

# Perms and Coms 1 Answers

1)

<p><b>6 (i)</b> <math>7 \times 6 \times 5 \times 4</math> 840</p>	<p>B1 B1</p>
<p><b>(ii)</b> <math>2 \times 6 \times 5 \times 4</math> or <math>\frac{2}{7} \times (840)</math> 240</p>	<p>M1 A1</p>
<p><b>(iii)</b> <math>2 \times 5 \times 4 \times 2</math> or <math>\frac{2}{6} \times (240)</math> or clear indication of method 80</p>	<p>M1 A1 [6]</p>

2)

<p><b>7 (i)</b> <math>{}^{13}C_8 = 1287</math></p> <p><b>(ii)</b> 7 teachers, 1 student : 6 6 teachers, 2 students <math>{}^7C_6 \times {}^6C_2 : 105</math> 5 teachers, 3 students <math>{}^7C_5 \times {}^6C_3 : 420</math> 531</p>	<p>M1, A1 [2]</p> <p>B1 B1 B1 B1 [4]</p>	<p>correctly and correct use of notation M1 for correct C notation</p>
---	--	--

3)

<p><b>(a)</b> 10, 3 and 15 multiply 3 values 450</p> <p><b>(b)</b> <math>4 \times (5 \times 4 \times 3)</math> 240</p>	<p>B1 M1 A1</p> <p>B1+B1 B1</p>
--	---

[6]

4)

<p><b>10 [8]</b></p>	<p><b>(a)</b> <math>{}^9P_4 [ = 9 \times 8 \times 7 \times 6 ] = 3024</math></p> <p><b>(b) Possibilities :</b>      <b>1 C + 4 S</b>      <b>2 C + 3 S</b></p> <p>Either <math>5 \times {}^8C_4 [ = 350 ]</math> or <math>{}^5C_2 \times {}^8C_3 [ = 560 ]</math>      Both correct</p> <p><b>Sum</b> of relevant two terms only = 910</p>	<p>M1 A1</p> <p>B1 B1</p> <p>M1 A1</p> <p>M1 A1</p>
----------------------	--	---

5)

<p><b>7 (a)</b></p> <p><b>(b)</b></p>	<p><math>8 \times 8!</math> or <math>\frac{8}{9} \times 9!</math> or <math>9! - 8!</math> <math>\rightarrow 322\,560</math></p> <p><math>2G, 1B \quad {}_5C_2 \times {}_3C_1 = 10 \times 3 = 30</math> <math>3G, 0B \quad {}_5C_3 = 10</math> total = sum of these = 40</p>	<p>M1</p> <p>A1 [2]</p> <p>M1 A1 B1 A1 [4]</p>	<p>Must be <math>{}_nC_r</math> – knows what to do. Ans only is ok for 2 marks.</p> <p>Needs to be a product of <math>{}_nC_r</math>'s. Co. Anywhere.</p> <p>Co.</p>
---------------------------------------	---	--	--

# Perms and Coms 1 Answers

6)

<b>7 (i)</b>	$6! = 720$	B1
<b>(ii)</b>	$M \dots \Rightarrow 5! = 120$	M1 A1
<b>(iii)</b>	$4! \quad 48$	M1 A1
<b>(iv)</b>	$6!/4! 2! = 15$ Accept ${}_6C_4$ or ${}_6C_2 = 15$	B1
<b>(v)</b>	$5!/3! 2! = 10$ (or, answer to (iv) less ways M can be omitted) (Listing – ignoring repeats $\geq 8$ [M1] $\Rightarrow 10$ [A1])	M1 A1
[8]		