

Name: _____

Foundation Unit 2 topic test

Date:

Time: 50 minutes

Total marks available: 46

Total marks achieved: _____

Questions

Q1.

(a) Simplify $5a - 2a$

.....
(1)

(b) Simplify $3 \times 4y$

.....
(1)

(c) Simplify $3e + 4f + 2e - f$

.....
(2)

(Total for Question is 4 marks)

Q2.

(a) $L = 3a + 2c$

$$a = 5$$

$$c = 8$$

Work out the value of L .

$L =$
(2)

(b) Kirsty buys some buns.

She buys x packs of currant buns and y boxes of iced buns.

There are 6 currant buns in a pack of currant buns.

There are 8 iced buns in a box of iced buns.

Write down an expression, in terms of x and y , for the total number of buns Kirsty buys.

.....
(2)

(Total for Question is 4 marks)

Q3.

(a) Expand $2m(m + 3)$

.....
(1)

(b) Factorise fully $3xy^2 - 6xy$

.....
(2)

(Total for Question is 3 marks)

Q4.

(a) Expand and simplify $5(x + 7) + 3(x - 2)$

.....
(2)

(b) Factorise completely $3a^2b + 6ab^2$

.....
(2)

(Total for Question is 4 marks)

Q5.

(a) Simplify $8x - 3x + 2x$

.....
(1)

(b) Simplify $4y \times 2y$

.....
(1)
(Total for question = 2 marks)

Q6.

(a) Simplify $5f - f + 2f$

.....
(1)

(b) Simplify $2 \times m \times n \times 8$

.....
(1)

(c) Simplify $t^2 + t^2$

.....
(1)
(Total for question is 3 marks)

Q7.

(a) Expand $3(x + 4)$

..... (1)

(b) Expand $x(x^2 + 2)$

..... (2)

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

..... (1)

(Total for Question is 4 marks)

Q8.

* Angela and Michelle both work as waitresses at the same restaurant.

This formula is used to work out the total amount of money each waitress gets.

$$\text{Total amount} = \text{£}6.50 \times \text{number of hours worked} + \text{tips}$$

The table shows the number of hours Angela and Michelle each worked last Saturday. It also shows the tips they got.

| | Number of hours worked | Tips |
|----------|------------------------|------|
| Angela | 8 | £12 |
| Michelle | 7 | £15 |

Who got the higher total amount of money last Saturday?
You must show clearly how you got your answer.

(Total for Question is 4 marks)

Q9.

$$f = 5x + 2y$$

$$x = 3 \text{ and } y = -2$$

Find the value of f .

.....
(Total for question = 2 marks)

Q10.

