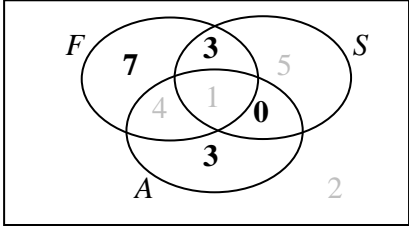
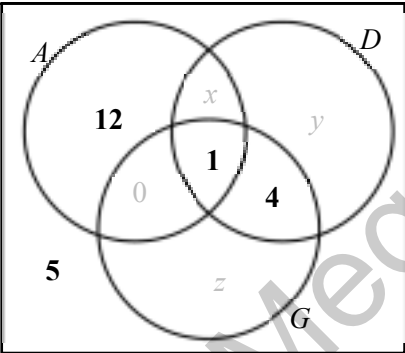
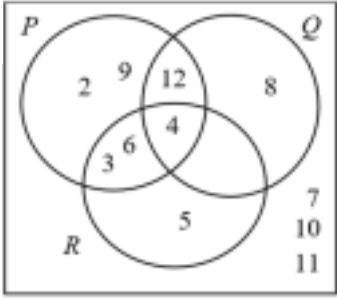
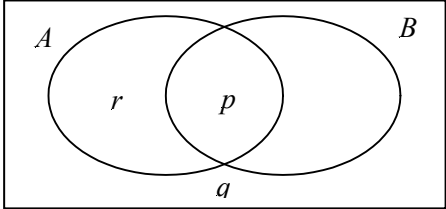
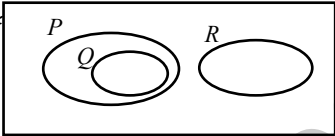
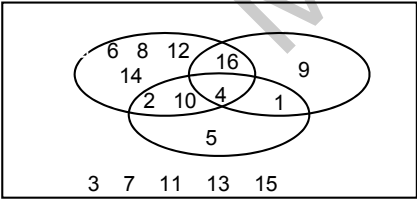
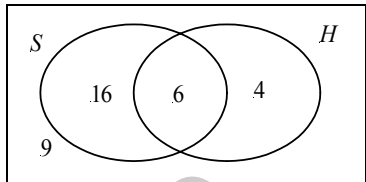
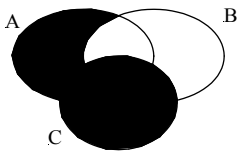


1(a)(i)	12, 16, 18, 24, 25, 30, 36	1	
1(a)(ii)	2	1	
1(b)	$(D \cup C) \cap B'$ oe	1	
1(c)(i)	Venn diagram completed correctly 	2	B1 for 2 values correct
2(a)(i)	{a, e, f, g, h, i, j}	1	
2(a)(ii)	6	1	
2(b)	$A \cap C \cap B'$ oe	1	
3(a)		2	B1 for 2 or 3 values correctly placed
3(b)	$[x =] 3$ $[y =] 6$ $[z =] 9$	3	B2 for $x = 3$ OR M2 for $\frac{40 - 12 - 1 - 4 - 5}{1 + 2 + 3}$ soi or M1 for $40 - 12 - 1 - 4 - 5$ soi or $x + y + z + 12 + 1 + 4 + 5 = 40$ oe
3(c)	$A \cap G \cap D'$ oe	1	
3(d)	$(\text{their } x) + 1$ evaluated	1	

4(a)	$(A \cup B)'$ oe	1	
4(b)(i)		3	B2 for Venn diagram with 1 or 2 errors, omissions or repeats or for correct Venn diagram with $(P \cup Q \cup R)'$ blank or B1 for Venn diagram with 3 or 4 errors, omissions or repeats or for correct Venn diagram with $(P \cup Q \cup R)'$ blank and one further error
4(b)(ii)	2, 9	1	FT <i>their</i> diagram
4(b)(iii)	7	1	
4(b)(iv)	$P' \cap Q \cap R$ oe	1	
5(a)	10 or $n(P \cup Q) = 10$ cao	1	
5(b)		3	B1 for each correct p, q and r .
6		2	B1 for Q or R correct
7(a)(i)	Correctly completed Venn diagram 	3	B2 for Venn diagram with one or two errors, omissions or repeats or for correct Venn diagram with 3, 7, 11, 13, 15 omitted or B1 for Venn diagram with three or four errors, omissions or repeats or for correct Venn diagram with 3, 7, 11, 13, 15 omitted and <u>one</u> other error, omission or repeat
7(a)(ii)	10	1	
7(a)(iii)	2, 4, 10	1	FT <i>their</i> Venn diagram
8(a)	$(P \cup R) \cap Q'$	1	
8(b)	Any irrational number in range $9 < x < 10$	2	B1 for any irrational number as answer or any number in range $9 < x < 10$ as answer

9(a)	0, 2	1	
9(b)	6	1	
9(c)	0, 2, 4, 6	2	B1 for 0, 2, 4, 6 plus extras (e.g. repeated 2 or 4; or an 8) or B1 for three of 0, 2, 4, 6 with no extras. or M1 for $2x + y$ clearly seen correctly evaluated for two or more valid values of x and y
10	9	2	B1 for a Venn diagram with at least two of 16, 6, 4, 9 in the correct subset.  or M1 for $35 - (22 + 10 - 6)$ oe
11(a)(i)	Correctly completed Venn diagram	1	
11(a)(ii)	36	1	
11(a)(iii)	13	1	FT $n(A \cup B)$ from <i>their</i> Venn diagram provided no repeated elements in sets A and B
11(a)(iv)	1, 4, 6, 9, 12, 18	1	FT provided no repeated elements in sets A and B
12(a)(i)	1	1	
12(a)(ii)	10, 12, 14, 15, 16, 18, 20	1	
12(a)(iii)	$\frac{7}{11}$ oe	1	
12(b)(i)	8	2	M1 for $14 + 10 + 24 - x = 40$ oe or for correct Venn diagram with algebraic expressions. Or B1 for Venn diagram with at least 3 numbers correct
13 (a)		1	
(b)	8	2*	M1 for $23 + 17 - (36 - 4)$ or M1 for $23 - x + x + 17 - x + 4 = 36$ oe or B1 for $S \cap F' = 15$ or $F \cap S' = 9$

14	(a) (i)	(a) 10	1	
		(b) 9	1	
(ii)	(c) 3,5,7,11	1		
		$\frac{4}{11}$ oe isw	1ft	ft from <i>their</i> (a)(i)(c)

15	16	2*	B1 for 15, 8 and 11 correctly placed and 26 not placed in Venn diagram or for $x + 26 + 8 = 50$ oe or for $50 - 26 - 8$ oe leading to answer
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16 a 47

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M1 for Cricket set inside the Football set, e.g. in a Venn diagram; Ans. = $30+8+9$; "30 play both cricket and football".

b)	11, 19	1	
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Mega Lecture

Mega Lecture