Additional Mathematics- 0606
Permutation and combinations answers

1)

(i) $\frac{9\times8\times7\times6}{4\times3\times2(\times1)}$

126

(ii) $\frac{4\times3}{2(\times1)}$

$\left(\frac{4\times3}{2(\times1)}\right)\times3\times2$

36

(iii) adds number of arrangements of 2,1,1 and 1,2,1 and 1,1,2 only
multiplies for each selection
$(36)+4\times3\times2+4\times3(\times1)$
72

2)

(i) 40320

(ii) $\frac{8\times7\times6\times5\times4}{5\times4\times3\times2(\times1)}$ or $\frac{8!}{5!\times3!}$

56

(iii) uses 5, 4 and 3 only
60

3)

(i) ${}^{7}P_{4}=840$

(ii) $4\times{}^{6}P_{3}$ or $\frac{4}{7}\times840$

480

4)

(i) $7 \times 6 \times 5 \times 4$
840

(ii) $2 \times 6 \times 5 \times 4$ or $\frac{2}{7} \times (840)$

240

(iii) $2 \times 5 \times 4 \times 2$ or $\frac{2}{6} \times (240)$ or clear indication of method

80

5)

(i) $^{14}C_6 = 3003$

(ii) $^8C_4 \times {}^6C_2$
$= 1050$

(iii) $^8C_6 + 6\,{}^8C_5 = 364$

6)

(i) Evidence of 8, 7, 6, 5, 4, 3, 2, 1 or 8!
40320

(ii) Evidence of 5! (120) or 4! (or 24)
2880
$\frac{7 \times 6 \times 5}{3 \times 2(\times 1)}(= 35)$ and $\frac{5 \times 4}{2(\times 1)}(= 10)$
Multiply
350

7)

(i) $6! = 720$

(ii) $2 \times 5! = 240$

(iii) $4 \times 5! = 480$

(iv) Even first and last: 4! (24)
Odd first and even last: 4 x 4! (144)
Total: $7 \times 4! = 168$

8)

(i) Evidence of $4 \times 3 \times 3 \times 2 \times 2(\times 1 \times 1)$ or $4 \times 3 \times 3 \times 2 \times 2(\times 1 \times 1)$ or $4! \times 3!$
144

(ii) 4! (or 24) for boys and 3! (or 6) for girls
288

(iii) Evidence of $4 \times (120) \times 3$ or $(4) \times 5! \times (3)$
1440

9)

(i) $\dfrac{14 \times 13 \times 12 \times 11 \times 10 \times 9}{6 \times 5 \times 4 \times 3 \times 2 \times 1}$ or $\dfrac{14!}{8! \times 6!}$
3003

(ii) Both 5 students + 1 teacher and 4 students + 2 teachers
56×6 or 70×15
1386

(iii) 30

10)

(a) **(i)** 15120

(ii) 210

(b) **(i)** 15504

(ii) ${}^{12}C_{10} \times {}^{8}C_{5}$
$= 3696$

(iii) 56

11)

(a) **(i)** 792

(ii) 4W, 3M and 5W, 2M
5×35 or $(1) \times 21$
196

(b) **(i)** $4 \times 5 \times 4 \times 3$ or $2/3 \times 6 \times 5 \times 4 \times 3$
240

(ii) $4 \times 4 \times 3 \times 1$ or $\frac{1}{5} \times (240)$
48

12)

(i) ${}^{15}C_7 = 6435$

(ii) ${}^{6}C_2 \times {}^{9}C_5 = 1890$

(iii) No women: ${}^{9}C_7 = 36$
$6435 - 36$
$= 6399$

13)

(i) Evidence of 6, 5, 4, and 3 only
360

(ii) Evidence of 2×3 for outside digits
Evidence of 4×3 for inside digits
72

14)

(a) **(i)** 3628800

(ii) Evidence of 5! (=120) and 4! =(24)
Evidence of 3!
17280

(b) **(i)** Evidence of $\frac{6\times5(\times4\times3)}{(4\times3)\times2(\times1)}$ (=15) or $\frac{5\times4}{2(\times1)}(=10)$
Multiplies
150

(ii) No cousins in 30 ways
Older cousin only in 60 ways or younger cousin only in 20 ways
110
(or both cousins in 40 ways B1, subtract from 150 B1 answer 110 B1)