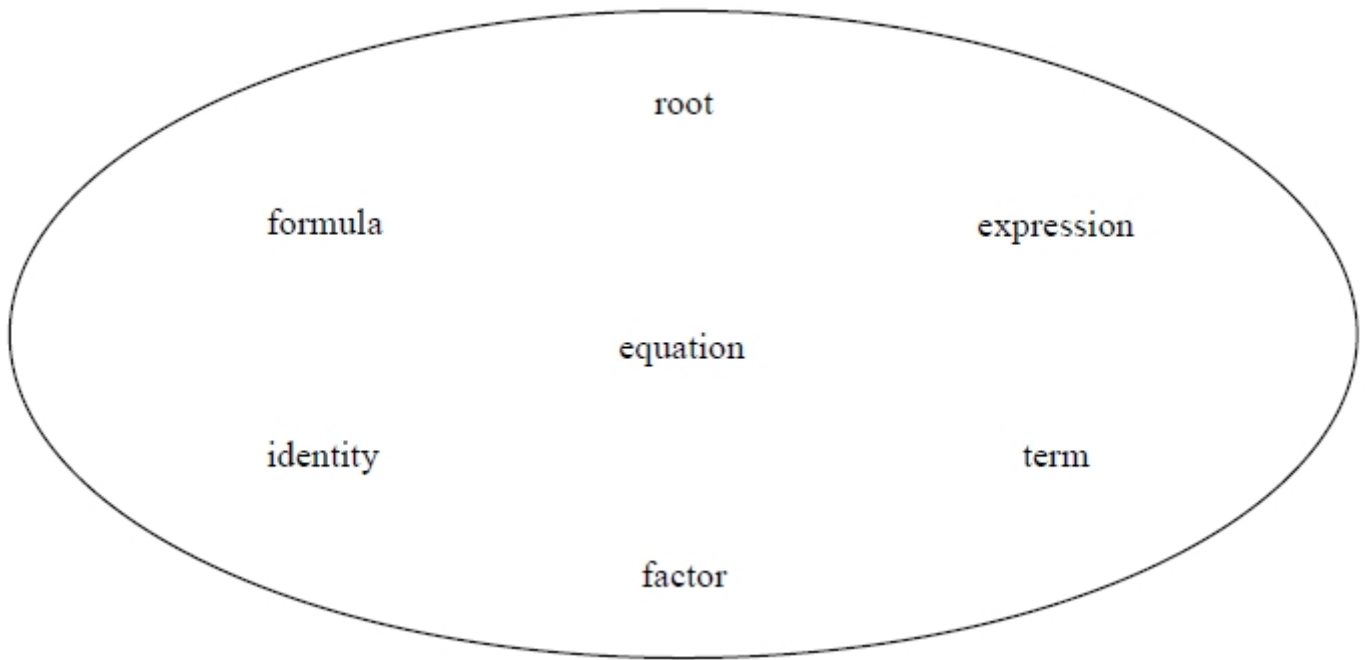
(a) Expand and simplify $3(y - 2) + 5(2y + 1)$

.....
(2)

(b) Simplify $5u^2w^4 \times 7uw^3$

.....
(2)
(Total for question = 4 marks)

Q11.



Choose a word from those above that makes this statement correct.

(a) x^2 is a in $x^2 + 4y$

(1)

Choose a word from those above that makes this statement correct.

(b) $(y + 2)$ is a of $3y + 6$

(1)

(Total for question = 2 marks)

Q12.

(a) Factorise $y^2 + 27y$

.....
(1)

(b) Simplify $(t^3)^2$

.....
(1)

(c) Simplify $\frac{w^9}{w^4}$

.....
(1)

(Total for question = 3 marks)

Q13.

You can use this rule to work out the total cost, in pounds, of hiring a carpet cleaner.

Multiply the number of days by 7.8 and then add 12

Andy hires a carpet cleaner.
The total cost is £82.20

(a) Work out the number of days Andy hires the carpet cleaner for.

..... days
(2)

Chloe hires a carpet cleaner for y days.
The total cost is £ T .

(b) Write down a formula for T in terms of y .

.....
(2)
(Total for question = 4 marks)

Q14.

Dimitar has 20 sweets.
Pip also has 20 sweets.

Dimitar gives Pip x sweets.

Dimitar then eats 5 of his sweets.
Pip then eats half of her sweets.

Write expressions for the number of sweets Dimitar and Pip now have.

Dimitar

Pip

(Total for question = 3 marks)

Examiner's Report

Q1.

Students attempted parts (a) and (b) very well, most gained both marks and it was rare to see blank responses. In part (a) incorrect responses were usually due to carelessness e.g. 3 , $4a$, a , $7a$ and likewise in part (b) e.g. 12 , $7y$

(Part (c) was also well attempted by students with very few blank responses seen but students were less successful on this part of the question though more students than not gained both marks. The most common error was to incorrectly merge $5e + 3f$ to $8ef$. Other common errors included e or $5f$ or missing the add sign and simply writing $5e 3f$.

Q2.

Part (a) was generally answered well. Some students showed no understanding of substitution to get $35 + 28 = 63$. There were a number of students making very careless errors in the addition when they correctly found 15 and 16 or made errors in the product of 3 and 5 or 2 and 8.

The most common error seen in part (b) was to write $x = 6$ and $y = 8$ rather than write a correct expression. It was disappointing to see how many students got the correct answer and then tried to 'simplify' their answer by following this with $14xy$. This either lost them a mark when it was preceded by $6x + 8y$ (or $6x$ or $8y$) or scored no marks at all.

