**1.** For the events *A* and *B*, *p*(*A*) = 0.6, *p*(*B*) = 0.8 and *p*(*A*  *B*) = 1.

Find

(a)*p*(*A**B*);

(b) *p*(A  *B*). (Total 4 marks)

**2.** Events *E* and *F* are independent, with P(*E*) =  and P(*E*  *F*) = . Calculate

(a) P(*F*);

(b) P(*E*  *F*).

(Total 6 marks)

**3.** The following Venn diagram shows a sample space *U* and events *A* and *B.*



*n*(*U*) *=* 36, *n*(*A*)= 11, *n*(*B*) = 6 and *n*(*A*  *B*)′ = 21.

(a) On the diagram, shade the region (*A*  *B*)′*.*

(b) Find

(i) *n*(*A*  *B*)*;*

(ii) *P*(*A*  *B*)*.*

(c) Explain why events *A* and *B* are not mutually exclusive. (Total 4 marks)

**4.** The eye colour of 97 students is recorded in the chart below. (6 marks)

|  |  |  |
| --- | --- | --- |
| Brown | Blue | Green |
| Male | 21 | 16 | 9 |
| Female | 19 | 19 | 13 |

One student is selected at random.

(a) Write down the probability that the student is a male.

(b) Write down the probability that the student has green eyes, given that the student is a female.

(c) Find the probability that the student has green eyes or is male.

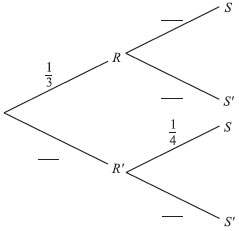
**5.** A card is picked up at random from a pack of 52 cards. Find the probability that it is a king or queen.

**6.** A family has 2 children. Find the probability that both are boys, if it is known that at least one of the children in a boy.

**7.** The following probabilities were found for two events *R* and *S*.

P(*R*) = , P(*S*  *R*) = , P(*S*  *R′*) = .

(a) **Copy** and **complete** the tree diagram.



(3)

(b) Find the following probabilities.

(i) P(*R*  *S*).

(ii) P(*S*).

(iii) P(*R*  *S*).

**8.** Today Philip intends to go walking. The probability of good weather (G) is . If the weather is good, the probability he will go walking (W) is . If the weather forecast is not good (NG) the probability he will go walking is . (Total 8 marks)

(a) Complete the probability tree diagram to illustrate this information.



(b) What is the probability that Philip will go walking?