15)

(i) $6 \times 5 \times 4 \times 3 = 360$ or ${}^6P_4 = 360$

(ii)

Position	1	2	3	4
Number of ways	5	4	3	1

or $\frac{1}{6}$**(i)** or ${}^5P_3$ or ${}^5C_3 \times {}^6C_1$
Number of 4 digit numbers = 60

(iii)

Position	1	2	3	4
Number of ways	3	4	3	1

or ${}^3P_1 \times {}^4P_2$
Number of 4 digit numbers = 36

16)

(i) $^{14}C_6 = 3003$

(ii) $^{5}C_3 \times {}^{9}C_3 = 840$

(iii) **Either** $3003 - {}^{9}C_6 = 2919$

Or
1M + 5W: $5 \times {}^{9}C_5 = 630$
2M + 4W: $^{5}C_2 \times {}^{9}C_4 = 1260$
3M + 3W: 840 (part **(ii)**)
4M + 2W: $^{5}C_4 \times {}^{9}C_2 = 180$
5M + 1W: $1 \times {}^{9}C_1 = 9$
Total: 2919

17)

(a) **(i)** 360

(ii) 120

(b) **(i)** 924

(ii) 28

(iii) $924 - \left({}^{8}C_3 \times {}^{4}C_3\right) - \left({}^{8}C_2 \times {}^{4}C_4\right)$
(i.e. 924 – 3M 3W – 2M 4W)

$924 - 224 - 28$
$= 672$

Or: 4M 2W $^{8}C_4 \times {}^{4}C_2 = 420$

5M 1W $^{8}C_5 \times {}^{4}C_1 = 224$

6M $^{8}C_6 = 28$

Total $= 672$

18)

(a)	**(i)**	15120
	(ii)	$(5\times4)\times(4\times3\times2)$ 480
(b)	**(i)**	5456
	(ii)	${}^{18}C_2 \times 15$ 2295
	(iii)	5456 – Number of ways only girls get tickets $5456 - 455 = 5001$ **Or** 1B 2G 1890 2B 1G 2295 3B 816 Total 5001

19)

(a) (i) 720

(ii) 240

(iii) Starts with either a 2 or a 4: 48 ways

Does not start with either a 2 or a 4: 96 ways
(i.e. starts with 1 or 5)

Total = 144

Alternative 1:

Ends with a 2, starts with a 1,4 or 5 : 72 ways
Ends with a 4, starts with a 1,2 or 5 : 72 ways
Total =144

Alternative 2:

$$240-\left(2\times 2\times {}^4P_3\right) \text{ or } \left(4\times {}^4P_3\times 2\right)-\left(2\,{}^4P_3\right)$$
$$=144$$

Alternative 3:

$${}^3P_1\times {}^4P_3\times {}^2P_1 \text{ or } 3\times 4\times 2$$
$$=144$$

(b) With twins : ${}^{16}C_4$ $(=1820)$

Without twins: ${}^{16}C_6$ $(=8008)$

Total: 9828

Alternative:

$${}^{18}C_6-\left(2\times {}^{16}C_5\right)$$
$$=9828$$

20)

(a)

1 digit even numbers 2

2 digit even numbers $4 \times 2 = 8$

3 digit even numbers $3 \times 3 \times 2 = 18$

Total = 28

(b) (i)

3M 5W = 35
4M 4W = 175
5M 3W = 210

Total = 420

or ${}^{12}C_8 - 6M\,2W - 7M\,1W$
$495 - 70 - 5 = 420$

(ii)

Oldest man in, oldest woman out and vice–versa

${}^{10}C_7 \times 2 = 240$

Alternative:
1 man out 1 woman in
6 men 4 women

6M 1W : ${}^{6}C_6 \times {}^{4}C_1 = 4$
5M 2W : ${}^{6}C_5 \times {}^{4}C_2 = 36$
4M 3W : ${}^{6}C_4 \times {}^{4}C_3 = 60$
3M 4W : ${}^{6}C_3 \times {}^{4}C_4 = 20$
Total = 120

There are 2 identical cases to consider, so 240 ways in all.