Q3.

In part (a), there was only one mark for this question and so both terms were required. This happened sometimes but often $2m^2$ was correct and $6m$ was incorrectly given as 6 or $3m$ or $5m$. Occasionally $2m^2 + 6m = 8m$ or $8m^2$ or $8m^3$ was seen, there is no 'ISW' on algebra questions and so these answers did not score the mark.

Part (b) was not well answered. It appeared to be beyond most candidates. Occasionally $3xy$ was identified as a factor but the other factor was rarely seen.

Q4.

Two thirds of candidates had no success with this question and the marks that were awarded were generally given in part (a). Here, common mistakes included multiplying out just the first term in the bracket, failing to simplify, or failing to deal correctly with the 2. Some candidates attempted a grid method as if multiplying out a pair of linear expressions. Correct factorisation in part (b) was very rare indeed. When an attempt was made, candidates often worked with factors but gave a final answer involving 2 pairs of brackets. Partial factorisation using only an integer also seen but often not fully correct and when a common factor was identified, there was often an error with the terms inside the bracket.

Q5.

No Examiner's Report available for this question

Q6.

No Examiner's Report available for this question

Q7.

No parts of this question were answered well. Algebra is still an area of uncertainty for this level of candidate. In part (a), answers of $3x + 4$ and $7x$ were the usual errors seen. In part (b), $x^2 + 2x$ and $2x^2 + 2x$ were the best of the incorrect answers of candidates showing some algebraic manipulative ability. Some achieved the correct expansion but then incorrectly tried to simplify their answer, losing the mark. In part (c), $x^2 - 6$, $x(x - 3)$ and $x(x - 6x)$ were the best of the 'near misses'.

Q8.

Most candidates were able to work out the total amount of money that Angela and Michelle got and state clearly which of these got the greater amount.

Some candidates simply stated the totals without showing how these were obtained. Candidates should be reminded to show all stages of their work and to write their conclusions in words, not just circle their choice.

A common error seen was for candidates to show the correct working for Michelle as $6.5 \times 7 + 15$ but then write the answer to this as 60.05

The majority of candidates gave their answers with the £ sign included.

Q9.

No Examiner's Report available for this question

Q10.

No Examiner's Report available for this question

Q11.

No Examiner's Report available for this question

Q12.

No Examiner's Report available for this question

Q13.

No Examiner's Report available for this question

Q14.

No Examiner's Report available for this question

Mark Scheme

Q1.

| Paper: 5MB2F_01 | | | | |
|-----------------|---------|-----------|------|--|
| Question | Working | Answer | Mark | Notes |
| (a) | | $3a$ | 1 | B1 |
| (b) | | $12y$ | 1 | B1 |
| (c) | | $5e + 3f$ | 2 | M1 (implied) for $5e$ or $3f$ A1 oe |

Q2.

| PAPER: IMA0_1F | | | | |
|----------------|-------------|-----------|------|--|
| Question | Workin g | Answer | Mark | Notes |
| (a) | | 31 | 2 | M1 for $3 \times 5 + 2 \times 8$ or 15 and 16 A1 cao |
| (b) | | $6x + 8y$ | 2 | M1 for $6x$ or $8y$ A1 for $6x + 8y$ oe as final answer |

Q3.

| PAPER: IMA0_1F | | | | |
|----------------|---------|--------------|------|--|
| Question | Working | Answer | Mark | Notes |
| (a) | | $2m^2 + 6m$ | 1 | B1 cao |
| (b) | | $3xy(y - 2)$ | 2 | B2 for $3xy(y - 2)$ (B1 for $3x(y^2 - 2y)$ or $3y(xy - 2x)$ or $xy(3y - 6)$ or $3xy$ (a two term algebraic expression)) |

Q4.

