Compound Measures Answers

1.

0.8	P1	for process to find the area, eg $187.5 = \dfrac{180}{A}$ **or** $180 \div 187.5 \ (= 0.96)$ **or** $\dfrac{180}{1.2x} = 187.5$ **or** $1.2x = \dfrac{180}{187.5}$
	P1	for complete process to find width, eg "0.96" $\div 1.2$ **or** $180 \div 225$
	A1	cao

2.

10	P1	for a process to use distance = speed × time for either of the parts of Jessica's journey, eg. $6 \times \dfrac{15}{60} \ (= 1.5)$ or $9 \times \dfrac{40}{60} \ (= 6)$ or $6 \times 15 \ (= 90)$ or $9 \times 40 \ (= 360)$
	P1	for a process to add the 2 distances for Jessica, eg $6 \times \dfrac{15}{60} + 9 \times \dfrac{40}{60} \ (= 7.5)$ or $6 \times 15 + 9 \times 40 \ (= 450)$
	P1	for complete process to find Amy's average speed, eg. "7.5" $\div$ "0.75" oe or "450" $\div$ 45
	A1	cao

3.

Answer	Mark	Mark scheme
1.6	P1	for $1.8 \times 80 \ (= 144)$ **or** $1.2 \times 40 \ (= 48)$ or for 192 **or** for $80 : 40 = 2 : 1$
	P1	for ("144" + "48") $\div$ (80 + 40) or $192 \div 120$ **or** for $(1.8 \times 2 + 1.2) \div 3$ or $4.8 \div 3$
	A1	oe

4.

Answer	Mark	Mark scheme
260	P1	conversion to common units of capacity eg 2.2 × 4.54 (= 9.988) or 8 ÷ 4.54 (= 1.76...) **OR** for Company A 2400 ÷ 4.54 (= 528.63...) **OR** 2400 ÷ 8 (= 300) **OR** a rate per minute 8 ÷ [time for Company A] (= 4.8...) oe
	P1	for a complete process to find the time for company A or company B in minutes. eg in litres Company A 2400 ÷ "4.8..." (= 500) or "300" × [1 min 40 sec] (= 500) **or** Company B 2400 ÷ "9.988" (= 240.28...) **OR** eg in gallons Company A "528.63.." ÷ ("1.76..." ÷ [1 min 40 sec]) (= 500) **or** Company B "528.63…" ÷ 2.2 (= 240.28…)
	P1	for complete processes to find the times for both company A and company B in minutes. Company A eg in litres 2400 ÷ "4.8…" (= 500) or "300" × [1 min 40 sec](= 500) **or** in gallons "528.63.." ÷ ("1.76. .." ÷ [1 min 40 sec]) (= 500) **AND** Company B eg in litres 2400 ÷ "9.988" (= 240.28...) or in gallons "528.63…" ÷ 2.2 (= 240.28…)
	A1	for an answer in the range 259 to 260

5.

2 hours 45 minutes	P1	for 30 ÷ 24 (= 1.25) or 12 ÷ 8 (= 1.5)	May be written in hours and/or minutes
	P1	for finding the sum of their two times eg "1.25" + "1.5" (= 2.75) or 165 (minutes)	or 3 h 15 min or 2 h 75 min
	A1	cao	

6.

Answer	Mark	Mark scheme
1.01	P1	for 1.09×60 $(= 65.4$ or $\frac{327}{5})$ **or** 0.97×128 $(= 124.16$ or $\frac{3104}{25})$
	P1	for 1.09×60 $(= 65.4$ or $\frac{327}{5})$ **and** 0.97×128 $(= 124.16$ or $\frac{3104}{25})$ **or** "65.4" + "124.16" $(= 189.56$ or $\frac{4739}{25})$
	P1	for a complete process to find the density of antifreeze eg ("65.4" + "124.16") $\div 188$ or $189.56 \div 188$ or $\frac{4739}{25} \div 188$
	A1	for answer in the range 1.00 to 1.01

7.

