RD Sharma Solutions Class 12 Maths Chapter 31 Ex 31.3

Probability Ex 31.3 Q1

Given,

$$P(A) = \frac{7}{13},\ P(B) = \frac{9}{13} \text{ and } P(A \cap B) = \frac{4}{13}$$

We know that,

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{\frac{4}{13}}{\frac{9}{13}}$$

$$= \frac{4}{9}$$

$$P\left(\frac{A}{B}\right) = \frac{4}{9}$$

Probability Ex 31.3 Q2

Given,

$$P(A) = 0.6,\ P(B) = 0.3 \text{ and } P(A \cap B) = 0.2$$

We know that,

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{0.2}{0.3}$$

$$P\left(\frac{A}{B}\right) = \frac{2}{3}$$

and, $$P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$

$$= \frac{0.2}{0.6}$$

$$P\left(\frac{B}{A}\right) = \frac{1}{3}$$

$$P\left(\frac{A}{B}\right) = \frac{2}{3},\ P\left(\frac{B}{A}\right) = \frac{1}{3}$$

Probability Ex 31.3 Q3

Given,

$$P(A \cap B) = 0.32 \text{ and } P(B) = 0.5$$

We know that,

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{0.32}{0.5}$$

$$= \frac{16}{25}$$

$$= 0.64$$

$$P\left(\frac{A}{B}\right) = 0.64$$

Probability Ex 31.3 Q4

Given,

$$P(A) = 0.4,\ P(B) = 0.8,\ P\left(\frac{B}{A}\right) = 0.6$$

We know that,

$$P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$

$$0.6 = \frac{P(A \cap B)}{0.4}$$

$$P(A \cap B) = 0.6 \times 0.4$$

$$P(A \cap B) = 0.24$$

Now, $P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$

$$= \frac{0.24}{0.8}$$

$$P\left(\frac{A}{B}\right) = 0.3$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$= 0.4 + 0.8 - 0.24$$

$$P(A \cap B) = 0.96$$

$$P\left(\frac{A}{B}\right) = 0.3, \quad P(A \cap B) = 0.96$$

Probability Ex 31.3 Q5(i)

Given,

$$P(A) = \frac{1}{3},\ P(B) = \frac{1}{4},\ P(A \cup B) = \frac{5}{12}$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$\frac{5}{12} = \frac{1}{3} + \frac{1}{4} - P(A \cap B)$$

$$P(A \cap B) = \frac{1}{3} + \frac{1}{4} - \frac{5}{12}$$

$$= \frac{4 + 3 - 5}{12}$$

$$P(A \cap B) = \frac{2}{12}$$

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{\frac{2}{12}}{\frac{1}{4}}$$

$$= \frac{2}{12} \times \frac{4}{1}$$

$$P\left(\frac{A}{B}\right) = \frac{2}{3}$$

$$P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$

$$= \frac{\frac{2}{12}}{\frac{1}{3}}$$

$$= \frac{2}{12} \times \frac{3}{1}$$

$$P\left(\frac{B}{A}\right) = \frac{1}{2}$$

Hence,

$$P\left(\frac{A}{B}\right) = \frac{2}{3}$$

$$P\left(\frac{B}{A}\right) = \frac{1}{2}$$

Probability Ex 31.3 Q5(ii)

Given,

$$P(A) = \frac{6}{11},\ P(B) = \frac{5}{11} \text{ and } P(A \cup B) = \frac{7}{11}$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$
$$P(A \cap B) = P(A) + P(B) - P(A \cup B)$$
$$= \frac{6}{11} + \frac{5}{11} + \frac{7}{11}$$
$$P(A \cap B) = \frac{4}{11}$$

We know that,

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$
$$= \frac{\frac{4}{11}}{\frac{5}{11}}$$
$$= \frac{4}{5}$$

$$P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$
$$= \frac{\frac{4}{11}}{\frac{6}{11}}$$
$$= \frac{2}{3}$$

Hence,

$$P\left(\frac{A}{B}\right) = \frac{4}{5},\ P\left(\frac{B}{A}\right) = \frac{2}{3}$$

Probability Ex 31.3 Q5(iii)

Given,

$$P(A) = \frac{7}{13},\ P(B) = \frac{9}{13},\ P(A \cap B) = \frac{4}{13}$$

Since, $P(A' \cap B) = P(B) - P(A \cap B)$
$$= \frac{9}{13} - \frac{4}{13}$$
$$P(A' \cap B) = \frac{5}{13}$$

$$P\left(\frac{A'}{B}\right) = \frac{P(A' \cap B)}{P(B)}$$
$$= \frac{\frac{5}{13}}{\frac{9}{13}}$$
$$= \frac{5}{9}$$

$$P\left(\frac{A'}{B}\right) = \frac{5}{9}$$

Probability Ex 31.3 Q5(iv)

