Y10 End of Year (Middle) MS

1) $\frac{20}{5}$ × 1.5 (= 6)
or 20 × 0.5 (= 10)
or 20 × 50 (= 1000)

M1

their 6 − their 10
or their 10 − their 6

M1 dep

4

SC2 £2 (from 16 × 50p − 4 × £1.50)

A1

[3]

2) 70 ÷ 5 (× 4) or 14 or 56
oe

M1

56 in W only and 14 in B only

A1

their 56 + *x* = 3(their 14 + *x*) or
their 56 + *x* = their 42 + 3*x*
oe any letter

M1

7 in W and B
ft their 56 and their 14
Award if W total = 3 × B total

A1ft

23 not in W or B
ft their 56 and their 14 and 7
Award if the four values total 100

B1ft

[5]

3) $\frac{12}{8}$ or $\frac{8}{12}$ or $\frac{6}{8}$ or $\frac{8}{6}$ seen
oe

M1

6 × their $\frac{12}{8}$ or 6 ÷ their $\frac{8}{12}$
or 12 × their $\frac{6}{8}$ or 12 ÷ their $\frac{8}{6}$
oe

M1dep

9

A1

[3]

4) showing value of either x=2 (x^3+ 3x = 14) or x=3 (x^3+ 3x = 36) **M1**
Working for x to 1dp for any of 2.1, 2.2, …., 2.9 **M1**
Value of x = 2.85

M1 M1 A0

[4]

5) States that total angle for arcs is 180°

Strand (i)

Accept "half a circle" or "semi-circle"

Q1

$\pi \times 8^2 \div 2$ or [100, 101]

oe

M1

$\pi \times 8^2 \div 2 + 64 + 64$
or [100, 101] + 64 + 64

M1dep

[228, 229] or 230

Accept 32π + 128

SC1 for $\pi \times 8^2$ or [200, 202] and 64 or 128 seen

A1

Alternative Method

States that total angle for arcs is 180°

Strand (i)

Accept "half a circle" or "semi-circle"

Q1

$\frac{\theta}{360} \times \pi \times 8^2$ and $\frac{180 - \theta}{360} \times \pi \times 8^2$

oe

$\vartheta < 180$

M1

$\frac{\theta}{360} \times \pi \times 8^2 + \frac{180 - \theta}{360} \times \pi \times 8^2 + 64 + 64$

M1dep

[228, 229] or 230

Accept 32π + 128

SC1 for $\pi \times 8^2$ or [200, 202] and 64 or 128 seen

A1

[4]

6) $(3x + a)(x + b)$
where $ab = 8$ or $a + 3b = 14$
or
$3x(x + 4) + 2(x + 4)$
or
$x(3x + 2) + 4(3x + 2)$

M1

$(3x + 2)(x + 4)$

oe

A1

[2]

7) (a) 19

B1

(b) 15/6 = 2.5 (o.e)

B1

(c) $6x - 5 = 4x$ **M1**

$x = 2.5$ (o.e) **A1**

(c) + 7 and × 2

Must be in correct order **B1**

(c) $y = \frac{x}{2} + 3$ **B1**

[6]

8a) cfs: 12, 20, 62, 91, 110 B1

	points plotted correctly with ends of groups	B1
	0cf at 10 time	B1
	Lq = 43 UQ = 74 approx	M1 using graph to find at least one
	IQR = 31 approx	A1
b)	girls took less time on average	A1ft
	median lower (42) than boys (about 55)	A1
	girla less consistent / more spread	A1ft
	higher IQR of 55 compared to boys of 31	A1 ft
c)	P(over 70) = 33/110 = 3/11	M1 ft from their graph
	multiplying 2 probabilities	M1
	9/121	A1 ft

9) (a) Fully correct box plot

B1 for three or four or five correct plots
210, 250, 310, 390, 470

B2

(b) No change

B1

Increase

B1

Increase

B1

[4]

10)

	1.12	B1
	24,080 ÷ 1.12	M1
	£21, 500	A

[3]

Alternative method 1

	112% = 24,080	B1
	100 % = 24,080 ÷ 1.12	M1
	£21, 500	A

11) **Alternative method 1**

$\frac{1}{3}\pi(r+2)^2 r$

M1

$\frac{4}{3}\pi r^3 = \frac{1}{3}\pi(r+2)^2 r$

oe

M1dep

$3r^2 - 4r - 4 \ (= 0)$
or $3r^2 - 4r = 4$

oe
Reduces to three term quadratic

M1dep

$(3r + 2)(r - 2) \ (= 0)$

M1dep

2

must discard $r = -\frac{2}{3}$

SC2 Answer 2 with no working

A1

Alternative method 2

$\frac{1}{3}\pi(r+2)^2 r$

M1

$\frac{4}{3}\pi r^3 = \pi(r+2)^2 r$

oe

M1dep

$4r^2 = (r+2)^2$

M1dep

$2r = r + 2$

M1dep

2

SC2 Answer 2 with no working

A1

Additional Guidance

Answer $r = 2$ and $r = -\frac{2}{3}$

If there is incorrect working, unless recovered, apply the scheme even if $r = 2$ is seen

M4 A0

[5]

12) $\frac{9}{27}$ or $\frac{18}{27}$ or fraction with denominator 22

oe

M1

$\frac{9}{27} \times \frac{8}{22}$ or $\frac{72}{594}$ or

$\frac{18}{27} \times \frac{7}{22}$ or $\frac{126}{594}$

oe

M1

their $\frac{72}{594}$ + their $\frac{126}{594}$ or $\frac{198}{594}$

oe

dep on 2nd M1

M1dep

Clear indication that $\frac{198}{594}$ and $\frac{9}{27}$ are equivalent fractions

A1

[4]

13)

For use of area of any triangle ½ BC x 12 sin35° = 40 M1

BC = 11.6229.. A

Finding length AC (DB 26.732 …) M1

AB = 15.1 cm (26.732.. – 11.6229.) A