

Revision B F3 (End of Year Exam) [40] MARKSCHEME

1.

(a) $2(3a - 5)$ B1
 $-2(5 - 3a)$

(b) $3ab(2a + 3b)$ B2
B1 for 3ab
B1 for (2a + 3b)
B1 for correct partial factorisation with at least two
common factors outside bracket.
eg $3a(2ab + 3b^2)$

[3]

2.

Alternative method 1		
$x + 25 + 2x + 35 = 180$	M1	oe
$x = 40$	A1	
$2 \times \text{their } 40 + 35$ and $5 \times \text{their } 40 - 85$	M1dep	
$2 \times 40 + 35 = 115$ and $5 \times 40 - 85 = 115$ and corresponding angles	A1	
Alternative method 2		
$5x - 85 = 2x + 35$	M1	oe
$x = 40$	A1	
$2 \times \text{their } 40 + 35$ and their $40 + 25$	M1dep	
$2 \times \text{their } 40 + 35 = 115$ and their $40 + 25 = 65$ and angles on a straight line	A1	

3.

Expanding brackets or dividing by 2:
Rearranging:

$$28 - 20x \leq 32 \quad \text{or} \quad 7 - 5x \leq 8$$

$$-20x \leq 4 \quad \text{or} \quad -5x \leq 1$$

$$x \geq -\frac{1}{5}$$

[M1] oe
[M1] oe
[A1]

- 4.
- $\pi \times 9^2$ M1
Or 254 (....) seen
- $\pi \times 5^2$ M1
Or 78 (....) or 79 seen
- Subtracting M1 dep
Dependent on both previous M1s
- 176 (or 56π) A1
Accept 175.8 to 176
Using 18^2 and $10^2 \Rightarrow 703.2$ to 704 SC2
- cm^2 B1
Note: units mark
5. [5]
- Attempt $\frac{7-2}{8--2}$ M1
- Negative reciprocal of their gradient M1 dep
Must be an attempt at a gradient
- $-2x + 7$ A1 [3]

6.

<p>23.6 – 23.8</p> <p>Accept 24 provided full method shown</p>	<p>3 1 A01.3b 2 A03.1c</p>	<p>M2 for $\frac{329 \times 130}{18 \times 100}$</p> <p>Or</p> <p>M1 for any two of $\frac{329}{100}$ or $\frac{130}{100}$ or $\frac{329}{18}$ or 329×130</p>	<p>May be done in stages</p>
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7.

Alternative method 1		
$(n = 0.17272\dots \text{ and})$ $100n = 17.272\dots$	M1	oe eg $10n = 1.7272\dots \text{ and}$ $1000n = 172.72\dots$
$99n = 17.272\dots - 0.17272\dots \text{ or}$ $99n = 17.1 \text{ or } \frac{17.1}{990} \text{ or } \frac{171}{990}$ or $\frac{57}{330}$	M1dep	oe eg $990n = 172.72\dots - 1.7272\dots \text{ or}$ $990n = 171$
$\frac{19}{110}$	A1	

Alternative method 2		
$0.07272\dots = \frac{72}{990}$	M1	
$(\frac{1}{10} + \frac{72}{990} =) \frac{99}{990} + \frac{72}{990} \text{ or}$ $\frac{171}{990} \text{ or } \frac{57}{330}$	M1dep	
$\frac{19}{110}$	A1	

8.

(a)	20	2 1 AO1.1 1 AO2.3a	M1 for $D = \frac{M}{V}$ soi	Can be implied by an answer of 2
(b)	$8\frac{1}{7}$ or 8.14[...]	4 2 AO1.3b 2 AO3.1d	M1 for 15 or 105 ÷ 7 And M2 for $\frac{180+105}{\text{their}(20+15)}$ or $\frac{18+10.5}{\text{their}'(2+1.5)}$ Or M1 for some attempt to find $\frac{\text{total mass}}{\text{total volume}}$	

9.

8 : 3 nfw	5 1 AO1.1 1 AO1.3b 2 AO3.1b 1 AO3.2	B2 for CD = 8 cm Or M1 for $CD^2 + 6^2 = 10^2$ oe AND B2 for AC = 16 Or M1 for $\sin 30 = \frac{\text{their } CD}{AC}$ oe Or B1 for $\sin 30 = 0.5$ oe	Could be on diagram
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10.

$$\text{Cost (£) 2001} = \frac{\text{USA price}}{1.42} = 0.704\dots \text{ of USA price}$$

or if cost \$100 in 2001

$$\text{Cost in 2001 is } \pounds \frac{100}{1.42} = \pounds 70.42$$

$$\text{Cost ($) 2002} = 0.82 \text{ of USA price in 2001} \quad \text{B1}$$

In 2002, cost is \$82 B1

$$\text{Cost (£) 2002} = \frac{0.82}{1.64} \text{ of USA price in 2001} \quad \text{M1}$$

$$\text{Which is } \pounds \frac{82}{1.64} \quad \text{M1}$$

$$= 0.5 \text{ of USA price in 2001} \quad \text{A1}$$

= £50 A1

Reduction is 0.204... of USA price in 2001

Reduction is £20.42

$$\% \text{ reduction is } \frac{0.204\dots}{0.704\dots} \times 100 \quad \text{M1}$$

$$\% \text{ reduction is } \frac{20.42\dots}{70.42\dots} \times 100 \quad \text{M1}$$

$$= 29.0\% \quad \text{A1}$$

$$= 29.0\% \quad \text{A1}$$

OR in 2002 cost is \$82 B1

$$\text{Old cost was } \frac{1.42}{1.64} \times \$82 \quad \text{M1}$$

$$= \$71 \quad \text{A1}$$

Reduction is 100 – 71 M1

$$= 29\% \quad \text{A1}$$

OR in 2002 cost is \$82 B1

$$\text{Reduction if } \$82 \times \frac{0.22}{1.64} \quad \text{M1}$$

$$= \$11$$

2002 cost is \$82 – 11

$$= \$71 \quad \text{A1}$$

Reduction is 100 – 71 M1

$$= 29\% \quad \text{A1}$$

[5]