SOHCAHTOA (TRIGONOMETRY)

Pearson Edexcel - Thursday 4 June 2020 - Paper 2 (Calculator) Foundation Tier

1.

25	99.5	M1	for $\sin(34) = \frac{x}{178}$ oe **or** alternative method to find x	
		A1	for answer in range 99.5 to 99.7	If an answer in the range 99.5 to 99.7 is given in the working space then incorrectly rounded, award full marks

Pearson Edexcel - Thursday 6 June 2019 - Paper 2 (Calculator) Foundation Tier

2.

24	9.85	M1	for $\sin(38) = \frac{AB}{16}$ oe **or** alternative method to find AB	
		A1	for an answer in the range 9.76 to 9.92	

Pearson Edexcel - Monday 12 November 2018 - Paper 3 (Calculator) Foundation Tier

3.

25	17.3	P1	for full process to find either angle eg $(180 - 90) \div (2+3) \times 2$ **or** for 36 or 54 seen as an angle	May be seen on diagram Condone correct values if incorrectly placed.
		P1	for a correct equation using trigonometry eg $\cos[A] = 14 \div AB$	This must be shown as an equation with all four elements (eg cos, $[A]$, 14, AB) present. $[A]$ could be 36 or any angle clearly and unambiguously identified as A. This also applies to $[B]$ with Sine.
		P1	(dep previous P mark) for rearranging their trigonometry equation to make AB the subject eg $(AB =)$ "$14 \div \cos 36$"	
		A1	for an answer in the range 17.3 to 17.4	If an answer is shown in the range in working and then incorrectly rounded award full marks.

Pearson Edexcel - Tuesday 12 June 2018 - Paper 3 (Calculator) Foundation Tier

4.

23 (a)	50.5	M1	for $\cos ABC = \frac{7}{11}$ (0.63…) oe	Must be a complete statement for cos, sin or tan with all three elements present.
		A1	for answer in the range 50.4 to 50.51	If an answer is in the range 50.4 to 50.51 is given in the working space then incorrectly rounded, award full marks.
(b)	Increase (supported)	C1	States increase with supporting reason eg "$\frac{7}{10}$ is greater than $\frac{7}{11}$" "0.636 is less than 0.7" …."cos increases as angle decreases" "decreasing the denominator increases the value of the fraction" "angle is now 45.6" (accept 45.5 – 45.6)	If figures are given they must be correct (truncated or rounded).

Pearson Edexcel - Monday 6 November 2017 - Paper 2 (Calculator) Foundation Tier

5.

22		32.3	P1	for using Pythagoras to find length of third side of triangle, eg $7.5^2 - 6^2$ or $6^2 + x^2 = 7.5^2$
				or uses trigonometry to find angle in triangle eg $\sin A = \frac{6}{7.5}$ or $\cos B = \frac{6}{7.5}$
			P1	(dep P1) for complete process to find length of third side of triangle
				eg $\sqrt{7.5^2 - 6^2}$ or $\sqrt{56.25 - 36}$ or $\sqrt{20.25}$ (=4.5)
				or uses trigonometry to find base length of triangle eg $7.5 \times \cos$ "A" or $7.5 \times \sin$ "B" or $\frac{6}{\tan "A"}$
			P1	(dep P2) for $24 - 10 -$ "4.5" (= 9.5)
			P1	(indep) for process to find angle CDA, eg $\tan CDA = \frac{6}{base}$ from right-angled triangle
			A1	for answer in the range 32.2 to 32.3

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

6.

26	(a)		$\frac{\sqrt{3}}{2}$	B1	
	(b)		6	M1	starts process eg $\sin 30 = \frac{x}{12}$
				A1	answer given

OCR November 09 November 2020- Morning (Calculator) Foundation Tier

7.

18			5.39[6...] or 5.4[0]	3	**M2** for $8 \times \tan 34$ or any complete correct method or **M1** for $\tan 34 = \frac{x}{8}$	e.g. $\frac{8}{\tan(90-34)}$ e.g. $\tan(90-34) = \frac{8}{x}$ See appendix

OCR Tuesday 5 November 2019 – Morning (Calculator) Foundation Tier

8.

13			Shows correct working leading to 34.9[9...] seen [rounding to 35]	3	**M2** for $\tan^{-1}\frac{14}{20}$ or **M1** for $\tan[=]\frac{14}{20}$ or $\tan[=]0.7$ or $\tan[x][=]\frac{14}{20}$ or 0.7	If using Pythagoras , sin or cos, must have full method. Accept change of variable

9.

18			5.39[6...] or 5.4[0]	3	**M2** for $8 \times \tan 34$ or any complete correct method or **M1** for $\tan 34 = \frac{x}{8}$	e.g. $\frac{8}{\tan(90-34)}$ e.g. $\tan(90-34) = \frac{8}{x}$ See appendix

OCR Thursday 07 November 2019- Morning (Non-Calculator) Foundation Tier

10.

