AREA OF COMPOUND SHAPES

Pearson Edexcel - Thursday 8 November 2018 - Paper 2 (Calculator) Foundation Tier

1.

24	No (supported)	P1	calculates area of trapezium eg ½ × 7 × (10+16) (= 91)		
		P1	for division by coverage eg ÷2 or [area of trapezium] ÷ 2 (= 45.5) or process to find coverage per tin eg 5 × 2 (= 10)	for process to find number of tins bought eg 160 ÷ 16.99 = 9 tins	[area of trapezium] needs to be clearly stated if the process of finding the area is not clear
		P1	for division to find the number of tins eg ÷5 or "45.5" ÷ 5 (= 9.1) **or** [area of trapezium] ÷ "10" (= 9.1)	for using whole no. of tins to find total litres eg 9 × 5 (= 45)	
		P1	(dep on at least P2) for a process to multiply a whole number of tins (rounded up) by 16.99	(dep on at least P2) for a process to find the total coverage eg "45" × 2 (= 90)	
		C1	for 'No' supported by correct figures eg 169.9 or 90 **and** 91		There must be a conclusion ("No" or equivalent wording) including the figure 169.9 and working showing processes followed.

Pearson Edexcel - Wednesday 8 November 2017 - Paper 3 (Calculator) Foundation Tier

2.

24		147	P1	starts process, eg uses x and $x + 7$
			P1	starts to work with at least 6 correct sides, may be on the diagram or in an expression
			P1	(dep on previous P1) gives a correct expression for the perimeter, eg $x + x + 7 + x + 7 + x + 7 + x + x + 7 + x + 7 + x + 7$ or adds at least 6 correct sides and equates to 70
			A1	for width = 3.5 oe **and** length = 10.5 oe
			B1	ft (dep P2) for correct area for their x

Pearson Edexcel – Specimen 1 - Paper 1 (Non-Calculator) Foundation Tier

3.

16		32	M1	for method to find area of any one rectangle
			A1	cao

4.

23		48	P1	begins to work with rectangle dimensions eg $l+w=7$ or $2\times l+w$ (=11)
			C1	shows a result for a dimension eg using $l=4$ or $w=3$
			P1	begins process of finding total area eg 4 × "3" × "4"
			A1	cao

OCR – Tuesday 03 November 2020- Morning - Paper 1 (Calculator) Foundation Tier

5.

25			142.2[0] with correct working	6	**M1** for 36^2 or 1296 **M1** for $k \times \pi \times 18^2$ oe where k = ½, 1, 1½ or 3 AND **M1** for *their* area × 30 **M1** for *their* mass ÷ 1000 and ÷ 10 or counting up in 10 000s to their mass AND **M1** for *their* 9 × 15.8 If **0, 1 or 2** scored instead award **SC3** for answer of 142.2[0] with insufficient working If **0 or 1** scored instead award **SC2** for 2822 to 2823.02 If **0** scored award **SC1** for 1526 to 1527.02, 1017 to 1018.008, 508 to 509.004, 3051 to 3054.024, 162π, 324π, 486π rot to at least nearest integer	Correct working requires **M1** AND **M1** AND **M1** **M2** implied by 2822 to 2823.02 or **M1** implied by 1526 to 1527.02, 1017 to 1018.008, 508 to 509.004, 3051 to 3054.024, 162π, 324π, 486π rot to at least nearest integer *their* area cannot be 36 and **M1** implied by 84660 to 84 690.6 or 84.66 to 84.7 *their* mass is attempt at (rectangle and circle(s)) × 30, **M1** implied by 8.46 to 8.47 *their* 9 **dep.** on fourth **M1** scored **with a rounding up to next integer**

OCR Monday 6 November 2017– Morning (Calculator) Foundation Tier

6.

9			42	6	**M1** for $\frac{6\times2}{2}$ oe **A1** for [area triangle] = 6 **M1** for $\frac{3+5}{2}\times8$ oe **A1** for [area trapezium] = 32 **M1** for 10 × 8 – (*their* area of triangle + *their* area of trapezium) or for 2 × 2 + (*their* area of triangle + *their* area of trapezium)	Accept other equivalent methods Could be implied by 24 + 8

Pearson Edexcel – Sample Papers - Paper 3 (Calculator) Foundation Tier

7.

12		48	P1	For start to process eg.96 ÷ 12 **or** 96 ÷ 2
			A1	cao

8.

18		252	P1 For start to process eg. radius = 12 ÷ 4 (=3) M1 Method to find area of trapezium or semicircle or circle P1 Process to find area of the shaded region A1 251.7 – 252

OCR Wednesday 8 November 2017– Morning (Calculator) Foundation Tier

9.

