**1.** The Venn diagram and Attribute table shown both represent the same information about the siblings of a group of Year 10 students. (*Not all Karnaugh maps have the shaded row and column, but including it makes is easier to make calculations)*

B = Brother S = Sister

|  |  |  |  |
| --- | --- | --- | --- |
|  | **B** | **B′** |  |
| **S** | 29 | 10 | 39 |
| **S′** | 7 | 4 | 11 |
|  | 36 | 14 | 50 |

7

29

10

4

**B**

**S**

A student is selected at random from the group. Calculate the probability that:

(a) they are an only child (b) they have a brother but no sister

(c) they have siblings of both genders (d) they have a sister

**2.** The Venn diagram shows the number of Year 10 students that intend continuing with Maths or Science in 2011.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **M** | **M′** |  |
| **S** |  |  |  |
| **S′** |  |  |  |
|  |  |  |  |

88

82

3

27

**M**

**S**

(a) Complete the attribute table to show the data given in the Venn Diagram

(b) A student is selected at random. Calculate the probability that:

(i) they will study both Maths and Science in 2011

(ii) they won’t study Maths in 2011

(iii) they will study only one of the two subjects in 2011

(iv) they won’t study both subjects in 2011

3. The Attribute table shows the way in which Year 10 students get to school

|  |  |  |  |
| --- | --- | --- | --- |
|  | **B** | **B′** |  |
| **W** |  |  |  |
| **W′** |  |  |  |
|  |  |  |  |

B = Bus

W = Walk

(a) Complete the attribute table

(b) Find:

(i) Pr (B) (ii) Pr(W ∩ B)

(iii) Pr(W ∪ B) (iv) Pr(W’)

(v) Pr(W ∩ B’) (vi) Pr(W ∩ B)’ (vii) Pr(W ∪ B)’ (viii) Pr(W’ ∪ B) (ix) Pr(W’ ∩ B’)

(c) Represent the same information using a Venn Diagram

4. 100 Year 10 girls were surveyed regarding their formal outfits.

20 wore black dresses (B), 85 wore high heels (H), 15 wore high heels and black dresses (H ∩ B)

(a) Represent the information using an attribute table. (b) Find:

(i) Pr(B) (ii) Pr(H)’ (iii) Pr(H ∪ B) (iv) Pr(H’ ∩ B) (v) Pr(H ∩ B)’