14	**(a)**	**(i)**	4 : 5	**1**		Accept 1 : 1.25 or 1 : $\frac{5}{4}$ or 0.8 : 1 or $\frac{4}{5}$: 1
14	**(a)**	**(ii)**	1 : 7 final answer	**3**	**B1** for 2100 [ml] or 0.3[l] seen **M1** for correct partial simplification of *their* ratio	A correct partially simplified ratio in the same units implies B1 M1 eg 100 : 700
14	**(b)**		2 nfww	**3**	**B1** for sin 30 = ½ oe **B1** for tan 45 = 1	B marks can be implied if seen on the correct side of a ratio

OCR Tuesday 21 May 2019 – Morning (Calculator) Foundation Tier

11.

18			21.6[3...]	**3**	Accept $6\sqrt{13}$ as final answer for 3 marks **M2** for $\sqrt{12^2 + 18^2}$ soi by $\sqrt{468}$ or **M1** for $12^2 + 18^2$ implied by 468 See appendix

OCR Tuesday 11 June 2019 – Morning (Calculator) Foundation Tier

12.

23	**a**		60 or 30 seen as angle $10 \times \sin 60$ or $10 \times \cos 30$ 8.660[...] <u>Alternative method by Pythagoras</u> 5 seen as side $\sqrt{10^2 - 5^2}$ 8.660[...]	**B1** **M2** **A1 dep** **B1** **M2** **A1 dep**	May be correctly marked on diagram **M1** for $\sin 60 = \frac{AC}{10}$ oe or $\cos 30 = \frac{AC}{10}$ **Dep** on at least M1 May be correctly marked on diagram or **M1** for $10^2 - 5^2$ **Dep** on at least M1	Reverse method using 8.66... **scores 0** 10^2 may be 100 and 5^2 may be 25
	b	**i**	$\frac{1}{2} \times \frac{1}{2} \times 10 \times 8.66[0..]$ oe 21.65[...]	**M1** **A1**		Reverse method using 21.7 **scores 0** May be in stages
		ii	260	**2**	**M1** for 12×21.7 or **B1** for 259.8 to 260.4	Award **M1** for alternative complete methods

OCR Monday 12 November 2018 – Morning (Calculator) Foundation Tier

13.

21			3.488 to 3.489 or 3.49 or 3.5	**3**	**M2** for 10.2 × sin20 or any complete correct method or **M1** for sin 20 = $\frac{x}{10.2}$	Cos70 × 10.2 or 10.2 × cos 20 and $\sqrt{(10.2^2 - (10.2 \times \cos 20)^2)}$ Allow 10.2 × cos 20 **with** attempt at Pythagoras for M1

OCR Thursday 2 November 2017– Morning (Calculator) Foundation Tier

14.

19			38.7	**6**	**B3** for 50 for *DE* or *CF* nfww Or **M1** for $62.5^2 - 37.5^2$ **M1** for $\sqrt{62.5^2 \pm 37.5^2}$ And B3 FT for $\sin^{-1}\frac{their50}{80}$ correctly evaluated or **M2 FT for** ft for $\sin^{-1}\frac{their50}{80}$ or **M1 FT** for $\sin[x] = \frac{their50}{80}$	Allow 39 May be in correct place on diagram 2500 implies **M1**

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

15.

19	**a**		180 ÷ (1 + 2 + 3) × 3 [= 90]	**2**	**M1** for 180 ÷ (1 + 2 + 3) If 0 scored, **SC1** for angles 30, 60, 90	Condone 6 for 1 + 2 + 3
	b		7.5	**4**	**B1** for sin 30° or cos 60° = ½ **soi** **M2** for 15 sin 30 **oe** or **M1** for *x*/15 = sin 30 **oe**	

Pearson Edexcel –Sample Papers - Paper 2 (Calculator) Foundation Tier

16.

24		20.9	M1 A1	correct recall of appropriate formula eg $\sin x = \frac{5}{14}$ for 20.9(248…)

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

17.

20			2.8(0…)	**3** **1 AO1.1** **2 AO1.3a**	**B1** for $\tan\theta = \frac{\text{opp}}{\text{adj}}$ **M1** for 4 × tan 35	

AQA Tuesday 19 May 2020 – Morning (Non-Calculator) Foundation Tier

18.

Q	Answer	Mark	Comments
27	**Alternative method 1**		
	cos and $\frac{9}{18}$ oe identified	M1	
	60	A1	
	Alternative method 2		
	sin and $\frac{\sqrt{18^2 - 9^2}}{18}$ identified or tan and $\frac{\sqrt{18^2 - 9^2}}{9}$ identified	M1	
	60	A1	
	Additional Guidance		
	Accept an embedded answer, eg cos 60 = $\frac{9}{18}$ with no further working		M1A1
	180 ÷ 3 = 60		M0A0

AQA Thursday 11 June 2019 – Morning (Calculator) Foundation Tier

19.