Answer	Mark	Mark scheme
3.75	P1	works to find vol of frustum eg $1/3\pi(3.6)^2 \times 6.4 - 1/3\pi(1.8)^2 \times 3.2$ or $86.858.. - 10.857...$ $(=24.192\pi$ or $76.00..)$
	P1	works to find vol of hemisphere eg $\frac{1}{2} \times \frac{4}{3}\pi \times 3.6^3$ $(=31.104\pi$ or $97.7....)$
	P1	mass of frustum as [vol]×density eg "76.00" × 2.4 (=182.4..) **or** mass of hemisphere as [vol]×density eg "97.7...."×4.8 (=469.037...)
	P1	mean density as total mass ÷ total volume eg ("182.4.." + "469.037") ÷ ("76..." + "97.7..") or "651.4..". ÷ "173.7...."
	A1	answer in the range 3.7 to 3.8

8.

(a)	2 mins 48 secs	P1	for an appropriate first step eg $700 \div 475 \; (=1.47..)$ **or** $475 \div$ [time] $(= 4.16.. \text{ m/s})$ **or** [time] $\div 475 \; (= 0.24 \text{ s/m})$
		P1	for a complete method to find the required time eg $700 \div 475 \times$ [time] $(=168)$ **or** $700 \div (475 \div$ [time]$) \; (=168)$ **or** [time] $\div 475 \times 700 \; (=168)$
		A1	cao
(b)	Statement	C1	eg takes less time **Acceptable examples** Quicker time Faster time Reduces my answer to part (a) **Not acceptable examples** It is an underestimate The amount of time could/may increase Laura goes faster

9.

No (supported)	P1	For a process to calculate the initial or new pressure, eg $(70 +10) \div (20+10) \; (=2.6 \text{ to } 2.7)$ **or** $80 \div 30 \; (=2.6 \text{ to } 2.7)$ **or** $70 \div 20 \; (=3.5)$
	P1	For a complete process to make a comparison eg. $0.8 \times$ "3.5" $(=2.8)$ **OR** $\frac{("3.5"-"2.6")}{"3.5"} \times 100 \; (=22 \text{ to } 26)$ **OR** "3.5" $\times 0.2 \; (=0.7)$ **and** $80 \div 30 \; (=2.6 \text{ to } 2.7)$ **OR** $\frac{"2.6"}{"3.5"} \; (\times 100) \; (=0.74 \text{ to } 0.78 \;\; \text{or} \;\; 74 \text{ to } 78)$
	A1	for a correct conclusion supported by accurate figures eg 2.8 **and** 2.6(6…) **OR** decrease is 24% (or 22% to 26%) **OR** 0.7 **and** 2.6 to 2.7 **and** 3.5 **OR** 0.7 **and** 0.9 **OR** 0.76 (or 0.74 to 0.78) **OR** 76% (or 74% to 78%)

10.

648	M2	a complete method, eg $12.5 \times 1000 \div 19.3$
	[M1	for using volume = mass/density, eg $12500 \div 19.3$ (condone inconsistent units or incorrect conversions) may be implied by digits 647... or 648...]
	A1	for answer in range 647 to 648

11.

Answer	Mark	Notes
57.1	P1	for a process to find time from Liverpool to Manchester, eg. $56 \div 70$ (= 0.8 (hrs) or 48 (mins))
	P1	for a process to find total distance, eg. $56 + 61$ (= 117) or the total time, eg. "48" + 75 (= 123) or "0.8" + $\frac{75}{60}$ (= 2.05) with consistent units of time
	P1	(dep P2) for a correct process to find average speed with consistent units of time, eg."117" ÷ "2.05" or "117" ÷ "123"
	A1	for answer in the range 57 to 57.1
explanation	C1	for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ of the distance from Barnsley to Leeds

12.

Answer	Mark	Notes
1.01	P1	fruit syrup 15×1.4 (= 21) or water 280×0.99 (= 277.2) or apple juice 25×1.05 (= 26.25)
	P1	(dep P1) for complete process to find the total mass e.g. "277.2" + "26.25" + "21" (= 324.45) or a weighted density eg $15 \times 1.4 \div 320$ (= 0.065625) or $280 \times 0.99 \div 320$ (= 0.86625) or $25 \times 1.05 \div 320$ (= 0.08203125)
	P1	(dep P2) for complete process to find the density eg "324.45" ÷ 320 (=1.01..) or "0.065625" + "0.86625" + "0.08203125" (= 1.0139..)
	A1	1.01 to 1.014