$P(A)=\frac{1}{2}, P(B)=\frac{1}{3}$ and $P(A\cap B)=\frac{1}{4}$,

$$P(A/B)=\frac{P(A\cap B)}{P(B)}=\frac{\frac{1}{4}}{\frac{1}{3}}=\frac{3}{4}$$

$$P(B/A)=\frac{P(B\cap A)}{P(A)}=\frac{\frac{1}{4}}{\frac{1}{2}}=\frac{1}{2}$$

$$P(\overline{A}/B)=\frac{P(B)-P(A\cap B)}{P(B)}=\frac{\frac{1}{3}-\frac{1}{4}}{\frac{1}{3}}=\frac{1}{4}$$

$$P(\overline{A}/\overline{B})=\frac{P(\overline{A}\cap\overline{B})}{P(\overline{B})}=\frac{1-P(\overline{A\cup B})}{P(A)-P(A\cap B)}=\frac{1-P(A)-P(B)+P(A\cap B)}{P(A)-P(A\cap B)}=\frac{1-\frac{1}{2}-\frac{1}{3}+\frac{1}{4}}{\frac{1}{2}-\frac{1}{4}}=\frac{5}{4}$$

Probability Ex 31.3 Q6

Given,

$$2P(A)=P(B)=\frac{5}{13}$$

$$2P(A)=\frac{5}{13}$$

$$\Rightarrow \quad P(A)=\frac{5}{26}$$

$$P\left(\frac{A}{B}\right)=\frac{P(A\cap B)}{P(B)}$$

$$\frac{2}{5}=\frac{P(A\cap B)}{\frac{5}{13}}$$

$$P(A\cap B)=\frac{2}{5}\times\frac{5}{13}$$

$$P(A\cap B)=\frac{2}{13}$$

We know that,

$$P(A\cup B)=P(A)+P(B)-P(A\cap B)$$

$$=\frac{5}{26}+\frac{5}{13}-\frac{2}{13}$$

$$=\frac{5+10-4}{26}$$

$$=\frac{11}{26}$$

$$P(A\cup B)=\frac{11}{26}$$

Probability Ex 31.3 Q7

Given,

$$P(A) = \frac{6}{11},\ P(B) = \frac{5}{11},\ P(A \cup B) = \frac{7}{11}$$

(i)

Since, $P(A \cap B) = P(A) + P(B) - P(A \cup B)$

$$= \frac{6}{11} + \frac{5}{11} - \frac{7}{11}$$

$$P(A \cap B) = \frac{4}{11}$$

(ii)

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{\frac{4}{11}}{\frac{5}{11}}$$

$$P\left(\frac{A}{B}\right) = \frac{4}{5}$$

(iii)

$$P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$

$$= \frac{\frac{4}{11}}{\frac{6}{11}}$$

$$P\left(\frac{B}{A}\right) = \frac{2}{3}$$

Probability Ex 31.3 Q8

Sample space for three coins is given by

$$\{HHH, HTH, THH, TTH, HHT, HTT, THT, TTT\}$$

(i)

A = Head on third toss

$$A = \{HHH, HTH, THH, TTH\}$$

B = Head on first two toss

$$B = \{HHH, HHT\}$$

$$(A \cap B) = \{HHH\}$$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$

$$P\left(\frac{A}{B}\right) = \frac{1}{2}$$

Hence, $P\left(\frac{A}{B}\right) = \frac{1}{2}$

(ii)

A = At least two heads

$$A = \{HHH, HHT, HTH, THH\}$$

B = At most two heads

$$B = \{HHT, HTT, THT, TTT, HTH, THH, TTH\}$$

$$(A \cap B) = \{HHT, HTH, THH\}$$

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$P\left(\frac{A}{B}\right) = \frac{3}{7}$$

Hence, $P\left(\frac{A}{B}\right) = \frac{3}{7}$

(iii)

A = At most two tails

$A = \{HHH, HTH, THT, TTH, HHT, THT, HTT\}$

B = At least one tail

$B = \{HTH, THH, TTH, HHT, HTT, THT, TTT\}$

$(A \cap B) = \{HTH, THT, TTH, HHT, THT, HTT\}$

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{6}{7}$$

Hence, $P\left(\frac{A}{B}\right) = \frac{6}{7}$

Probability Ex 31.3 Q9

Sample space of two coins

$\{HH, HT, TH, TT\}$

(i)

