

| Question Number | Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Marks                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------------------------------------------------|
| 1.              | <div><table><tr><td></td><td>1</td><td>2</td><td>2</td><td>3</td><td>3</td><td>3</td></tr><tr><td>1</td><td>2</td><td>3</td><td>3</td><td>4</td><td>4</td><td>4</td></tr><tr><td>2</td><td>3</td><td>4</td><td>4</td><td>5</td><td>5</td><td>5</td></tr><tr><td>2</td><td>3</td><td>4</td><td>4</td><td>5</td><td>5</td><td>5</td></tr><tr><td>3</td><td>4</td><td>5</td><td>5</td><td>6</td><td>6</td><td>6</td></tr><tr><td>3</td><td>4</td><td>5</td><td>5</td><td>6</td><td>6</td><td>6</td></tr><tr><td>3</td><td>4</td><td>5</td><td>5</td><td>6</td><td>6</td><td>6</td></tr></table><p><math>\therefore P(\text{sum at least } 5) = \frac{21}{36} = \frac{7}{12}</math></p></div> <div><p><math>2 \times (1, 2, \dots, 3)</math></p><p>Adding</p><p>All <math>\geq 5</math> correctly indicated</p><p>Attempt to count <math>\geq 5</math></p><p><math>\frac{21}{36}; \frac{7}{12}; 0.58\dot{3}; 0.583</math></p></div> |                                          | 1 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 3 | 3 | 4 | 4 | 4 | 2 | 3 | 4 | 4 | 5 | 5 | 5 | 2 | 3 | 4 | 4 | 5 | 5 | 5 | 3 | 4 | 5 | 5 | 6 | 6 | 6 | 3 | 4 | 5 | 5 | 6 | 6 | 6 | 3 | 4 | 5 | 5 | 6 | 6 | 6 | M1<br>M1<br>A1<br>M1<br>A1<br><b>(5 marks)</b> |
|                 | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2                                        | 2 | 3 | 3 | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |
| 1               | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3                                        | 3 | 4 | 4 | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |
| 2               | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4                                        | 4 | 5 | 5 | 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |
| 2               | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4                                        | 4 | 5 | 5 | 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |
| 3               | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5                                        | 5 | 6 | 6 | 6 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |
| 3               | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5                                        | 5 | 6 | 6 | 6 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |
| 3               | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5                                        | 5 | 6 | 6 | 6 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |
| Alt 1           | <div><p>Tree with relevant branches</p><p>All correct - <math>\frac{2}{6}, \frac{3}{6}</math> on those branches</p><p><math>P(\text{sum at least } 5) = \left(\frac{2}{6} \times \frac{3}{6}\right) + \left(\frac{3}{6} \times \frac{2}{6}\right) + \left(\frac{3}{6} \times \frac{3}{6}\right)</math> (At least 2 pairs &amp; adding)</p><p><math>= \frac{21}{36}; \frac{7}{12}; 0.58\dot{3}; 0.583</math></p></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | M1<br>A1<br>M1<br>A1<br>A1<br><b>(5)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                                |

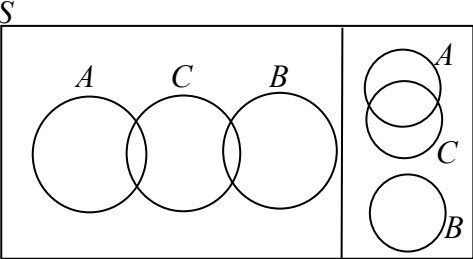
| Question Number | Scheme                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                       | Marks                          |                 |                |   |   |          |                |                |                 |                 |                |                                                                                                 |                                |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------|----------------|---|---|----------|----------------|----------------|-----------------|-----------------|----------------|-------------------------------------------------------------------------------------------------|--------------------------------|
| Alt 2           | Outcomes (2, 3), (3, 3), (3, 2)<br><br>$\left(\frac{2}{6} \times \frac{3}{6}\right) + \left(\frac{3}{6} \times \frac{3}{6}\right) + \left(\frac{3}{6} \times \frac{2}{6}\right)$<br><br>$\frac{21}{36}$                                                                                                                                                                                | Recognising 2 pairs<br>All correct<br>Can be implied<br>Multiplying 2 pairs of 2 probs. & adding<br>All correct                                                                                       | M1<br>A1<br>M1<br>A1<br>A1 (5) |                 |                |   |   |          |                |                |                 |                 |                |                                                                                                 |                                |
| Alt 3           | P (sum $\geq$ 5) = 12 $\left(\frac{1}{6} \times \frac{1}{6}\right)$ + 9 $\left(\frac{1}{6} \times \frac{1}{6}\right)$<br><br>$\frac{21}{36}$                                                                                                                                                                                                                                           | a(p <sub>1</sub> $\times$ p <sub>2</sub> ) or b(p <sub>1</sub> $\times$ p <sub>2</sub> )<br><br>p <sub>1</sub> = p <sub>2</sub> = $\frac{1}{6}$<br>a( ) + b( )<br>21 or 12 + 9<br><br>$\frac{21}{36}$ | M1<br>A1<br>M1<br>A1<br>A1 (5) |                 |                |   |   |          |                |                |                 |                 |                |                                                                                                 |                                |