30	**Alternative method 1**		
	$\sin x = \frac{13}{16}$ or $\sin^{-1}\frac{13}{16}$	M1	oe $\sin x = 0.8125$
	54(.3...)	A1	
	Alternative method 2		
	$\cos x = \frac{13}{16}$ or $\cos^{-1}\frac{13}{16}$ and 90 – their [35.6, 36]	M1	oe
	54(.3...)	A1	
	Alternative method 3		
	$\cos x = \frac{\sqrt{16^2 - 13^2}}{16}$ or $\tan x = \frac{13}{\sqrt{16^2 - 13^2}}$	M1	oe
	54(.3...)	A1	
	Additional Guidance		
	$\sin = \frac{13}{16}$ or $\sin \frac{13}{16}$ or $\sin^{-1} = \frac{13}{16}$ unless recovered		M0
	Answer 54 from scale drawing with no trigonometry		M0A0

AQA Tuesday 6 November 2018 – Morning (Non-Calculator) Foundation Tier

20.

24	$\frac{\sqrt{3}}{2}$	B1	

AQA Monday 12 November 2018 – Morning (Calculator) Foundation Tier

21.

29	$\cos x = \frac{9}{10}$	M1	oe eg $\sin x = \frac{\sqrt{10^2 - 9^2}}{10}$ $\tan x = \frac{\sqrt{10^2 - 9^2}}{9}$
	25.8... or 26	A1	
	Additional Guidance		
	$\cos = \frac{9}{10}$ $x = 25.8$ (recovered)		M1A1
	$\cos = \frac{9}{10}$		M0A0

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

22.

29	$\tan x = \frac{3}{7}$ or $\tan^{-1}\frac{3}{7}$ or $\sin x = \frac{3(\sin 90)}{\sqrt{3^2+7^2}}$ or $\sin x = \frac{3(\sin 90)}{\sqrt{58}}$ or $\cos x = \frac{7}{\sqrt{3^2+7^2}}$ or $\cos x = \frac{7}{\sqrt{58}}$ or $90 - \tan^{-1}\frac{7}{3}$ or 90 – [66.7, 66.81] or 90 – 67	M1	oe eg $\cos x = \frac{7^2+\left(\sqrt{7^2+3^2}\right)^2-3^2}{2\times\sqrt{3^2+7^2}\times 7}$ Any letter
	[23, 23.3]	A1	

Additional Guidance

$\tan = \frac{3}{7}$ or $\tan\frac{3}{7}$ or $\tan^{-1} = \frac{3}{7}$ (unless recovered)	M0
Answer [23, 23.3] (possibly coming from scale drawing)	M1A1
If using sine rule must rearrange to $\sin x =$ for M1	
If using cosine rule must rearrange to $\cos x =$ for M1	
Allow [0.42, 0.43] for $\frac{3}{7}$	
Allow 2.33… for $\frac{7}{3}$	
Allow [7.6, 7.62] for $\sqrt{3^2+7^2}$	

AQA Thursday 25 May 2017– Morning (Non-Calculator) Foundation Tier

23.

27	0	B1	
	Additional Guidance		

AQA Thursday 8 June 2017– Morning (Calculator) Foundation Tier

24.

29	$\sin 72 = \frac{x}{8}$ or $8 \times \sin 72$ or $\cos (90 - 72) = \frac{x}{8}$ or $8 \times \cos (90 - 72)$ or $\frac{x}{\sin 72} = \frac{8}{\sin 90}$ or $\frac{\sin 72}{x} = \frac{\sin 90}{8}$	M1	oe eg 8 cos 72 or 2.47… or 2.5 **and** $\sqrt{8^2 - (8 \cos 72)^2}$
	[7.6, 7.61]	A1	
	Additional Guidance		
	If trigonometry and Pythagoras are used it must be a fully correct method that would lead to the correct value of x		
	Accept sin 72 × 8		M1
	Accept opp or o for x eg $\sin 72 = \frac{\text{opp}}{8}$		M1
	$\sin = \frac{x}{8}$ or $\sin\theta = \frac{x}{8}$ (unless recovered)		M0
	Answer coming from scale drawing		M0A0
	Answer in range seen followed by 7 or 8		M1A1

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

25.

29(a)	0.64	B1	
29(b)	$\frac{x}{4} = \cos 50°$ or $\frac{x}{4}$ = their 0.64 or 4 × their 0.64	M1	oe their 0.64 from (a)
	2.6	A1ft	oe ft their 0.64 from (a)