

## SPEED AND DENSITY

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

1.

26		conclusion  (supported)	P1 30 ÷ 70 (=0.428) P1 60 × "0.428..." C1 for conclusion linked to 25.7 mins, 30.3 miles or 69.2 mph	26 ÷ 60 (=0.4333...) 70 × "0.4333..."	30 ÷ 26 (=1.153...) 60 × "1.153..."
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### OCR Thursday 25 May 2017 – Morning (Calculator) Foundation Tier

2.

11		Identifying there are not enough coaches or too many people with correct justification	2	M1 for 320 ÷ 53 soi by 6.03[...] or 53 × 6 soi by 318 or 2 or 320 ÷ 6 soi by 53.3	No, he needs 7 coaches alone scores 0 See appendix
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### OCR Sample Question Paper 1 – Morning/Afternoon (Calculator) Foundation Tier

3.

18		Average speed = $\frac{\text{Distance}}{\text{Time}} = \frac{x}{5}$ km/h  = $\frac{1000x}{60^2 \times 5}$ m/s = $\frac{1000x}{18000}$ m/s <b>oe</b> = $\frac{x}{18}$ m/s	4 2 AO1.3a 2 AO2.2	B1 for x km = 1000x m  B1 for 5 hours = 60 <sup>2</sup> × 5 s  B1 for working to given answer without intermediate expression or statement of formula	
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### OCR Sample Question Paper 3 – Morning/Afternoon (Calculator) Foundation Tier

4.

17	(a)	20	2 1 AO1.1 1 AO2.3a	M1 for $D = \frac{M}{V}$ <b>soi</b>	Can be implied by an answer of 2
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	(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 $\frac{\text{total mass}}{\text{total volume}}$	
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AQA Thursday 4 June 2020 – Morning (Calculator) Foundation Tier

5.

Q	Answer	Mark	Comments
29	2625 ÷ 250 or 2.625 ÷ 250 or 2625 ÷ 0.00025 or answer with digits 105	M1	oe eg $\frac{2.625 \times 1000}{250}$
	10.5	A1	oe
	<b>Additional Guidance</b>		
	Digits 105 may have additional zeros before 1 or after 5 eg1 0.000105 eg2 10500 eg3 10.05		

AQA Thursday 6 June 2019 – Morning (Calculator) Foundation Tier

6.

<b>21</b>	<b>Alternative method 1</b>		
	$18 + 36$ or 0.5 or 30	M1	oe implied by 3.5 or 3 h 30 min or 3.3(0) or 210 seen
	$\frac{200 - 18}{4 - \text{their } 0.5}$ or $\frac{182}{3.5}$ or $\frac{200 - 18}{4 \times 60 - \text{their } 30}$ or $\frac{182}{210}$ or 0.86(6...) or 0.87	M1dep	oe method for miles per hour or miles per minute implied by $\frac{182}{3 \text{ h } 30 \text{ min}}$ or $\frac{182}{3.3(0)}$
	52	A1	
	<b>Alternative method 2</b>		
	$18 + 36$ or 0.5 or 30	M1	implied by 7
	$\frac{200}{4} + \frac{50 - 36}{7}$ or $50 + 2$	M1dep	oe
	52	A1	
	<b>Additional Guidance</b>		
	Allow the first mark even if not subsequently used		
	Ignore units for the M marks		
	Answer 0.86(6...) or 0.87		M1M1A0
	Answer 0.86(6...) or 0.87 with mph crossed out and replaced by miles per min oe		M1M1A1
	Working for 52 then $(52 + 36) + 2$		M1M1A0
NB $50 + 2 = 52$ from $200 + 4 = 50$ and $36 + 18 = 2$		Zero	

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

7.

