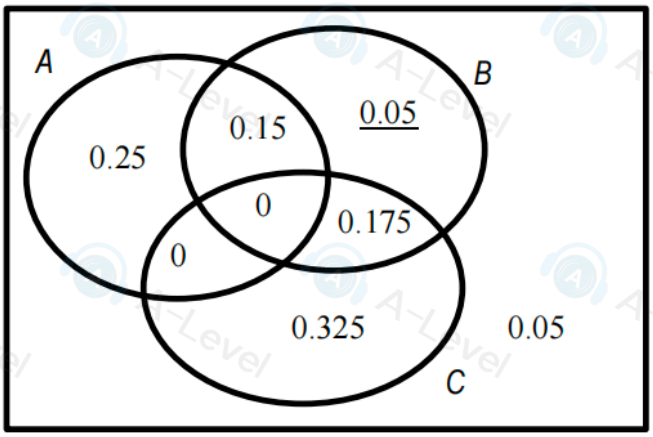
Question Number	Scheme	Marks
6. (a)	$[\mathrm{P}(A \cup C) =] \underline{\frac{9}{10}}$ oe	B1
		(1)
(b)	$\mathrm{P}(A \cup B) = \mathrm{P}(A) + \mathrm{P}(B) - \mathrm{P}(A) \times \mathrm{P}(B)$	M1
	$\frac{5}{8} = \frac{2}{5} + \mathrm{P}(B) - \frac{2}{5}\mathrm{P}(B)$	M1 A1
	$\mathrm{P}(B) = \frac{3}{8}$ *	A1cso
		(4)
(c)	$[\mathrm{P}(A \mid B) = \mathrm{P}(A) =] \underline{\frac{2}{5}}$ oe	B1
		(1)
(d)		Diagram B1 0.15 and 0.25 M1 0.05 and 0.05 M1 0.175 and 0.325 M1 A1
		(5) **Total 11**

Question	Scheme	
4 (a)	$0.2 = \frac{\mathrm{P}(C \cap D)}{0.45}$	M1
	$[\mathrm{P}(C \cap D) =] 0.09$	A1
		(2)
(b)	$0.59 = \mathrm{P}(C) + 0.45 - "0.09"$ $[\rightarrow \mathrm{P}(C) = 0.59 - 0.45 + "0.09"]$	M1
	$= 0.23$	A1
		(2)
	Notes	**Total 4**
	Mark (a) and (b) together	
(a)	M1 for substitution of 0.2 and 0.45 into a correct equation for $\mathrm{P}(C \cap D)$ (allow any rearrangement)	
	A1 oe correct answer scores 2 out of 2 Must be clearly identified as the answer to part (a). A correct Venn diagram on its own is not sufficient.	
(b)	M1 for correct substitution of 0.59, 0.45 and "their a" into $\mathrm{P}(C \cup D) = \mathrm{P}(C) + \mathrm{P}(D) - \mathrm{P}(C \cap D)$ Implied by "their (b)" – "their(a)" = 0.14 $0.59 = \mathrm{P}(C) + 0.45$ is M0 Only ft 0 < "their (a)" < 1 If "their (a)" is outside this range, then M0	
	A1 oe correct answer scores 2 out of 2	

Question	Scheme	
3 (a)	eg They represent / analyse / solve (real world problems)	B1
	They improve understanding / simplify (the real world)	
	Can be repeated/ adapted / refined	
	To show the relationship between variables/show trends	
		(1)
(b)	$[S_{ww} =]10036.45-\frac{339.25^2}{12}=445.57$ (to 2 decimal places)*	B1*
		(1)
(c)	$S_{td}=\frac{-91.55}{11.5}$ or $S_{td}=14.4-\frac{29.5\times9.1}{12}$ or $S_{dd}=\frac{445.57}{11.5^2}$ or $S_{dd}=75.9-\frac{29.5^2}{12}$	M1
	$S_{td}=-7.9608...$ awrt **−7.96** $S_{dd}=3.3691...$ awrt **3.37**	A1A1
		(3)
(d)	$[r =]\frac{-91.55}{\sqrt{445.57\times26.43}}$ or $[r =]\frac{"-7.9608..."}{\sqrt{"3.3691..."\times26.43}}$	M1
	$=-0.8436...$ awrt **− 0.844**	A1
		(2)
(e)	As the **temp**erature increases, **gas/consumption** decreases	B1ft
		(1)
(f)	$b=\frac{-91.55}{26.43}[=-3.4638...]$	M1
	$a=\frac{339.25}{12}-"-3.4638"\times\frac{9.1}{12}$ [= 30.897…] or $a=$ awrt $28.3-"-3.4638"\times$ awrt 0.76	M1
	$w=-3.46t+30.9$ *	A1*
		(3)
(g)	$11.5d=-3.46t+30.9$ oe eg $d=-0.301t+2.69$	B1
		(1)
(h)(i)	2.0852…(m^3) awrt **2.09**	B1
(ii)	the gas consumption will **decrease** by **0.3 m^3**	B1ft
		(2)

Question Number	Scheme	Marks
	If any part, especially (a) or (b), is missing send to review	
4(a)	0.72	B1 **(1)**
(b)	C (is most likely to be the 100 metre junior champion)	B1 **(1)**
(c) (i)	$S_{xx}=3445.26-\frac{164.4^2}{8}\left[=66.84 \text{ or } \frac{1671}{25}\right]$	M1
	$r=\frac{60.85}{\sqrt{"66.84"\times67.52}}$	M1
	$=0.90578…$ awrt **0.906**	A1 **(3)**
(ii)	The faster boys are in the the 100 metres, the faster they are in the 200 metres	B1 **(1)**
		Total 6