Degolion Cylchol

1. Cwblhewch y tabl canlynol.

Ffracsiwn	Degolyn	Degolyn cylchol? Ie neu Na	Degolyn terfynus? Ie neu Na
$\frac{2}{5}$			
$\frac{5}{8}$			
$\frac{7}{9}$			
$\frac{2}{11}$			

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[4]

2. *(a)* Cwblhewch y tabl canlynol. [3]

Ffracsiwn	Degolyn	Cylchol neu terfynus? *(recurring or terminating?)*
$\frac{1}{3}$	$0\dot{3}$	.....
$\frac{5}{8}$	.....	.....
$\frac{3}{11}$	.....	.....

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3. *(b)* Mynegwch $\frac{12}{99}$ fel degolyn cylchol *(recurring)*. [2]

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4. *(c)* Trawsnewidiwch bob un o'r ffracsiynau canlynol yn ddegolyn.
Nodwch a yw pob degolyn yn **derfynus** neu'n **gylchol**.
Dangoswch eich holl waith cyfrifo. [4]

$\frac{5}{8}$

.....

.....

.....

Degolyn ..... Terfynus neu gylchol? .....

$\frac{3}{11}$

.....

.....

.....

Degolyn ..... Terfynus neu gylchol? .....

5. *(b)* Trawsnewidiwch bob un o'r ffracsiynau canlynol yn ddegolyn **a** nodwch a yw'r degolyn yn ddegolyn terfynus *(terminating)* neu'n ddegolyn cylchol *(recurring)*.
Dangoswch eich **holl** waith cyfrifo.

$\frac{7}{8}$

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.....

$\frac{2}{9}$

.....

.....

$\frac{4}{11}$

.....

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[4]

6.

(a) Mynegwch $0\dot{7}\dot{4}$ fel ffracsiwn. [2]

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7.

(a) Mynegwch $0\dot{8}\dot{5}$ fel ffracsiwn. [2]

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8.

(b) Mynegwch $0\dot{4}\dot{7}\dot{8}$ fel ffracsiwn.

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[2]

9.

(a) Mynegwch $0\dot{7}5\dot{2}$ fel ffracsiwn.

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[2]

10.

(a) Mynegwch $0\dot{4}3\dot{5}$ fel ffracsiwn.

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[2]

11.

(b) Enrhifwch $33 \times 0\dot{5}\dot{1}$. [3]

12.

(a) Enrhifwch $\frac{1}{3} + 0\dot{0}4$, gan fynegi eich ateb fel ffracsiwn. [3]

Cynllun Marcio

1.

5.				B4	All correct B3 any 3 rows correct or all 4 decimals correct B2 any 2 rows correct or 3 decimals correct B1 any 1 row correct or 2 decimals correct *Accept unambiguous intention for Yes/No columns* *Accept if candidate indicates yes without giving the corresponding no, unless there is a contradiction, and vice versa*
Fraction	Decimal	Recurring	Terminating		
2/5	0.4	No	Yes		
5/8	0.625	No	Yes		
7/9	0.77(777..) or 0.78	Yes	No		
2/11	0.18(18..)	Yes	No		
				4	

2.

(a) 0.625	B1	
$0.2727\ldots$ or $0.\dot{2}7$	B1	
Recurring, Terminating, Recurring	B1	FT provided at least 1 of the decimals is correct, i.e. at least B1 previously awarded
(b) $\frac{0.27}{5.4}$ or $\frac{0.9}{18}$ or $\frac{0.3}{6}$ or equivalent correct 1st step	M1	Allow for sight of 0.27
$\frac{27}{540}$ or $\frac{9}{180}$ or $\frac{3}{60}$ or 0.05	M1	FT expressing as a fraction (with whole number numerator and denominator) provided equivalent level of difficulty, 2.7/5.4 = 27/54 or ½ is equivalent level of difficulty (M0, M1, A0)
1/20	A1	CAO
(c) Method that '… × 12 + 56 = 200, or $\frac{\ldots \times 12 + 56}{100} = 2$	M1	OR 2×100, then 'their 200' – 56, then 'their 144' ÷ 12, or trial & improvement with correct operations in the correct order
Number is 12	A1	CAO
	8	

3.