21)

(a) (i) 360
(ii) 60
(iii) 36

(b) (i)

${}^{8}C_5 \times {}^{12}C_5$

$56 \times 792 = 44352$

(ii)

4 places are accounted for
Gender no longer 'important'

Need ${}^{16}C_6 = 8008$

Alternative Method
$\left({}^{6}C_6 \times {}^{10}C_0\right) + \left({}^{6}C_5 \times {}^{10}C_1\right) \dots \left({}^{6}C_0 \times {}^{10}C_6\right)$
$1 + 60 + 675 + 2400 + 3150 + 1512 + 210 = 8008$

22)

(i)	${}^{12}C_4 = 495$
(ii)	${}^{7}C_2 \times {}^{5}C_2 = 21 \times 10$ $= 210$
(iii)	not K and B = ${}^{6}C_2 \times {}^{4}C_1 = 15 \times 4 = 60$ K and not B = ${}^{6}C_1 \times {}^{4}C_2 = 6 \times 6 = 36$ $60 + 36$ 96 OR K and B = ${}^{6}C_1 \times {}^{4}C_1 = 6 \times 4 = 24$ not K and not B = ${}^{6}C_2 \times {}^{4}C_2 = 15 \times 6 = 90$ $210 - 90 - 24$ 96

23)

(a)	**(i)**	20160
	(ii)	$3 \times {}^{6}P_4 \times 2$ $= 2160$
	(iii)	$5 \times 2 \times {}^{6}P_4$ $= 3600$
(b)	**(i)**	${}^{14}C_4 \times {}^{10}C_4$ or ${}^{14}C_8 \times {}^{8}C_4$ (or numerical or factorial equivalent) $= 210210$
	(ii)	${}^{8}C_4 \times {}^{6}C_4$ $= 1050$

24)

(a)	Permutation because the order matters oe
(b) (i)	${}^6C_4 + {}^5C_4 + {}^7C_4$ 55
(ii)	${}^2C_1 \times {}^6C_1 \times {}^5C_1 \times {}^7C_1$ 420
(iii)	${}^6C_3 \times {}^2C_1$ or ${}^2C_2 \times {}^5C_1 \times {}^6C_1$ summation 70

25)

(a) (i)	28
(ii)	20160
(iii)	$6 \times (5 \times 4 \times 3)$ oe to give 360 $6 \times (5 \times 4 \times 3) \times 2$ $= 720$
(b)	Either ${}^{10}C_6 - {}^7C_6 = 210 - 7$ $= 203$ Or 1W 5M $= 63$ 2W 4M $= 105$ 3W 3M $= 35$ Total $= 203$

26)

(a)	**(i)**	Number of arrangements with Maths books as one item = 4! or $4 \times 3!$ or Maths books can be arranged 2! ways and History 3! ways = $2! \times 3!$ $2 \times 4!$ or $2 \times 4 \times 3!$ or $4 \times 2 \times 3! = 48$
	(ii)	$5! - 48$ or $6 \times 2 \times 3!$ 72
(b)	**(i)**	3003
	(ii)	$3003 - 6 - 135$ 2862 or 2M 3W = 720 3M 2W = 1260 4M 1W = 756 5M = 126 2862

27)

Any one of:

$\left[{}^6C_0 \times\right] {}^7C_3 + {}^6C_1 \times {}^7C_2$

or $35 + 126$

or ${}^{13}C_3 - {}^6C_2 \times {}^7C_1 - {}^6C_3$

or $286 - 105 - 20$

161

28)

(a) (i) $2 \times 4!$ or $\frac{2}{5} \times 5!$ oe

48

(ii) ${}^{5}P_{3}$ or $\frac{5!}{2!}$ or $5 \times 4 \times 3$ oe

60

(b) (i) $4 \times 2[!] \times 3$oe

24

(ii) $3!$ or 3×3 seen

18

29)

(i) Free choice : no. of ways
${}^{6}C_{4} \times {}^{5}C_{2} = 15 \times 10$
$= 150$

(ii) Both Mr and Mrs Coldicott
${}^{5}C_{3} \times {}^{4}C_{1} = 10 \times 4$
$= 40$

(iii) Mr C and not Mrs C ${}^{5}C_{3} \times {}^{4}C_{2} (= 60)$
Not Mr C and Mrs C ${}^{5}C_{4} \times {}^{4}C_{1} (= 20)$
Total = 80

OR
Total = (i) – (ii) – neither
Neither = ${}^{5}C_{4} \times {}^{4}C_{2} = 30$
Total = 150 – 40 – 30 = 80

