$P(8) = \quad P(H\,4\,4) + P(T\,2\,4) + P(T\,4\,2)$	M1		$\frac{1}{3}$ or $\frac{2}{3}$ mult by dice related prob, seen anywhere
$= \quad \frac{1}{3}\times\frac{1}{16}+\frac{2}{3}\times\frac{1}{16}+\frac{2}{3}\times\frac{1}{16}$	M1		Summing two or three 2-factor probs involving $\frac{1}{3}$ and $\frac{2}{3}$
$= \quad \frac{5}{48}$	A1		$\frac{5}{48}$ oe seen as num or denom of a fraction
$P(H \mid 8) = \frac{P(H \cap 8)}{P(8)}$	B1		$\frac{1}{48}$ oe seen as num or denom of a fraction
$= \frac{\frac{1}{48}}{\frac{5}{48}} = \frac{1}{5}$	A1	**5**	Correct ans

(i W(8) M(5) 4 2 = ${}^8C_4 \times {}^5C_2 = 700$ 5 1 = ${}^8C_5 \times {}^5C_1 = 280$ 6 0 = ${}^8C_6 \times {}^5C_0 = 28$ Total = 1008	M1 M1 A1 A1	 **4**	Mult 2 combs, ${}^8C_x \times {}^5C_y$ Summing 2 or 3 options 2 correct options unsimplified Correct answer
(ii) M1 and MMWWW = ${}^3C_2 \times {}^8C_3 = 168$ M2 and MMWWW = ${}^3C_2 \times {}^8C_3 = 168$ Neither and MMMWWW = ${}^3C_1 \times {}^8C_3 = 56$ Total = 392	M1 B1 A1	 **3**	Summing 3 options One correct option Correct answer
OR total, no restrictions = ${}^5C_3 \times {}^8C_3 = 560$ M1M2 and MWWW = ${}^3C_1 \times {}^8C_3 = 168$ 560 – 168 = 392	M1 B1 A1		Subt 2 men together from no restrictions One correct of 560 or 168 Correct answer
iii) e.g. WWMWWW = 5! (women) × 4 = 480	M1 M1 A1	 **3**	5! Seen mult by integer ⩾ 1 Mult by 4 Correct answer
OR 6! – MWWWWW – WWWWWM = 6! – 5! – 5! = 480	M1 M1 A1		6! seen with a subtraction 5! or 2 × 5! Seen subtracted Correct answer

$^{48}C_{43}$	B1		48 seen in a single term combination oe
	B1		43 or 5 seen in a single term combination oe
			Both can be mult by integer $k \geqslant 1$
= 1712304 (1710000)	B1	**3**	Correct final answer

(i	6! ×5!	B1		6! oe seen multiplied by integer $k \geqslant 1$
		B1		5! oe seen multiplied by integer $k \geqslant 1$
	= 86400	B1	**3**	Correct final answer
(ii)	6! × 7 × 6 × 5 × 4	B1		6! seen mult by integer $k \geqslant 1$
		B1		Mult by $^{7}P_{4}$ oe
	= 604800	B1	**3**	Correct final answer

(a	1*****3 or 3*****1 or 2*****2	M1		Mult by 6^5 (for middle 5 dice outcomes)
	$= 6^5 \times 3$	M1		Mult by 3 or summing 3 different combinations (for end dice outcomes)
	= 23328	A1	**3**	Correct answer accept 23 300
(b)	W J H			
	1 1 $7 = {}^{9}C_1 \times {}^{8}C_1 \times 1 = 72$	M1		Multiplying 3 combinations (may be implied)
	1 7 $1 = {}^{9}C_1 \times {}^{8}C_7 \times 1 = 72$	A1		1 unsimplified correct answer (72, 504, 1680, 216 or 3024)
	7 1 $1 = {}^{9}C_7 \times {}^{2}C_1 \times 1 = 72$			
	1 3 $5 = {}^{9}C_1 \times {}^{8}C_3 \times 1 = 504$ mult by 3!	A1		A 2nd unsimplified different correct answer
	3 3 $3 = {}^{9}C_3 \times {}^{6}C_3 \times 1 = 1680$	M1		Summing options for 1,1.7 or 1,3,5 oe (mult by 3 or 3!)
		M1		Summing at least 2 different options of the 3
	Total 4920	A1	**6**	Correct ans
	If no marks gained			If games replaced M1M1M1 max available
	Listing all 10 different outcomes	SCM1		If factorials used M0M1M1 max available