16(a)(i) 0.021	B1	
16(a)(ii) 0.05	B2	B1 for 1/20
16(b) $0.\dot{1}2\dot{}$	B2	Accept $0.1\dot{2}1\dot{2}\ldots$ or dots as for recurring notation Otherwise B1 for $0.12(1\ldots)$
16(c) $35\sqrt{2}$	B2	B1 for $\sqrt{70} = \sqrt{2} \times \sqrt{35}$ seen or implied, OR $7\sqrt{5}\sqrt{10}$ or $5\sqrt{7}\sqrt{14}$

4.

(a) 125	B2	B1 for sight of 5^3 or 78125÷625
(b) Method to evaluate, allow 1 slip in tables	M1	Accept digits 9 1 2 6 with incorrect place value
9.126	A1	
rounded to 9.13	A1	FT 'their 9.126' provided M1 awarded
(c) 0.625	B1	
0.27(27…)	B1	
0.44(44…)	B1	
terminating, recurring, recurring (decimal) stated	B1	FT their responses provided at least B2 already awarded
	9	

5.

5.(a) Method to evaluate, allow 1 slip in tables	M1	Accept digits 5 4 7 3 with incorrect place value
5.473	A1	
rounded to 5.5	A1	FT their 5.473 provided M1 awarded
(b) 0.875	B1	
0.22(22…)	B1	
0.36(36…)	B1	
terminating, recurring, recurring (decimal) stated	B1	FT their responses provided at least B2 already awarded
	7	

6.

Unit 2 GCSE Maths June 2015 Higher Tier	**TICK**	**MARK**	**Comment**
12. (a) $x = 0{\cdot}74444.....$ $10x = 7{\cdot}4444.....$ with an attempt to subtract		M1	Or $10x$ and $100x$, or equivalent. Or an alternative method.
67/90 or equivalent e.g. 737/990		A1	An answer of $6{\cdot}7/9$ gains M1 only. Mark final answer. Do not ignore incorrect cancelling.
(b) $18 + \sqrt{36} + \sqrt{36} + 2$ or $\sqrt{324} + \sqrt{36} + \sqrt{36} + \sqrt{4}$ or equivalent		M1	3 of the 4 terms correct. $\sqrt{18}\sqrt{2}$ is insufficient for $\sqrt{36}$.
= 32		A1	Do not ignore subsequent working
			Alternative method: $(3\sqrt{2} + \sqrt{2})^2$ M1
			= 32 A1
(c) 1/125 or 0·008 or equivalent		B2	B1 for 125^{-1} or $1/5^3$ or $(1/5)^3$ or $1/\sqrt{15625}$ or $1/15625^{1/2}$ or $(1/15625)^{1/2}$

7.

(a) Attempt to find the difference between $100x=85.8585\ldots$ and $x = 0.8585\ldots$ $85/99$	M1 A1	Or alternative full method
(b) $3(2x + 7) + 4$ as a numerator $4(2x + 7)$ as a denominator $\frac{6x + 25}{4(2x + 7)}$ or $\frac{6x + 25}{8x + 28}$	M1 M1 A1	Mark final answer
(c) $(\sqrt{(3\times25)} - \sqrt{3})^2$ $= (5\sqrt{3} - \sqrt{3})^2$ $(= (4\sqrt{3})^2 = 16\times3)$ 48	M1 A1 A1 8	OR M1 $75 - \sqrt{75}\sqrt{3} - \sqrt{75}\sqrt{3} + 3$ any 3 terms correct A1 $75 - 15 - 15 + 3$ CAO A1 48

8.