A = Tail appears on one coin

$A = \{HT, TH\}$

B = One coin shows head

$B = \{HT, TH\}$

$(A \cap B) = \{HT, TH\}$

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{2}{2}$$

$$P\left(\frac{A}{B}\right) = 1$$

Hence, $P\left(\frac{A}{B}\right) = 1$

(ii)

A = No tail appears

$A = \{HH\}$

B = No head appears

$B = \{TT\}$

$(A \cap B) = \{\ \}$

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{0}{1}$$

$$= 0$$

$$P\left(\frac{A}{B}\right) = 0$$

Probability Ex 31.3 Q10

Die is thrown three times.

A = 4 appears on the third toss

$$A = \{(1,1,4),(1,2,4),(1,3,4),(1,4,4),(1,5,4),(1,6,4)$$
$$(2,1,4),(2,2,4),(2,3,4),(2,4,4),(2,5,4),(2,6,4)$$
$$(3,1,4),(3,2,4),(3,3,4),(3,4,4),(3,5,4),(3,6,4)$$
$$(4,1,4),(4,2,4),(4,3,4),(4,4,4),(4,5,4),(4,6,4)$$
$$(5,1,4),(5,2,4),(5,3,4),(5,4,4),(5,5,4),(5,6,4)$$
$$(6,1,4),(6,2,4),(6,3,4),(6,4,4),(6,5,4),(6,6,4)\}$$

B = 6 and 5 appear respectively on first two tosses

$$B = \{(6,5,1),(6,5,5),(6,5,3),(6,5,4),(6,5,5),(6,5,6)\}$$

$$(A \cap B) = \{(6,5,4)\}$$

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$
$$= \frac{1}{6}$$

$$P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$
$$= \frac{1}{36}$$

Hence, $P\left(\frac{A}{B}\right) = \frac{1}{6}$, $P\left(\frac{B}{A}\right) = \frac{1}{36}$

Probability Ex 31.3 Q11

There are three person for photograph father (F), mother (M), son (S).

Sample space $= \{FMS, FSM, MFS, MSF, SFM, SMF\}$

A = Son on one end

$A = \{SFM, SMF, MFS, FMS\}$

B = Father in the middle

$B = \{MFS, SFM\}$

$(A \cap B) = \{MFS, SFM\}$

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$= \frac{2}{2}$$

$$P\left(\frac{A}{B}\right) = 1$$

$$P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$

$$= \frac{2}{4}$$

$$P\left(\frac{B}{A}\right) = \frac{1}{2}$$

Hence, $P\left(\frac{A}{B}\right) = 1$, $P\left(\frac{B}{A}\right) = \frac{1}{2}$

Probability Ex 31.3 Q12

The sample space of the experiment is $\{(1,1)(1,2)(1,3)\ldots(6,6)\}$ conisting of 36 outcomes.

$P(A) = P(\text{Sum} = 6) = \frac{5}{36}$

$P(B) = P(4 \text{ appears at least once}) = \frac{11}{36}$

Now, $P\left(\frac{B}{A}\right) = \frac{P(A \text{ and } B)}{P(A)}$

$$= \frac{P(\text{sum is 6 and 4 has appeared at least once})}{P(A)}$$

$$= \frac{\frac{2}{36}}{\frac{5}{36}}$$

$$= \frac{2}{5}$$

Probability Ex 31.3 Q13

Two dice are thrown.

A = Sum on the dice is 8

$A = \{(2,6),(3,5),(4,4),(5,3),(6,2)\}$

B = Second die always exhibits 4

$B = \{(1,4),(2,4),(3,4),(4,4),(5,4),(6,4)\}$

$(A \cap B) = \{(4,4)\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$

$$= \frac{1}{6}$$

Required probability $= \frac{1}{6}$

Probability Ex 31.3 Q14

Here two dice are thrown

A = Getting 7 as sum on two dice

$A = \{(1,6),(2,5),(3,4),(4,3),(5,2),(6,1)\}$

B = Second die exhibits an odd number

$B = \{(1,1),(2,1),(3,1),(4,1),(5,1),(6,1)$
$(1,3),(2,3),(3,3),(4,3),(5,3),(6,3)$
$(1,5),(2,5),(3,5),(4,5),(5,5),(6,5)\}$

$(A \cap B) = \{(2,5),(4,3),(6,1)\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$

$$= \frac{3}{18}$$

$$= \frac{1}{6}$$

Hence, Required probability $= \frac{1}{6}$

Probability Ex 31.3 Q15

A pair of dice is thrown.