30)

(a) (i) $^{18}C_5 = 8568$ mmm

(ii) **Either**

$^{10}C_4 \times {}^{8}C_1 = 1680$

$^{10}C_3 \times {}^{8}C_2 = 3360$

$^{10}C_2 \times {}^{8}C_3 = 2520$

$^{10}C_1 \times {}^{8}C_4 = 700$

Total = 8260

Or

their $^{18}C_5 - \left({}^{10}C_5 + {}^{8}C_5\right)$

$8568 - (252 + 56)$

Total = 8260

(b) (i) $^{10}P_6 = 151200$

(ii) $4 \times {}^{8}P_4 \times 3$

$= 20160$

(iii) Answer to (i) - $^{7}P_6$

$= 146160$

Alternative:
1 symbol: 45360
2 symbols: 75600
3 symbols: 25200
Total: 146160

31)

(a)(i)	2520
(a)(ii)	360
(a)(iii)	1080
(a)(iv)	6 or 8 to start with No of ways = $2 \times 5 \times 4 \times 3 \times 2$ = 240
	9 to start with No of ways = $1 \times 5 \times 4 \times 3 \times 3$ = 180
	Total number of ways = 420
(a)(iv)	**Alternative 1** All numbers > 6000 – all odd numbers > 6000
	$1080 - 180 - 480$
	Total number of ways = 420
	Alternative 2 Even numbers > 60000 : Odd numbers > 60000 7 : 11
	Total number of ways = $\frac{7}{18} \times 1080$
	= 420
(b)(i)	480700
(b)(ii)	26460
(b)(iii)	With brother and sister $^{23}C_5 = 33649$
	Without brother and sister $^{23}C_7 = 245157$
	Total number of ways = 278806

32)

(a)	$(9\times8\times7\times6\times1)+(8\times8\times7\times6\times1)$ soi
	5712
(b)	${}^9C_4\times{}^5C_4+{}^9C_3\times{}^5C_5$ oe
	[630 + 84 =] 714

33)

(a)	$\left[{}^{30}P_2=\right]$ 870
(b)(i)	${}^2C_1\times{}^{14}C_{10}$ oe (2 × 1001)
	2002
(b)(ii)	$({}^2C_1\times{}^5C_4\times{}^9C_6)+({}^2C_1\times{}^5C_5\times{}^9C_5)$ oe (840 + 252) or ${}^2C_1\times{}^{14}C_{10}-({}^2C_1\times{}^5C_1\times{}^9C_9+{}^2C_1\times{}^5C_2\times{}^9C_8+{}^2C_1\times{}^5C_3\times{}^9C_7)$ {2002 – (10 + 80 + 720)}
	1092

34)

(a)(i)	${}^{8}C_{6} \times {}^{6}C_{4}$	B1
	420	B1
(a)(ii)	${}^{12}C_{8} + {}^{12}C_{10}$	B2
	= 561	B1
	Alternate scheme: $1001 - \left(2 \times {}^{12}C_{9}\right)$	B1 B1
	= 561	B1
(b)(i)	136 080	B1
(b)(ii)	No of ways ending with 0 - 15 120	B1
	No of ways ending with 5 - 13 440	B1
	Total 28 560	B1
(b)(iii)	Starting with 6 or 8 - 13 440	B1
	Starting with 7 or 9 - 16 800	B1
	Total = 30 240	B1

35)

(a)(i)	720	B1
(a)(ii)	240	B1
(a)(iii)	$k \times 4! \times 2$ or $240 - k \times 4! \times 2$ or correct equivalents with no extra terms added or subtracted	B1
	$4 \times 4! \times p$ or correct equivalents with no extra terms added or subtracted	B1
	192	B1
(b)(i)	6435	B1
(b)(ii)	With twins: ${}^{13}C_{6}$ or 1716 Without twins: ${}^{13}C_{8}$ or 1287	B2
	Total: 1716 + 1287 = 3003	B1

36)

