

Y10 End of Year (All sets) MS

1) $4n - 1$

B1

2a) One pair of branches correct

[1]

B1

All correct

A2

b) One product correctly multiplied

M1

HH or TT identified

M1

$$\frac{4}{25} + \frac{9}{25}$$

$$\frac{13}{25} \text{ oe}$$

A1

[5]

3) (a) $\pounds 1500 \times 1.016^2$

B1

Alternative method 1

[1548.38, 1548.39]

ft their part (a)

B1ft

1500 \times 1.018 or 1527

oe

M1

1500 \times 1.018 \times 1.013

or 1527 \times 1.013

or [1546.85, 1546.86]

oe

M1dep

[1548.38, 1548.39]

and [1546.85, 1546.86] and Dev's

oe

ft their part (a)

A1ft

Alternative method 2

1.016² or 1.032(256) or 1.0323

M1

1.018 or 1.013 seen

M1

$$1.018 \times 1.013 \text{ or } 1.031(234)$$

M1dep

$$1.032(256) \text{ and } 1.031 \text{ and Dev's}$$

A1

Additional Guidance

Note incorrect answers from part (a) for Alt 1

$$£1500 \times 1.6 \times 2 = £4800$$

$$£1500 \times 1.6^2 = £3840$$

$$£1500 \times 1.016 \times 2 = £3048$$

[5]

4) Angles of pentagon add to 540°

B1

$$540 \div (1+2+5+5+7) = 17^\circ$$

M1 (their pentagon provided $> 360 \div$ total)

$$17 \times 7 = 119^\circ$$

A

[3]

5) $\frac{300}{360} \times 2 \times \pi \times 15 (= [78.5, 78.6])$

oe eg 1 $\frac{5}{6} \times 30\pi$

eg 2 25π

eg 3 $2 \times \pi \times 15 - \frac{1}{6} \times 2 \times \pi \times 15$

eg 4 $0.83 \times 30\pi$

M1

their $[78.5, 78.6] + 2 \times 15$

oe

M1dep

$[108.5, 109]$ or $25\pi + 30$

SC2 Answer $[78.5, 78.6]$ or 25π

SC1 Answer $[45.7, 45.71]$ or $5\pi + 30$

A1

[3]

6)

Question	Working	Answer	Mark	AO	Notes
(a)	$10 \times 10 \times 10 \times 10$	10000	M A	1.3a 1.3a	M1 $10 \times 10 \times 10 \times 10$ A1 cao
(b)	$5 \times 4 \times 5 \times 4$	400	M A	1.3a 1.3a	M1 $5 \times 4 \times 5 \times 4$ A1 cao

b)ii)

$$400/4999$$

their ans from bi)/4999

A1

[5]

7)	second difference of 4 identified	M1	
	$2n^2$	A1	
	$-n$	A1	
	$+4$	A1	
8)	(a) $3a(3a - 2)$		
	<i>B1</i> $a(9a - 6)$ or $3(3a^2 - 2a)$		B2
	(b) $(x + a)(x + b)$		
	<i>where</i> $ab = 20$		
	<i>or</i> $a + b = -12$		M1
	$(x - 2)(x - 10)$		A1
	2 and 10		
	<i>ft their pair of brackets</i>		B1ft
			[5]
9)	$\frac{1}{3} \times \pi \times 1.5^2 \times 4$		
	or 3π		M1
	$\frac{1}{3} \times \pi \times 1.5^2 \times 4 \div 0.2$		
	or 15π		
	<i>oe</i>		M1dep
	$[47, 47.2]$ or 48		A1
			[3]
10)			
a)	10		B1
	23		B1
b)	attempt at obtaining an expression in terms of x and equating to 14		M1
	$(2x) x^2 + 3 = 14$ simplified $(4x + 3 = 14)$		
	$x = 11/4$ <i>oe</i>		A1
			[4]

11) Forming each equation: M2

$$g + s = 60$$

$$10g - 3s = 431$$

Multiplying to make common coefficient M1

$$13g = 611$$

$$g = 47 \quad \text{A1}$$

$$s = 13 \quad \text{A1}$$

[5]

12) $75 \div 50$ or $\frac{3}{2}$ or 1.5 seen or implied

or $50 \div 75$ or $\frac{2}{3}$ seen or implied

oe

M1

$$(75 \div 50)^2 \text{ or } \left(\frac{3}{2}\right)^2 \text{ or } 1.5^2 \text{ or } 2.25 \text{ or } \frac{9}{4}$$

$$\text{or } (50 \div 75)^2 \text{ or } \left(\frac{2}{3}\right)^2 \text{ or } \frac{4}{9}$$

oe

M1dep

$$6000 \times 2.25 \text{ or } 13\,500$$

$$\text{or } 80 \times 6000$$

oe

M1

$$\text{their } 13\,500 \div 10\,000$$

$$\text{or } 80 \div 10\,000$$

$$\text{or their } 13\,500 \div 10\,000 \times 80$$

$$\text{or } 80 \times 6000 \div 10\,000$$

$$\text{or } 6000 \div 10\,000 \times 2.25$$

oe

Dependent on previous M1

M1dep

108

Digits 108 seen M1M1M1M1A0

A1

Additional Guidance

$$6000 \times \frac{3}{2} \times 80$$

M1M0M1

720 000 implies $\frac{3}{2}$ and 6000×80 from $(6000 \times \frac{3}{2} \times 80)$

M1M0M1

9000 implies $\frac{3}{2}$

Ignore assumptions about the shape

M1

[5]

13a) Alternative method 1

$$(x + 3)^2$$

oe

M1

$$x^2 + 3x + 3x + 9$$

oe

A1

$$3 \times (x + 3)$$

oe

M1

$$x^2 + 3x + 3x + 9 + 3x + 9 + 9 \\ = x^2 + 9x + 27$$

A1

Alternative method 2

$$(x + 6)(x + 3)$$

oe

M1

$$x^2 + 6x + 3x + 18$$

oe

A1

$$\text{their } (x^2 + 6x + 3x + 18) + 3 \times 3$$

oe

M1

$$x^2 + 6x + 3x + 18 + 9 \\ = x^2 + 9x + 27$$

A1

Alternative method 3

$$(x + 3)^2$$

oe

M1

$$x^2 + 3x + 3x + 9$$

oe

A1

$$3 \times (x + 6)$$

oe

M1

$$x^2 + 3x + 3x + 9 + 3x + 18 \\ = x^2 + 9x + 27$$

A1

Alternative method 4

$$(x + 6)^2$$

oe

M1

$$x^2 + 6x + 6x + 36$$

oe

A1

$$3 \times (x + 3)$$

oe

M1

$$x^2 + 6x + 6x + 36 - 3x - 9 \\ = x^2 + 9x + 27$$

A1

[4]

- b) $x^2 + 9x + 27 = 79$
rearrange to make 0 and factorise
 $(x-4)(x+13)=0$
x=4 only

B1

M1

A1

[3]

14)

a) Vol of sphere = $\frac{4}{3} \pi x^3 = 4.1887x^3$

M1

Vol of cuboid = $2x \times 2x \times x = 4x^3$

M1

- b) need to increase **vol** of cuboid by $\frac{\pi}{3}$

B1

recognising relationship between sf of length and vol is $(sf)^3$ or $\sqrt[3]{sf}$

M1

$$\sqrt[3]{\frac{\pi}{3}}$$

A1

[5]