17			3 : 8 cao	**4**	Using fractions **M1** for $\frac{1}{4}$ [+] $\frac{1}{4}$ [+] $\frac{1}{8}$ **M1** for 1 – *their* $\frac{5}{8}$ **B1** for *their* $\frac{3}{8}$: $\frac{8}{8}$ Using Areas **M1** for un-shaded area = 2×2×1÷2 + 1×1÷2 (=2.5) oe **M1** shaded area = *their* 4 – *their* 2.5 **B1** for *their* (1.5 : 4)	May be on diagram Any side length allowed eg 1 → 0.625 (1) 5 → 15.625 (25) 2 → 2.5 (4) 6 → 22.5 (36) 3 → 5.625 (9) 7 → 30.625 (49) 4 → 10 (16) 8 → 40 (64)

OCR Sample Question Paper 1 – Morning/Afternoon (Calculator) Foundation Tier

10.

5			48 (cm^2)	**3** 1 AO1.3a 2 AO3.1b	**M1** $\frac{1}{2} \times 8 \times 4 = 16$ **M1** *their* '16' × 3	

OCR Sample Question Paper 3 – Morning/Afternoon (Calculator) Foundation Tier

11.

6	**(a)**		40	**1** 1 AO1.3a		
	(b)		Correct reasoning leading to 36.9	**4** 1 AO1.3b 2 AO2.2 1 AO3.1b	**M2** for $\pi \times 1^2$ Or **M1** for $\frac{1}{2} \times \pi \times 1^2$ And **M1** for *their* '40' – $\pi \times 1^2$	
	(c)		7.38 or better	**3** 1 AO1.3a 2 AO3.1b	**M1** for 2 mm = 0.2 cm **soi** **M1** for 36.9 × *their* '0.2' **oe**	

AQA Tuesday 21 May 2019 – Morning (Non-Calculator) Foundation Tier

12.

	Alternative method 1: areas		
	$\pi \times 10^2$ or 100π	M1	implied by [314, 314.2]
	$\pi \times (8 \div 2)^2$ or $\pi \times 4^2$ or 16π or $\pi \times (8 \div 2)^2 \div 2$ or $\pi \times 4^2 \div 2$ or $16\pi \div 2$ or 8π	M1	implied by [50.2, 50.3] or [25.12, 25.14] 92π or 84π or 92 : 8 or 8 : 92 or 84 : 16 or 16 : 84 implies M1M1
	(their $100(\pi)$ – their $8(\pi)$) ÷ their $8(\pi)$ or $92(\pi) \div 8(\pi)$ or their $100(\pi) \div$ their $8(\pi)$ (– 1) or $12\frac{1}{2}$ (– 1) or 12.5 (– 1)	M1dep	dep on M2 absence of π must be consistent condone $16(\pi)$ as their $8(\pi)$ in first calculation only, ie condone (their $100(\pi)$ – their $16(\pi)$) ÷ their $16(\pi)$ or $84(\pi) \div 16(\pi)$, but not their $100(\pi) \div$ their $16(\pi)$ (– 1)
	$11\frac{1}{2}$ or 11.5	A1	condone $\frac{23}{2}$
25	**Alternative method 2: scale factor**		
	$\frac{10}{8 \div 2}$ or $\frac{10}{4}$ or $\frac{5}{2}$ or $\frac{10 \times 2}{8}$ or $\frac{20}{8}$ or 2.5	M1	oe scale factor of lengths eg $\frac{2}{5}$ or 0.4 accept 2 : 5 or 5 : 2 oe ratio π may be present, but must be consistent in numerator and denominator
	(their $\frac{5}{2}$)^2 or $\frac{25}{4}$	M1dep	oe scale factor of areas eg $\frac{4}{25}$ accept 4 : 25 or 25 : 4 oe ratio
	2 × their $\frac{25}{4}$ (– 1) or $\frac{25}{2}$ (– 1) or $12\frac{1}{2}$ (– 1) or 12.5 (– 1)	M1dep	oe eg 2 ÷ their $\frac{4}{25}$ (– 1)
	$11\frac{1}{2}$ or 11.5	A1	condone $\frac{23}{2}$
	Additional Guidance is on the following page		

	Additional Guidance	
25 (cont)	Accept, for example, $\pi 8$ or $\pi \times 8$ or $8 \times \pi$ for 8π	
	An answer of 11.5π with no incorrect working	M1M1M1A0
	Consistent use of πd^2 for the area of a circle gives the area of the circle as 400π, the area of the semicircle as 32π and the area of the shaded part as 368π. This also gives the answer 11.5, but scores zero	M0M0M0A0
	Irrespective of where their answer comes from and the presence of other measures such as circumference, students can gain the first two marks of alternative method 1 if it is clear that the methods or values given are for area eg 1 Big area = 100π, little area = 8π, big circumference = 20π, little circumference = 4π, $20 \div 4 = 5$ eg 2 100π, 8π, 20π, 4π	M1M1M0A0 M0M0
	Do not award the second mark if the value of 8π comes from πd This is implied by, eg, 'Area of circle = 20π, area of semi-circle = 8π'	M?M0 M0M0
	$\frac{100(\pi)-16(\pi)}{16(\pi)}$ (which may give an answer of 5.25)	M1M1M1A0
	$\frac{100(\pi)}{16(\pi)}$ (which may give an answer of 6.25)	M1M1M0A0

AQA Thursday 24 May 2018 – Morning (Non-Calculator) Foundation Tier

13.