(i)	${}^{10}C_4 = 210$	**B1**
(ii)	2 Mystery 2 others = ${}^{5}C_2 \times {}^{5}C_2 = 100$ 3 Mystery 1 other = ${}^{5}C_3 \times {}^{5}C_1 = 50$ 4 Mystery = ${}^{5}C_4 = 5$ Total 155	**B3**
	<u>Alternative Method</u> All – 0 Mystery – 1 Mystery	**B1**
	$= 210 - {}^{5}C_4 - {}^{5}C_1 \times {}^{5}C_3$	**B1**
	$= 210 - 5 - 5 \times 10 = 155$	**B1**
(iii)	2M1C1R = ${}^{5}C_2 \times {}^{3}C_1 \times {}^{2}C_1 = 60$ 1M2C1R = ${}^{5}C_1 \times {}^{3}C_2 \times {}^{2}C_1 = 30$ 1M1C2R $= {}^{5}C_1 \times {}^{3}C_1 \times {}^{2}C_2 = 15$ Total 105	**B3**

37)

(i)	$({}^{12}P_7 =)\,3\,991\,680$	**B1**	
(ii)	$(4 \times {}^{11}P_6 =)\,1\,330\,560$	**B1**	
(iii)	$4! \times 4! \times 2$ oe	**M2**	**M1** for $4! \times 4!$ oe only or ${}^{4}P_4 \times {}^{4}P_3$ oe only
	1152	**A1**	

38)

(a)	${}^{7}P_4$ or $7 \times 6 \times 5 \times 4$ oe	**M1**	
	840	**A1**	
(b)(i)	20	**B1**	
(b)(ii)	${}^{5}C_1 \times {}^{4}C_1 \times {}^{2}C_1$ or $5 \times 4 \times 2$ oe	**M1**	
	40	**A1**	
(b)(iii)	${}^{5}C_3 + {}^{4}C_3$ oe	**M1**	
	14	**A1**	

39)

(i)	120	**2**	**B2** $5\times4\times3\times2$ or **B1** for pattern $n(n-1)(n-2)(n-3)$
(ii)	720	**2**	**B1** $4\times3\times2$ **B1 dep** $\times6\times5=720$
(iii)	2520	**2**	**B1** $4\times\ldots\times\ldots\times\ldots\times3$ **B1 Dep** $\times7\times6\times5=2520$

40)

(a)	Number first $=7\times6\times5\times6\times5$ or ${}^7P_3\times{}^6P_2$ or 6300	**B1**	
	Letter first $=6\times5\times4\times7\times6$ or ${}^6P_3\times{}^7P_2$ or 5040	**B1**	
	6300 + 5040 = 11 340	**B1**	
(b)	With 2 sisters = ${}^7C_5\times{}^3C_2=63$ With 1 sister = ${}^7C_6\times{}^3C_1=21$ With no sister = ${}^7C_7=1$ and Total 85	**3**	**B1** One combination evaluated **B1** Another combination evaluated **B1** Third combination and 85
	OR		
	Total no of ways = ${}^{10}C_7=120$	**B1**	
	With 3 sisters = ${}^7C_4=35$	**B1**	
	Without 3 sisters = 120 – 35 = 85	**B1**	

41)

(i)	167 960	**1**	
(ii)	evidence of selecting from 16	**M1**	
	[${}^{16}C_7$ =] 11 440	**A1**	
(iii)	$2\times{}^nC_r$ with $n=16$ or $r=9$	**M1**	
	$\left[2\times{}^{16}C_9=\right]$ 22880	**A1**	
(iv)	$4\times{}^nC_r$ with $n=16$ or $r=9$	**M1**	
	$\left[4\times{}^{16}C_9=\right]$ 45760	**A1**	

42)

(a)(i)	40320	**B1**	
(a)(ii)	No. of ways with maths books as 1 unit = 5! or $5\times4!$ or ${}^5P_5$ or 120	**B1**	
	No. of ways maths books can be arranged amongst themselves = 4! or ${}^4P_4$ or 24	**B1**	
	Total = $(5!\ \times 4!\ \text{oe}) = 2880$	**B1**	
(a)(iii)	No. of ways with maths books as 1 unit and geography books as 1 unit = 3! or ${}^3P_3$ or $3\times2!$ or 6	**B1**	
	No. of ways maths books can be arranged amongst themselves and geography books can be arranged amongst themselves = $4!\ \times 3!$ or ${}^4P_4\times{}^3P_3$ or 144	**B1**	
	Total = $(3!\ \times 4!\ \times 3!\ \text{oe})$ = 864	**B1**	
(b)(i)	${}^{12}C_6 = 924$	**B1**	
(b)(ii)	**Either:** $924 - {}^8C_6$	**M1**	For *their* **(i)** – the number of teams of just men
	Total = 896	**A1**	
	Or: 5M 1W : ${}^8C_5\times{}^4C_1$ (= 224) 4M 2W : ${}^8C_4\times{}^4C_2$ (= 420) 3M 3W : ${}^8C_3\times{}^4C_3$ (= 224) 2M 4W : ${}^8C_2\times{}^4C_4$ (= 28)	**M1**	For a complete method
	Total = 896	**A1**	