12. (a) $\sqrt{45} = \sqrt{(9\times5)}$ or $\sqrt{(3\times3\times5)}$ or $3\sqrt{5}$ $\{ (\sqrt{45} - \sqrt{5})^2 \} = (3\sqrt{5} - \sqrt{5})^2$ $(= (2\sqrt{5})^2)$ $= 20$	M1 M1 A1	**OR** M2 for $45 - 2\sqrt{45}\sqrt{5} + 5$ OR M1 for 2 of the 3 (or 4) expansion terms correct FT from M1 awarded
12.(b) $x = 0.47878\ldots$ **and** $100x = 47.878\ldots$ with an attempt to subtract $474/990$ ISW	M1 A1	Or $10x$ **and** $1000x$ with attempt to subtract, or equivalent. Or alternative method An answer of 47.4/99 gains M1 only

9.

8.(a)$10x = 7.5252..$ and $1000x = 752.52\ldots$ with attempt to subtract $745/990$ (ISW)	M1 A1	Or equivalent Watch for slips in the denominator! A final answer of 74.5/99 is M1, A0
8.(b) $\pi^2(\sqrt{(4\times5)} - \sqrt{5})^2$ OR $20\pi^2 - 2\pi^2\sqrt{20}\sqrt{5} + 5\pi^2$ $\pi^2(\sqrt{5})^2$ middle term $(\pm)\ 20\pi^2$ $5\pi^2$	M1 M1 A1	If error is not considering π^2 correctly, leading to answers of 5π or 5, then award SC1
8.(c)$1/20^3$ or 20^{-3} or 8000^{-1} or $1/\sqrt{64\ 000\ 000}$ or $1/\ 64\ 000\ 000^{1/2}$ 1/8000 (ISW)	M1 A1	

10.

15(a) 10x = 4.3535... **and** 1000x = 435.3535... with an attempt to subtract 431/990 ISW	M1 A1	Or x = 0.43535… **and** 100x = 43.535… with an attempt to subtract, or equivalent. Or alternative method An answer of 43.1/99 gains M1 only
15(b) 1/10	B1	Do not accept 0.1
15(c)(i) 1	B1	CAO
15(c)(ii) $2\sqrt{10}$	B1	CAO
15(c)(iii) $2\sqrt{5}$	B1	CAO

11.

(a) 1/10 or 0·1	B2	B1 for 10^{-1} or $1/\sqrt[3]{1000}$ or $1/1000^{1/3}$ or $(1/1000)^{1/3}$
(b) $x = 0{\cdot}515151.....$ $100x = 51{\cdot}5151.....$ with an attempt to subtract (33 ×) 51/99 OR (33 ×) 17/33	M1 A1	Or $10x$ and $1000x$, or equivalent. Or an alternative method.
17	A1	Do not allow 1683/99
(c) $20 - \sqrt{100} - \sqrt{100} + 5$ or equivalent	M1	3 of the 4 terms correct. $\sqrt{20}\sqrt{5}$ is insufficient for $\sqrt{100}$.
= 5 7	A1	Mark final answer *Alternative:* $(2\sqrt{5} - \sqrt{5})^2$ M1 = 5 A1

12.

(a) $x = 0{\cdot}04444.....$ $10x = 0{\cdot}4444.....$ with an attempt to subtract (1/3 +) 4/90 OR (1/3 +) 2/45	M1 A1	Or $10x$ and $100x$, or equivalent. Or an alternative method. An answer of 0·4/9 gains M1 only.
34/90 (= 17/45)	A1	FT 'their 4/90' provided equivalent difficulty. Mark final answer. Do not ignore incorrect cancelling. *Alternative solution* *x = 0·37777……* *B1* *10x = 3·7777..... with an attempt to subtract* *M1* *x = 34 / 90 (= 17/45)* *A1* If no marks awarded, SC1 for a final answer of 34/99 (resulting from using 0·343434……) OR SC1 for a final answer of 37/99 (resulting from using 0·373737……)
(b) 1/4 or 0·25	B2	B1 for 4^{-1} or $1/\sqrt{16}$ or $1/16^{1/2}$ or $(1/16)^{1/2}$ Allow ±1/4 or ±0·25 for B2 OR –1/4 or –0·25 for B1
(c) $9 - 3\sqrt{5} - 3\sqrt{5} + 5$ $14 - 6\sqrt{5}$	M1 A1 7	3 or 4 terms correct. Mark final answer.