| Alt 4           | <table><tr><td><math>x</math></td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>P(X = x)</td><td><math>\frac{1}{36}</math></td><td><math>\frac{4}{36}</math></td><td><math>\frac{10}{36}</math></td><td><math>\frac{12}{36}</math></td><td><math>\frac{9}{36}</math></td></tr></table><br><br>P(X $\geq$ 5) = $\frac{12}{36}$ + $\frac{9}{36}$<br><br>$\frac{21}{36}$ | $x$                                                                                                                                                                                                   | 2                              | 3               | 4              | 5 | 6 | P(X = x) | $\frac{1}{36}$ | $\frac{4}{36}$ | $\frac{10}{36}$ | $\frac{12}{36}$ | $\frac{9}{36}$ | 2, 3, 4, 5, 6<br>Adding probability<br>All correct<br>Adding P(5) & P(6)<br><br>$\frac{21}{36}$ | M1<br>M1<br>A1<br>M1<br>A1 (5) |
| $x$             | 2                                                                                                                                                                                                                                                                                                                                                                                      | 3                                                                                                                                                                                                     | 4                              | 5               | 6              |   |   |          |                |                |                 |                 |                |                                                                                                 |                                |
| P(X = x)        | $\frac{1}{36}$                                                                                                                                                                                                                                                                                                                                                                         | $\frac{4}{36}$                                                                                                                                                                                        | $\frac{10}{36}$                | $\frac{12}{36}$ | $\frac{9}{36}$ |   |   |          |                |                |                 |                 |                |                                                                                                 |                                |

| Question Number                         | Scheme                                                                                                                                                                                                        | Marks                                                                                                                      |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 2.                                      | (a) Scatter diagram                                                                                                                                                                                           | Labels (not $x, y$ ) B1<br>Sensible scales allow axis interchange B1<br>Points B2<br>(–1 ee) (4)                           |
| (b)                                     | $S_{hc} = 884484 - \frac{1562 \times 5088}{9} = 1433\frac{1}{3}$<br><br>$S_{hh} = 1000\frac{2}{9}; S_{cc} = 2550$<br>(NB: accept :- 9; i.e.: - 159 $\frac{7}{27}$ ; 111 $\frac{11}{81}$ ; 283 $\frac{1}{3}$ ) | correct use of $S$ M1<br>1433 $\frac{1}{3}$ ; 1433. $\dot{3}$ A1<br>1000 $\frac{2}{9}$ , 1000. $\dot{2}$ ; 2550 A1; A1 (4) |
| (c)                                     | $r = \frac{1433\frac{1}{3}}{\sqrt{1000\frac{2}{9} \times 2550}}$<br>$= 0.897488....$                                                                                                                          | substitution in correct formula M1<br>A1 ft                                                                                |
| (d)                                     | Taller people tend to be more confident                                                                                                                                                                       | AWRT 0.897(accept 0.8975) A1 (3)<br>context B1 (1)                                                                         |
| (e)                                     | $b = \frac{1433.\dot{3}}{1000.\dot{2}} = 1.433014....$<br><br>$a = \frac{5088}{9} - \frac{1433.\dot{3}}{1000.\dot{2}} \times \frac{1562}{9} = 316.6256...$<br>$\therefore c = 317 + 1.43h$                    | M1<br>allow use of their $b$ M1<br>3sf A1 (3)                                                                              |
| (f)                                     | $h = 180 \Rightarrow c = 574.4$ or 574.5683....                                                                                                                                                               | subt. of 180 M1<br>574 - 575 A1 (2)                                                                                        |
| (g)                                     | $161 \leq h \leq 193$                                                                                                                                                                                         | B1 (1)                                                                                                                     |
|                                         |                                                                                                                                                                                                               | <b>(18 marks)</b>                                                                                                          |
