Q1.   (a)   Simplify

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

....

(2)

(b)   Expand

$$2(3c - 2)$$

....

(1)

(c)   Factorise

$$xy + 3x$$

....

(1)
(Total 4 marks)

Q2.   (a)   Expand

$$2(3c - 2)$$

....

(1)

(b)   Factorise

$$xy + 3x$$

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

Q3.   (a)   Factorise $5x + 10$

....
(1)

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

....
(2)
(Total 3 marks)

Q4.   (a)   Expand and simplify $4(2x + 5) + 2(3x - 2)$.

....

(2)

(b)   Factorise $y^2 - 4y$.

....

(1)
(Total 3 marks)

Q5.   (a)   Simplify $m + m + m + m + m + m$

....

(1)

(b)   Simplify $x^7 \times x^5$

....

(1)

(c)   Factorise $3y^2 + 2y$

....
(1)
(Total 3 marks)

Q6. (a) Factorise fully $8p^2q + 12p$

....
(2)

(b) Expand and simplify $5 - 2(m - 3)$

....
(2)
(Total 4 marks)

Q7. (a) Simplify $4a + 3c - 2a + c$

....
(1)

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

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

$S =$ ....
(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)

Q8.　　　(a)　　Expand $x(3x - 5y)$

....

(2)

(b)　　Factorise $x^2 - 36$

....

(1)
(Total 3 marks)

Q9.　　　(a)　　Simplify　　$4a + 3c - 2a + c$

....

(1)

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

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

S = ...

(2)

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

....

(2)

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

x = ...

(3)
(Total 8 marks)

Q10.   (a)   Factorise $5m + 10$

....
(1)

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

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

Q11.   (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)

M1.

	Answer	Mark	Additional Guidance
(a)	$7e - 6f$	2	**B2** (**B1** for $7e$ or $-6f$ seen)
(b)	$6c - 4$	1	**B1** (accept $6 \times c - 4$, $c6 - 4$ or equivalent expansion)
(c)	$x(y + 3)$	1	**B1**
			Total for Question: 4 marks

M2.

	Answer	Mark	Additional Guidance
(a)	$6c - 4$	1	**B1** oe
(b)	$x(y + 3)$	1	**B1** for $x(y + 3)$ oe or $(x + 0)(y + 3)$ oe
			Total for Question: 2 marks

M3.

	Working	Answer	Mark	Additional Guidance

(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 $x^2 + 2x - 15$
					Total for Question: 3 marks

M4.

	Working	Answer	Mark	Additional Guidance
(a)	$4(2x + 5) + 2(3x - 2)$ $8x + 20 + 6x - 4$	$14x + 16$	2	**M1** for either $8x + 20$ or $6x - 4$ or $4 \times 2x + 4 \times 5$ or $2 \times 3x - 2 \times 2$ or $14 \times$ or $+ 16$ **A1** for $14x + 16$
(b)		$y(y - 4)$	1	**B1**
				Total for Question: 3 marks

M5.

	Answer	Mark	Additional Guidance
(a)	$6m$	1	**B1** cao
(b)	x^{12}	1	**B1** for x^{12} or x^{7+5}
(c)	$y(3y + 2)$	1	**B1** cao

		Total for Question: 3 marks

M6.

	Working	**Answer**	**Mark**	**Additional Guidance**
(a)		$4p(2pq + 3)$	2	**B2** for $4p(2pq + 3)$ [**B1** for $2p(2pq + 6)$ or $4(p^2q + 3p)$ or $p(4pq + 12)$ or $2(2p^2q + 6p)$]
(b)	$5 - 2(m - 3) = 5 - 2m + 6$	$11 - 2m$	2	**M1** for $5 - 2m + 6$ **A1** cao
				Total for Question: 4 marks

M7.

	Working	**Answer**	**Mark**	**Additional Guidance**
(a)		$2a + 4c$	1	**B1** $2a + 4c$ or $2(a + 2c)$
(b)	$\frac{1}{2}x \times \frac{1}{4} \times (3)^2 =$ $\frac{1}{2} \times \frac{1}{4} \times 9 = 1.125$	1.125	2	**M1** for substitution: $\frac{1}{2} \times \frac{1}{4} \times 3^2$ 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)		$(y + 3) \times$ $(y + 5)$	2	**B2** for fully correct ($\textbf{B1}$ for $(y + a)(y + b)$ with one of $ab = 15$, $a + b = 8$)
				Total for Question: 9 marks

M8.

	Answer	**Mark**	**Additional Guidance**
(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
			Total for Question: 3 marks

M9.

	Working	**Answer**	**Mark**	**Additional Guidance**
(a)		$2a + 4c$	1	**B1** cao Accept $2(a + 2c)$
(b)	$\frac{1}{2} \times \frac{1}{4} \times (3)^2 =$ $\frac{1}{2} \times \frac{1}{4} \times 9 = 1.125$	1.125	2	**M1** for substitution: $\frac{1}{2} \times \frac{1}{4} \times 3^2$ 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 $\dfrac{5}{2}, \dfrac{10}{4}$ oe

Total for Question: 8 marks

M10.

	Answer	**Mark**	**Additional Guidance**
(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 $(y-3)(y+0)$

Total for Question: 2 marks

M11.

	Answer	**Mark**	**Additional Guidance**
(a)	$3bc$	1	**B1** for $3bc$ (accept $3cb$ or $bc3$ or $cb3$ or $3 \times b \times c$ oe, but $7bc - 4bc$ gets 0)

(b)	$2x + 5y$	2	**B2** for $2x + 5y$ (accept $x2 + y5$ or $2 \times x + 5 \times y$ or $x \times 2 + y \times 5$) [**B1** for $2x$ or $5y$ seen; accept $2 \times x$, $x2$, $5 \times y$, $y5$, etc.]
(c)	m^3	1	**B1** cao
(d)	$6np$	1	**B1** for $6np$ oe (accept $6pn$, $np6$, $pn6$ but NOT $6 \times p \times n$)
(e)	$5(m + 2)$	1	**B1** for $5(m + 2)$ or $5(2 + m)$. Accept $(5 - 0)(m + 2)$ or $(3 + 2)(m + 2)$
			Total for Question: 6 marks

E1.   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 $x(y + 2x)$.

E2.   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.

E3.   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.

E4.   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.

##

In part (a) many demonstrated their confusion at algebra by giving as an answer m^5 or even 5^m. Part (b) was better answered, but in part (c) the different rules applied to algebra and numbers again confused, with the additional complication of one letter not having an index. Success rates were therefore low.

E7.　　　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, $\dfrac{1}{4} \times 3^2$ was

evaluated as $\left(\dfrac{1}{4} \times 3^2 \right)$

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' $y(y + 8) + 15$

E8.　　　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 $(x - 6)$.

E9.   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 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.

E10. $15m$ 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.

E11.   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.