| Question | Working | Answer | Mark | Notes |
|----------|--------------------|---------------|------|---|
| (a) | $5x + 35 + 3x - 6$ | $8x + 29$ | 2 | M1 for $5x + 35$ OR $3x - 6$ or $8x$ or 29 A1 for $8x + 29$ |
| (b) | | $3ab(a + 2b)$ | 2 | B2 for $3ab(a + 2b)$ (B1 for correct partial factorisation $a(3ab + 6b^2)$ or $b(3a^2 + 6ab)$ or $3a(ab + 2b^2)$ or $3b(a^2 + 2ab)$ or $ab(3a + 6b)$ OR $3ab(ma + 2b)$ or $3ab(a + nb)$ where $m \neq 1, n \neq 2$) [B0 for partial factorisation using only an integer e.g. $3(a^2b + 2ab^2)$] |

Q5.

| Paper 1MA1: 3F | | | |
|----------------|---------|--------|-------|
| Question | Working | Answer | Notes |
| (a) | | $7x$ | B1 |
| (b) | | $8y^2$ | B1 |

Q6.

| Paper 1MA1: 2F | | | |
|----------------|---------|--------|--------|
| Question | Working | Answer | Notes |
| (a) | | $6f$ | B1 |
| (b) | | $16mn$ | B1 |
| (c) | | $2t^2$ | B1 cao |

Q7.

| | | Working | Answer | Mark | Notes |
|--|-----|---------|------------|------|--|
| | (a) | | $3x + 12$ | 1 | B1 for $3x + 12$ or $12 + 3x$ |
| | (b) | | $x^3 + 2x$ | 2 | M1 for the intention to multiply both terms in the bracket by x A1 for $x^3 + 2x$ OR B2 for $x^3 + 2x$ [B1 for x^3 or $2x$ seen] |
| | (c) | | $x(x - 6)$ | 1 | B1 for $x(x - 6)$ or $(x - 6)x$ |

Q8.

| | | Working | Answer | Mark | Notes |
|---|--|---------|-------------------|------|--|
| * | | | Correct statement | 4 | M1 for $6.50 \times 8 + 12$ or $6.50 \times 7 + 15$ M1 for $6.50 \times 8 + 12$ and $6.50 \times 7 + 15$ A1 for 64 and 60.5(0) C1 (dep on first M1) for correct statement ft their figures OR M1 for $6.50 \times (8-7)$ or $15-12$ M1 for $6.50 \times (8-7)$ and $15-12$ A1 for 6.5(0) and 3 C1 (dep on first M1) for correct statement ft their figures [SC If no working shown B1 for 64 and 60.5(0) or B1 for 6.5(0) and 3] |

Q9.

| Paper 1MA1: 2F | | | | |
|----------------|---------|--------|-------|---|
| Question | Working | Answer | Notes | |
| | | 11 | M1 | process of substitution demonstrated eg. $5 \times 3 + 2 \times -2$ |
| | | | A1 | cao |

Q10.

| Question | Working | Answer | Notes |
|----------|---------|------------|---|
| (a) | | $13y - 1$ | M1 for expansion of one bracket A1 for full simplification |
| (b) | | $35u^3w^7$ | B1 for 2 of 35, u^3 and w^7 correct B1 cao |

Q11.

| Question | Working | Answer | Mark type | AO | Notes |
|----------|---------|--------|-----------|-----|----------------------------------|
| (a) | | term | B | 1.1 | B1 for a fully correct statement |
| (b) | | factor | B | 1.1 | B1 for a fully correct statement |

Q12.

| Question | Working | Answer | Notes |
|----------|---------|-----------|-------|
| a | | $y(y+27)$ | B1 |
| b | | t^6 | B1 |
| c | | w^5 | B1 |

Q13.

| Question | Working | Answer | Notes |
|----------|---------|-----------------|---|
| (a) | | 9 | M1 for -12 and $\div 7.80$ A1 cao |
| (b) | | $T = 7.8y + 12$ | C1 for $7.8y + 12$ or $T =$ linear expression in y C1 $T = 7.8y + 12$ oe |

Q14.

| Question | Working | Answer | Notes |
|----------|---------|------------------------------------|---|
| | | D: $15 - x$ P: $\frac{20+x}{2}$ | M1 For writing a correct expression for D or P before sweets are eaten $20 - x$ or $20 + x$ A1 One correct expression A1 Both correct expressions |