| NB (a) No graph paper $\Rightarrow$ 0/4 |                                                                                                                                                                                                               |                                                                                                                            |

| Question Number | Scheme                                                                                           | Marks                                                                      |
|-----------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 3.              |                                                                                                  |                                                                            |
| (a)             | $0.5 + b + a = 1$<br>$0.3 + 2b + 3a = 1.7$<br>$\therefore a = 0.4$                               | use of $\sum P(X=x) = 1$<br>use of $E(x) = \sum xP(X=x)$<br>M1 A1<br>M1 A1 |
| (b)             | $b = 0.1$<br>$P(0 < X < 1.5) = P(X = 1) = 0.3$                                                   | $a = 0.4, b = 0.1$<br>B1 (5)<br>B1 (1)                                     |
| (c)             | $E(2X - 3) = 2E(X) - 3$<br>$= 2 \times 1.7 - 3 = 0.4$                                            | Use of $E(aX + b)$<br>M1<br>A1 (2)                                         |
| (d)             | $\text{Var}(X) = (1^2 \times 0.3) + (2^2 \times 0.1) + (3^2 \times 0.4) - 1.7^2$<br>$= 1.41$ (*) | Use of $E(x^2) - \{E(x)\}^2$<br>M1<br>A1 ft<br>A1 (3)                      |
| (e)             | $\text{Var}(2X - 3) = 2^2 \text{Var}(X)$<br>$= 4 \times 1.41 = 5.64$                             | cso<br>Use of Var<br>M1<br>A1 (2)                                          |
|                 |                                                                                                  | <b>(13 marks)</b>                                                          |

| Question Number | Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Marks                                                                                                                                                                                                                                                       |   |   |   |     |                       |                     |                       |    |                          |    |   |   |   |   |   |                  |  |     |   |   |   |   |   |   |   |             |    |     |   |   |   |   |   |   |   |                     |  |     |   |   |   |   |   |   |   |   |   |   |                          |    |     |  |  |  |  |  |  |   |   |                   |    |     |  |  |  |  |  |  |   |   |                      |    |                                                                                                                                                                                                                                                               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| 4. (a)(i)       | <div><math display="block">\bar{x} = \frac{270}{16} = 16.875</math><math display="block">sd = \sqrt{\frac{4578}{16} - 16.875^2}</math><math display="block">= 1.16592....</math></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <div>16.875, 16 <math>\frac{7}{8}</math> ; 16.9; 16.88</div> <div><math>\frac{\sum x^2}{16} - \bar{x}^2</math> &amp; <math>\sqrt{\quad}</math></div> <div>All correct</div> <div>AWRT 1.17</div> <div>B1</div> <div>M1</div> <div>A1 ft</div> <div>A1</div> |   |   |   |     |                       |                     |                       |    |                          |    |   |   |   |   |   |                  |  |     |   |   |   |   |   |   |   |             |    |     |   |   |   |   |   |   |   |                     |  |     |   |   |   |   |   |   |   |   |   |   |                          |    |     |  |  |  |  |  |  |   |   |                   |    |     |  |  |  |  |  |  |   |   |                      |    |                                                                                                                                                                                                                                                                    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| (ii)            | Mean % attendance = $\frac{16.875}{18} \times 100 (= 93.75)$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | cao                                                                                                                                                                                                                                                         |   |   |   |     |                       |                     |                       |    |                          |    |   |   |   |   |   |                  |  |     |   |   |   |   |   |   |   |             |    |     |   |   |   |   |   |   |   |                     |  |     |   |   |   |   |   |   |   |   |   |   |                          |    |     |  |  |  |  |  |  |   |   |                   |    |     |  |  |  |  |  |  |   |   |                      |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| (b)             | <div>First 4 1 means 14</div> <div>Second 1 8 means 18</div> <table><tr><td>(1)</td><td>4</td><td>1</td><td>4</td><td>4</td><td>4</td><td>(3)</td><td>Both Labels and 1 key</td><td>B1</td></tr><tr><td>(1)</td><td>5</td><td>1</td><td>5</td><td>5</td><td>5</td><td>5</td><td>(4) Back-to-back</td><td></td></tr><tr><td>(3)</td><td>6</td><td>6</td><td>6</td><td>1</td><td>6</td><td>6</td><td>6</td><td>(3) S