7	**Alternative method 1**		
	6 × 8 or 48 or 2^2 or 2 × 2 or 4	M1	may be on diagram
	48 ÷ 4 = 12 or 48 ÷ 12 = 4 or 4 × 12 = 48 or $\frac{4}{48}$ (=) $\frac{1}{12}$	A1	oe eg 48 ÷ 2 = 24 and 24 ÷ 2 = 12
	Alternative method 2		
	6 ÷ 2 or 2 ÷ 6 or 8 ÷ 2 or 2 ÷ 8	M1	
	3 × 4 = 12 or $\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$ with full working seen	A1	Need to justify where this product comes from with M1 work seen

7 cont	**Alternative method 3**		
	One row of 4 squares drawn or one column of 3 squares drawn	M1	Mark intention, not accuracy of drawing, 2m labels not required
	Rectangle split into 4 columns and 3 rows	A1	
	Additional Guidance		
	(2 × 2 = 4, 6 × 8 = 48 and) 4 is $\frac{1}{12}$ of 48		M1A1
	4 12s are 48		M1A1
	8 × 6 = 48, 12 ÷ 48 = 4 (cannot condone incorrect order as 'show that')		M1A0
	$\frac{4}{48}$ so correct		M1A0
	Beware 4 (or 12) arising from incorrect working eg 2 + 2 = 4, 8 + 6 = 14, 14 – 2 = 12		M0A0
	2 × 2 + 2 × 2 = 8 (misconception on area of rug) cannot score for 2 × 2		M0A0
	6 × 8 = 48 and 48 × 2 = 96 (ignore additional 'method' and give M1 for 48) 6 × 8 = 48 and 48 ÷ 2 = 24 (ignore additional 'method' and give M1 for 48) 6 x 8 x 2 (ignore additional 'method' and give M1 for 6 × 8)		M1A0
	6 × 8 = 48 and 48 ÷ 2 ÷ 2 = 12 (equivalent to dividing by 4)		M1A1
	Ignore references to perimeter or units if it is clear they are working out area		

AQA Sample Paper 1– Morning (Non-Calculator) Foundation Tier

14.

30	**Alternative method 1**		
	$(x+3)^2$	M1	oe
	$x^2+3x+3x+9$	A1	oe
	$3\times(x+3)$	M1	oe
	$x^2+3x+3x+9+3x+9+9$ $=x^2+9x+27$	A1	
	Alternative method 2		
	$(x+6)(x+3)$	M1	oe
	$x^2+6x+3x+18$	A1	oe
	their $(x^2+6x+3x+18)+3\times3$	M1	oe
	$x^2+6x+3x+18+9$ $=x^2+9x+27$	A1	
	Alternative method 3		
	$(x+3)^2$	M1	oe
	$x^2+3x+3x+9$	A1	oe
	$3\times(x+6)$	M1	oe
	$x^2+3x+3x+9+3x+18$ $=x^2+9x+27$	A1	
	Alternative method 4		
	$(x+6)^2$	M1	oe
	$x^2+6x+6x+36$	A1	oe
	$3\times(x+3)$	M1	oe
	$x^2+6x+6x+36-3x-9$ $=x^2+9x+27$	A1	

AQA Sample Paper 2– Morning (Calculator) Foundation Tier

15.

30	**Alternative method 1**		
	$10 \div 4$ or 2.5 or $4 \div 10$ or 0.4 or $\frac{1}{2} \times (18 + 10) \times 25$ or 350	M1	oe
	$18 \div$ their 2.5 or $18 \times$ their 0.4 or 7.2 or $25 \div$ their 2.5 or $25 \times$ their 0.4 or 10	M1dep	oe
	$\frac{1}{2} \times (18 + 10) \times 25$ or 350 and $\frac{1}{2} \times$ (their 7.2 + 4) $\times$ their 10 or 56	M1dep	Must see working
	$350 - 56 = 294$	A1	Do not award without working seen
	Alternative method 2		
	$10 \div 4$ or 2.5 or $4 \div 10$ or 0.4 or $\frac{1}{2} \times (18 + 10) \times 25$ or 350	M1	oe
	(Area scale factor =) (their 2.5)^2 or (their 0.4)^2	M1dep	
	their $350 \div$ (their 2.5)^2 or their $350 \times$ (their 0.4)^2 or 56	M1dep	Must see working
	$350 - 56 = 294$	A1	Do not award without working seen