4} \times 3^2$ was evaluated as $\left(\frac{1}{4} \times 3^2\right)$

Parts (c), (d) and (e) were all well done. The most common error in (c) was the difference of 2 squares misunderstanding as $(x - 5)(x + 5)$ or $(x - 2.5)(x + 25)$. The clumsy, but correct was awarded both marks.

On (d), the characteristic $x^2 + 7x + 7$ was occasionally seen and on (e) the 'factorisation' $y(y + 8) + 15$

20. This question proved to be a good discriminator. 68% of candidates gave a correct and fully simplified answer to the first part of the question. A significant proportion only completed a partial simplification and left the answer as $7bc - 4bc$. In part (b), candidates who showed the collection of like terms in their working seemed to gain more marks. Many candidates appeared confused about signs and so gave $6x$ or $-5y$ terms. Answers to part (c) were split mostly between $3m$ and m^3 with about two thirds of candidates giving the correct response. Only occasionally was it not possible to distinguish whether the candidate had written $m3$ or m^3. The answer $5np$ was common in part (d). Sometimes candidates left multiplication signs in their answers. Only about 10% of candidates could factorise the expression given in part (e) correctly. $15m$ and $5(m + 10)$ were common incorrect answers seen.

21. $15m$ was the most common error in part (a) by those candidates not understanding the concept of factorisation; $5m + 2$ and $5(m + 10)$ were seen from more sensible efforts. In part (b) $y - 3$, $-2y$ and $-2y^2$ were often errors made.

22. It is encouraging that many candidates were able to recognise different types of factorisation and distinguish between the type involving common factors and the type which needs two brackets.

The majority of candidates demonstrated knowledge of factorisation in part (a) although a number did not fully factorise the expression.

Partial factorisations such as $2(2x^2 - 3xy)$ and $x(4x - 6y)$ were quite common. Some candidates identified $2x$ as the common factor but made a mistake inside the brackets, e.g. writing $2x(x - 3y)$. In part (b) many candidates attempted to factorise into two brackets, although a large proportion did not find two numbers which both multiplied to give –6 and added to give +5. Many found numbers which satisfied one condition or the other, but not both, e.g. 2 and 3.

23. Full marks were rarely seen in this question, many candidates showing a definite weakness in manipulative algebra. The general performance suggests that a great many candidates were unfamiliar with the concept of factorisation; $18m$ being the usual answer offered and sometimes $3(m + 15)$ or $m + 5$ from those candidates with a little more idea.

24. Part (a) was poorly answered. A number of candidates attempted to factorise into two brackets with $(m + m)(m - 1)$ being a popular incorrect answer.
The majority of candidates were successful in expanding the brackets in part (b). Mistakes were then frequently made in transposing the terms. Those candidates who could isolate the x terms correctly then often made arithmetic errors.

25. Understanding of the concept of factorisation varied across and within centres; weaker candidates giving answers of $6x^2$ or $6x^3$ while more able candidates offering answers such as $(x + 2)(x + 3)$ and $(x + 3)(x + 3)$ showing some knowledge of the process if not complete.

26. There were a lot of algebraic answers that did not relate to what they were being asked to do in the question. The connection between the word ‘factorise’ and the idea of using brackets seemed alien to all but a select few.

27. Very few correct answers to this question, many candidates not understanding the concept of factorisation. $21x$ was the most common wrong answer and $3x + 4$ and $9(x + 3)$ were also seen.

28. 32% of the candidature succeeded in correctly factorising $x^2 - 10x$.

29. Both parts of this question were poorly done, and part (a) particularly gives cause for concern at this level. Here answers of $y^2 + 5$ and $2y + 5$ were common. In part (b) $4x$ was the most common incorrect response. A significant number of candidates took out a common factor of 2 and left it out leaving an answer of $5x – 3$ only.

30. Approximately two thirds of candidates were able to factorise the given expression.

31. Only the more able candidates made any real attempt at factorisation, with answers of 18, $18q$ and $6(q+ 12)$ being common. Many attempts at factorisation were incomplete and answers of $2 (3q + 6)$, $2 (3q + 4)$ and even q+ 2 were often seen.

32. No report available.

33. This question was done well by the higher attaining candidate, clearly showing good understanding of factorisation. $x(x – 6x)$ was often seen.

34. Despite the fact that factorising has been a regular feature on many of the modular papers, only 1% of the candidates were able to score a mark in part (a). Part (b) had a higher success rate with a quarter of the candidates being able to score at least one mark for recognising that $x – 2 = 8$ or, more commonly, removing the bracket correctly by multiplying each term inside the bracket by 5. Although over 15% of the candidates scored all 3 available marks, it was rare to see formal algebraic methods used to obtain the final answer.

35. No Report available for this question.

36. No Report available for this question.

37. No Report available for this question.

38. No Report available for this question.

39. No Report available for this question.

40. In part (a) the most common incorrect answer given by candidates with some understanding of factorisation was $2(a + 6)$. However answer of $8a$, $8 + a$ and $12a$ were commonplace. In part (b) the more able candidate often failed to gain full marks as a result of just partial factorisation whilst an answer of $15x^3y$ or $15x^2y$ was often seen from weaker candidates.

41. This question was poorly answered with few candidates able to factorise in part (a) but they had more success in part (b) with many candidates being able to gain at least one mark for multiplying out two brackets and getting 3 out of the 4 terms (x^2, $-3x$, $5x$, -15) correct but very few candidates were completely successful in giving the fully simplified answer.

42. No Report available for this question.

43. No Report available for this question.

44. Algebra is not usually a strong point of candidates entered for foundation tier and they showed that in this paper there was no exception to this. In part (a) only 20% gained the mark and in part (b) where factorising was a requirement this reduced to 7%.

Many candidates tried to over simplify their algebraic expressions and therefore scored no marks.

45. This algebra question was quite well answered. Almost 90% of candidates were awarded some credit for their answers to part (a). Common incorrect answers seen included 7e and 7e +6f. These could be awarded 1 mark for one correct term. The second part of the question was correctly answered by 84% of candidates whilst the success rate in the last part was 65%. In part (c) common incorrect answers included $3x^2y$, $4xy$ and $x(y + 2x)$.

46. No Report available for this question.

47. Candidates sitting the foundation paper often struggle with algebra and this was certainly true on this paper. Only 10% scored both marks in part (a) whilst 20% of candidates scored one mark usually by multiplying out one of the two brackets correctly. Solutions then fell apart usually for incorrect simplification with numbers and algebraic variables incorrectly combined or for writing 20 – 4 as –16 or 24. Only 9% of candidates scored the mark in part (b) as factorisation was a very poorly understood topic.