



## GCSE Foundation 12

*Algebra*

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95 minutes



95 marks

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*Equations*

**M1.** (a) 24

**B1**

(b)  $7c + 3d$  or  $3d + 7c$

*B1 for  $7c$  or  $3d$*

*Do not ignore further working*

**B2**

(c)  $3 \times 4$  and  $5 \times -2$  or 12 and -10  
oe

**M1**

2

**A1**

**[5]**

**M2.** (a) 50

**B1**

(b)  $(2y) = 8 + 3$  or  $(2y) = 11$

**M1**

$5\frac{1}{2}$  or 5.5 or  $\frac{11}{2}$   
oe

**A1**

(c)  $5m - 7p$

*B1 for  $5m$  or  $-7p$*

*Award B1 if further working seen after correct answer*

**B2**

**[5]**

**M3.** A = 6

**B1**

B = 5

*$(22 - 2 \times \text{their } A) \div 2$*

**B1 ft**

C = 10

*$26 - \text{their } A - 2 \times \text{their } B$*

**B1 ft**

D = 7

*$28 - \text{their } A - \text{their } B - \text{their } C$*

**B1 ft**

**[4]**

**M4.**  $3x + 4x + 5x (= 48)$

$3 + 4 + 5$  or one trial evaluated correctly  
eg  $3 \times 2 + 4 \times 2 + 5 \times 2 = 24$

$3x + 4x + 5x = 48$  or  $12x = 48$

$48 \div (3 + 4 + 5)$  or  $48 \div 12$   
or a different trial evaluated correctly  
 $3 \times 3 + 4 \times 3 + 5 \times 3 = 36$

M1

$(x =) 4$

A1

20

ft  $5 \times$  their 4  
ft is dependent on both method marks

A1 ft

[4]

**M5.** (a) 4

B1

(b)  $2x = 1 - 5$  or  $2x = -4$

M1

-2

A1

[3]

**M6.** (a)  $3 \times 4 (+) 2 \times -5$  or  $12 (+) -10$

M1

2

A1

(b)  $(c =) 12$

B1

(c)  $6w - 8 = 7$

$3w - 4 = 3.5$

M1

$6w = 7 + 8$  or  $6w = 15$

$3w = 3.5 + 4$  or  $3w = 7.5$

M1

$(w =) 2.5$

oe eg  $\frac{15}{6}$  or  $\frac{5}{2}$  or  $2\frac{1}{2}$

A1

(d)  $a^3 + 4a$

*B1 for  $a^3$  or  $4a$*

*Do not accept  $a4$*

**B2**

**[8]**

**M7.** (a) 4

**B1**

(b) -30

**B1**

(c)  $5c = 19 - 4$  or 15

**M1**

3

**A1**

(d)  $4(t - 5)$

*Accept  $4 \times (t - 5)$*

**B1**

**[5]**

**M8.** (a) 11

**B1**

(b) 15

**B1**

(c)  $(2c = 11 + 3 = 14)$   
Their  $14 \div 2$

**M1**

7

**A1**

**[4]**

**M9.**  $w = 3$   $x = 8$   $y = 7$

*B1 each*

**B3**

**[3]**

<b>M10.</b>	(a)	12			<b>B1</b>	
	(b)	$(4 + 10) \div 2$			<b>M1</b>	
		7			<b>A1</b>	
	(c)	$4a + 8b$ or $4(a + 2b)$				
		<i>B1 for one term correct</i>			<b>B2</b>	
	(d)	$5w + w = 9 - 6$				
		<i>Allow one sign error</i>			<b>M1</b>	
		$6w = 3$				
		<i>For collecting like terms ft their first line</i>			<b>M1</b>	
		$\frac{1}{2}$				
		<i>oe Accept <math>\frac{3}{6}</math></i>			<b>A1</b>	
						<b>[8]</b>

<b>M11.</b>	(a)	$(w =) 63$			<b>B1</b>	
	(b)	$7x = 63$				
		$63 \div 7$				
		<i>9 embedded M1</i>			<b>M1</b>	
		$(x =) 9$			<b>A1</b>	
	(c)	One integer $> 9$				
		<i>Any whole number greater than 9</i>			<b>B1</b>	
						<b>[4]</b>

<b>M12.</b>	(a)	40				
		<i>B1 (x =) 8</i>			<b>B2</b>	

(b)  $8y - 2 (= 18)$

$(4y - 1 =) 18 \div 2$

M1

$8y = 18 + 2$

$4y = 9 + 1$

M1

2.5 or  $2\frac{1}{2}$  or  $\frac{5}{2}$   
oe

A1

[5]

**M13.** (a) 15

*Allow embedded answer*

B1

(b)  $5y = 20$

*Allow embedded answer with contradiction*

M1

4

*Allow embedded answer with no contradiction*

A1

[3]

**M14.** (a)  $3a$

*Allow  $3 \times a$  and  $a \times 3$ ; not  $a3$*

B1

(b)  $6b + 10$

*B1 for  $6b$  or  $+ 10$*

*fw eg,  $16b$ ; deduct 1 mark*

B2

(c) 12

B1

[4]

**M15.**  $(5x) = 20$

*or  $x = 4$  seen*

**B1**

$(5 - 8) \div 3$

*Allow  $5 - 8 \div 3$  or  $3y = -3$*

**M1**

$(y =) -1$

**A1**

$3 \times (\text{their}) 4x - (\text{their}) -1$

**M1**

13

*ft (their)  $x$  or  $x = 4$  **and** (their)  $y$*

**A1ft**

**[5]**

**M16.** (a)  $2x + 3y + 4x + 2y + 3x + 5x + y$

*14x or 6y seen*

**M1**

$14x + 6y$

**A1**

(b) 'Their 14'  $\times 4$  + 'their 6'  $\times y = 68$

**M1**

'Their 6y' = 'their 12'

**M1**

$(y =) 2$

*ft Their answer for (a) with 2 terms*

**A1ft**

**[5]**

<b>M17.</b>	(a) $4x = 12$	M1	[8]
	3	A1	
	(b) $y + 5 = 28 \div 2$ or $2y + 10 = 28$	M1	
	$y = 14 - 5$	A1	
	or $y = \frac{28 - 10}{2}$	M1 dep	
	9	A1	
	(c) $7z + 3z$ or $9 - 2$	M1	
	$10z = 7$	A1	
	$\frac{7}{10}$	A1	
	oe	A1	

<b>M18.</b>	Length 8 and width 5 <i>allow 8 by 5 rectangle drawn</i> <i>or B1 rectangle with area 40</i> <i>or B1 rectangle with perimeter 26 cm</i>	B2	[2]

<b>M19.</b>	(a) 4	B1
	(b) 6	B1
	(c) $8z = 16$ $8z = 11 + 5$	M1
	2	A1



(d)  $3w = 6 = 9$

$w - 2 = 9/3$

M1

$3w = 15$

$w - 2 = 3$

DM1

5

*SC1 for  $3w - 2 = 9$ ,  $3w = 11$ ,  $w = 11/3$*

A1

[7]

**M20.**  $x + y = 15$  and  $x - y = 3$

or at least 2 valid trials

*eg  $8 - 7 \neq 3$ ,  $8 + 7 = 15$  one valid trial*

*$10 + 5 = 15$  2nd valid trial*

M1

$(x =) 9$  and  $(y =) 6$

*Note:  $x$  and  $y$  may not be seen*

A1

54

*54 on its own scores SC2*

A1

[3]