24	6 as density for J or K	B1	
	13 as volume for K or 78 ÷ their 6 as volume for K	B1ft	ft their 6
	g/cm <sup>3</sup> as units for densities of J and K and cm <sup>3</sup> as unit for volume of K	B1	allow g cm <sup>-3</sup>
	<b>Additional Guidance</b>		
	Mark table first		
	Full marks are only awarded for a fully correct table with no errors or omissions		
	13 cm <sup>3</sup> as a volume for K, 0.006 kg/cm <sup>3</sup> for both densities		B1B1B1
	Condone g per cm <sup>3</sup> , gpcm <sup>3</sup> or g per cubic centimetre as units for density		

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

8.

7	3206 ÷ 7	M1	may be seen as a calculation attempted such as in the 'bus stop' method
	458	A1	
	<b>Additional Guidance</b>		
	7 ÷ 3206 must be recovered eg by correct use in division sum		
	"Chunking" or build-up must convince that the equivalent to the full division is being attempted (ie reach or go beyond 3206)		
	Condone 3206 ÷ 420 (working in seconds) for M1		
	Accept $\frac{3206}{7}$ for M1 unless contradicted by further work		

AQA Tuesday 12 June 2018 – Morning (Calculator) Foundation Tier

9.

<b>13</b>	<b>Alternative method 1</b>		
	60 ÷ 5 or 12 or 3.5 ÷ 5 or 0.7	M1	oe
	their 12 × 3.5 or their 0.7 × 60	M1dep	oe
	42	A1	
	<b>Alternative method 2</b>		
	7 (miles) in 10 (minutes) or 10.5 (miles) in 15 (minutes) or 14 (miles) in 20 (minutes) or 21 (miles) in 30 (minutes) or 35 (miles) in 50 (minutes)	M1	
	7 × 6 or 10.5 × 4 or 14 × 3 or 21 × 2 or 35 ÷ 3.5 × 2	M1dep	oe
	42	A1	
	<b>Alternative method 3</b>		
	5 ÷ 60 or 0.08(3...)	M1	oe
	3.5 ÷ their 0.08(3...)	M1dep	oe
	42	A1	Accept [42, 42.2]
	<b>Additional Guidance</b>		
	$\frac{5}{60}$ or $\frac{1}{12}$ is oe 0.08(3...)	M1	

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

10.

<b>21a</b>	140 ÷ 50 or 2.8 or 140 ÷ 50 × 60 or 168	M1	oe
	2 (hours) 48 (minutes)	A1	258 (minutes) (after midday) implies M1A1
	4.18 (pm)	A1ft	oe ft their time in hours and minutes with M1 awarded
	<b>Additional Guidance</b>		
	140 ÷ 50 or 2.8 = 2 hours 80 minutes = 3 hours 20 minutes, Answer 4.50		M1A0A1ft
	140 ÷ 50 or 2.8 = 2 hours 8 minutes, Answer 3.38		M1A0A1ft
	140 ÷ 50 or 2.8 = 2 hours 80 minutes = 3 hours 20 minutes, Answer 4.5		M1A0A0ft
	140 ÷ 50 or 2.8, Answer 4.10		M1A0A0ft
	2 hours 8 minutes implies attempt at 140 ÷ 50		M1

<b>21b</b>	Valid statement	B1ft	eg the arrival time will be later it will be later time will be more ft their time in (a) eg it will be after 4.18pm
	<b>Additional Guidance</b>		
	It will be delayed		B1
	The arrival time will be increased		B1
	He will reach there late		B1
	The time will go up		B1
	It will go up		B1
	The journey will take longer so the arrival time is later		B1
	Take longer		B0
	Longer		B0
	Slower (restating question)		B0
	You won't get there as quick		B0
	Time will be longer		B0
	Journey will be longer		B0
	'Longer' is referring to a time period rather than an arrival time		

**AQA Wednesday 8 November 2017 – Morning (Calculator) Foundation Tier**

11.

<b>25</b>	72 N	B1	
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**AQA Thursday 25 May 2017– Morning (Non-Calculator) Foundation Tier**

12.

<b>22(a)</b>	2 or two	B1	
	<b>Additional Guidance</b>		
	Allow words which imply two times eg double, twice		B1
<b>22(b)</b>	$\div 4$	B1	