43)

(a)(i)	$7! = 5040$	**B1**	
(a)(ii)	Treating the 4 trophies as 1 unit so there are 4! ways	**B1**	Maybe implied by a correct answer
	There are also 4! ways of arranging the football trophies amongst themselves	**B1**	
	Total = $4! \times 4! = 576$	**B1**	
(a)(iii)	Treating the 4 football trophies as 1 unit and the 2 cricket trophies as 1 unit so there are 3! ways	**B1**	Maybe implied by a correct answer
	There are also 4! ways of arranging the football trophies amongst themselves and 2 ways of arranging the cricket trophies	**B1**	Maybe implied by a correct answer
	Total = $3! \times 4! \times 2 = 288$	**B1**	
(b)(i)	3003	**B1**	
(b)(ii)	28	**B1**	
(b)(iii)	3003 – 1	**M1**	For *their* **(i)** – 1
	3002	**A1**	**FT**

44)

(a)(i)	39 916 800	**B1**	
(a)(ii)	$5! \times 6!$ oe	**M1**	
	86 400	**A1**	
(b)(i)	${}^5C_3 \times {}^3C_1$ oe	**M1**	
	30	**A1**	
(b)(ii)	${}^5C_2 \times {}^3C_2 + {}^5C_1 \times {}^3C_1$ oe	**M1**	
	45	**A1**	

45)

(a)(i)	362 880	**B1**	
(a)(ii)	$7! \times 2$	**B1**	For 7!
	10 080	**B1**	For $7! \times 2$ leading to 10080
(a)(iii)	Total = $4! \times 4! \times 3! = 3456$	**B3**	**B1** for treating as 4 separate units 4! **B1** for either number of ways of arranging the maths books amongst themselves 4! or the number of ways of arranging the physics books amongst themselves 3!
(b)(i)	18 564	**B1**	
(b)(ii)	Total 3738	**B4**	**B1** 4 boys 3150 **B1** 5 boys 560 **B1** 6 boys 28

46)

(i)	$^{14}P_5$ or $14 \times 13 \times 12 \times 11 \times 10$	**M1**	
	240 240	**A1**	cao
(ii)	$^{3}P_1 \times {}^{5}P_2 \times {}^{6}P_2$ or $3 \times (5 \times 4) \times (6 \times 5)$	**M1**	Two of the three elements multiplied by …
	= 1800	**A1**	
(iii)	$^{6}P_2 \times {}^{8}P_3$ or $(6 \times 5) \times (8 \times 7 \times 6)$	**M1**	One element multiplied by … Clear intention to multiply
	= 10 080	**A1**	

47)

(i)	362880 (363000)
(ii)	PG or GP in $8! \times 2 = 80640$ or 7/9 of **(i)** $362880 - 80640 = 282240$
(iii)	$^9P_3$ or $^9C_3 \times 3!$ or $9!/6!$ = 504
(iv)	$^8C_2 \times 3!$ or $504 - {}^8C_3 \times 3!$ or $^8P_2 \times 3$ = 168
(v)	PG and x in $7 \times 2 \times 2$ ways = 28 Answer $504 - 28 = 476$

48)

(a)(i)	15 120	**B1**	
(a)(ii)	1680	**B1**	
(a)(iii) Method 1	Total = 2310	**B3**	B1 1st digit is 7 or 9 1680 or 210×8 B1 1st digit is 8 630 or 210×3
(a)(iii) Method 2	Total = 2310	**B3**	B1 for 5th digit is 2,4 or 6 1890 or 210×9 B1 for 5^{th} digit is 8 420 or 210×2
(b)(i)	3003	**B1**	
(b)(ii)	28	**B1**	
(b)(iii)	Total 1419	**B3**	B1 Including husband and wife 495 B1 Excluding husband and wife 924