and L</td><td>M1</td></tr><tr><td>(5)</td><td>7</td><td>7</td><td>7</td><td>7</td><td>7</td><td>1</td><td>7</td><td>(1) (ignore totals)</td><td></td></tr><tr><td>(6)</td><td>8</td><td>8</td><td>8</td><td>8</td><td>8</td><td>8</td><td>1</td><td>8</td><td>8</td><td>8</td><td>(3) Sensible splits of 1</td><td>M1</td></tr><tr><td>(0)</td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td>9</td><td>(1) First-correct</td><td>A1</td></tr><tr><td>(0)</td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td>0</td><td>(1) Second - correct</td><td>A1</td></tr></table> | (1)                                                                                                                                                                                                                                                         | 4 | 1 | 4 | 4   | 4                     | (3)                 | Both Labels and 1 key | B1 | (1)                      | 5  | 1 | 5 | 5 | 5 | 5 | (4) Back-to-back |  | (3) | 6 | 6 | 6 | 1 | 6 | 6 | 6 | (3) S and L | M1 | (5) | 7 | 7 | 7 | 7 | 7 | 1 | 7 | (1) (ignore totals) |  | (6) | 8 | 8 | 8 | 8 | 8 | 8 | 1 | 8 | 8 | 8 | (3) Sensible splits of 1 | M1 | (0) |  |  |  |  |  |  | 1 | 9 | (1) First-correct | A1 | (0) |  |  |  |  |  |  | 2 | 0 | (1) Second - correct | A1 | <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> 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| Question Number | Scheme                                                                                                                                                                                              | Marks                                        |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| 5.              | Let $L$ represent length of visit $\therefore L \sim N(90, \sigma^2)$                                                                                                                               |                                              |
| (a)             | $P(L < 125) = 0.80$ or $P(L > 125) = 0.20$<br>$\therefore P\left(Z < \frac{125 - 90}{\sigma}\right) = 0.8$ $\therefore P\left(L > \frac{125 - 90}{\sigma}\right) = 0.20$                            |                                              |
|                 | Standardising,<br>$\pm(125 - 90), \sigma/\sigma^2/\sqrt{\sigma}$<br>$\sigma$                                                                                                                        | M1                                           |
|                 | $\therefore \frac{125 - 90}{\sigma} = 0.8416$                                                                                                                                                       | 0.8416<br>B1                                 |
|                 | $\therefore \sigma = \frac{35}{0.8416} = 41.587\dots$                                                                                                                                               | AWRT 41.6<br>A1 (4)                          |
| (b)             | $P(L < 25) = P\left(Z < \frac{25 - 90}{41.587\dots}\right)$                                                                                                                                         | Standardising 25, 90, their +ve 41.587<br>M1 |
|                 | $= P(Z < -1.56)$<br>$= 1 - P(Z < 1.56)$ For use of symmetry or $\Phi(-z) = 1 - \Phi(z)$ ; $p < 0.5$<br>$= 0.0594$                                                                                   | M1<br>A1<br>B1 (3)                           |
| (c)             | $90 + 3\sigma = 215 \Rightarrow 6.25$ pm for latest arrival<br>$90 + 2\sigma = 173.\dot{3} \Rightarrow 7.07$ pm for latest arrival<br>$\therefore$ This normal distribution is <u>not</u> suitable. | Based on $2\sigma/3\sigma$ rule<br>B1<br>(2) |
|                 |                                                                                                                                                                                                     | (9 marks)                                    |

| Question Number                                | Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Marks                                                                                                                                              |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>6. (a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p> | <div style="display: flex; align-items: flex-start;"> <div style="flex: 1;">  <p style="margin-left: 20px;"> <math>A, B, C</math> inside <math>S</math><br/> <math>A, B</math> no overlap<br/><br/> <math>A, C</math> overlap </p> </div> <div style="flex: 2; padding-left: 20px;"> <p> <math>P(A C) = \frac{P(A \cap C)}{P(C)} = \frac{P(A)P(C)}{P(C)} = P(A)</math> </p> <p style="text-align: right;">Use of independence</p> <p style="text-align: center;"><math>= 0.2</math></p> <p> <math>P(A \cup B) = P(A) + P(B) - P(A \cap B)</math> use of <math>P(A \cup B)</math> &amp; <math>P(A \cap B) = 0</math> can be implied<br/> <math>= 0.2 + 0.4 - 0</math><br/> <math>= 0.6</math> </p> <p> <math>P(A \cup C) = P(A) + P(C) - P(A \cap C)</math> Use of <math>P(A \cup C)</math> &amp; independence<br/> <math>\therefore 0.7 = 0.2 + P(C) - 0.2 P(C)</math><br/> <math>\therefore 0.5 = P(C) \{1 - 0.2\}</math> Solving for <math>P(C)</math> from an equation with <math>2P(C)</math> terms<br/> <math>\therefore P(C) = \frac{5}{8}</math> </p> </div> </div> | <p>B1<br/>B1</p> <p>B1 (3)</p> <p>M1</p> <p>A1 (2)</p> <p>M1</p> <p>A1 (2)</p> <p>M1</p> <p>A1</p> <p>M</p> <p>A1 (4)</p> <p><b>(11 marks)</b></p> |
|                                                | <p>NB <math>P(B \cup C) = P(B) + P(C) - P(B \cap C)</math><br/> <math>= 0.4 + 0.625 - P(B \cap C) \Rightarrow P(B \cap C) &gt; 0</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                    |