A = Getting 7 as sum number on 2 dice.

$A = \{(1,6),(2,5),(3,4),(4,3),(5,2),(6,1)\}$

B = Second die always exhibits prime number

$B = \{(1,2),(2,2),(3,2),(4,2),(5,2),(6,2)$
$(1,3),(2,3),(3,3),(4,3),(5,3),(6,3)$
$(1,5),(2,5),(3,5),(4,5),(5,5),(6,5)\}$

[Since, there are 2,3,5 prime number on a die]

$(A \cap B) = \{(2,5),(4,3),(5,2)\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$
$$= \frac{3}{18}$$
$$= \frac{1}{6}$$

Hence, Required probability $= \frac{1}{6}$

Probability Ex 31.3 Q16

A die is rolled.

A = A prime number on die

$A = \{2,3,5\}$

B = An odd number on die

$B = (1,3,5)$

$(A \cap B) = \{3,5\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$
$$= \frac{2}{3}$$

Required probability $= \frac{2}{3}$

Probability Ex 31.3 Q17

A pair of dice is thrown

A = Getting sum 8 or more

= Getting sum 8,9,10,11 or 12 on the pair of dice

$A = \{(2,6),(3,5),(4,4),(5,3),(6,2),(3,6)$
$(4,5),(5,4),(6,3),(4,6),(5,5),(6,4)$
$(5,6),(6,5),(6,6)$

B = 4 on first die

$B = \{(4,1),(4,2),(4,3),(4,4),(4,5),(4,6)\}$

$(A \cap B) = \{(4,4),(4,5),(4,6)\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$
$$= \frac{3}{6}$$
$$= \frac{1}{2}$$

Required probability $= \frac{1}{2}$

Probability Ex 31.3 Q18

Two dice are thrown

A = Sum of the numbers on dice is 8

$A = \{(2,6),(3,5),(4,4),(5,3),(6,2)\}$

B = At least one die does not show five

$B = \{(1,1),(1,2),(1,3),(1,4),(1,6),(2,1),(2,2)$
$(2,3),(2,4),(2,6),(3,1),(3,2),(3,3),(3,4)$
$(3,6),(4,1),(4,2),(4,3),(4,4),(4,6),(6,1)$
$(6,2),(6,3),(6,4),(6,6)\}$

$(A \cap B) = \{(2,6),(4,6),(6,2)\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$
$$= \frac{3}{25}$$

Required probability $= \frac{3}{25}$

Probability Ex 31.3 Q19

Two numbers are selected at random from integers 1 through 9.

A = Both numbers are odd

$A = \{(3,1),(5,1),(7,1),(9,1),(3,5),(3,7),(9,3),(5,3),(5,7),(5,9)$
$(7,3),(7,5),(7,9),(9,3),(9,5),(9,7)\}$

B = Sum of both numbers is even
= Sum of both numbers is 2, 4, 6, 8, 10, 12, 14, 16 or 18
$= \{(1,3),(1,5),(2,4),(1,7),(2,6),(3,5),(1,9),(2,8),$
$(3,7),(4,6),(7,5),(8,4),(9,3),(8,6),(9,5),(9,7)\}$

$(A \cap B) = \{(1,3),(1,5),(1,7),(3,5),(1,9),(3,7),(7,5),(9,3),(9,5),(9,7)\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$
$$= \frac{10}{16}$$

Required probability $= \frac{5}{8}$

Probability Ex 31.3 Q20

A die is thrown twice

A = The number 5 has appeared at least once

$A = \{(1,5),(2,5),(3,5),(4,5),(5,5),(6,5),(5,1),(5,2),(5,3),(5,4),(5,6)\}$

B = Sum of the numbers is 8
$= \{(2,6),(3,5),(4,4),(5,3),(6,2)\}$

$(A \cap B) = \{(3,5),(5,3)\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$
$$= \frac{2}{5}$$

Required probability $= \frac{2}{5}$

Probability Ex 31.3 Q21

Two dice are thrown

A = Sum of the numbers showing on the dice is 7

$A = \{(1,6),(2,5),(3,4),(4,3),(5,2),(6,1)\}$

B = First die shows a 6

$= \{(6,1),(6,2),(6,3),(6,4),(6,5),(6,6)\}$

$(A \cap B) = \{(6,1)\}$

$$P\left(\frac{A}{B}\right) = \frac{n(A \cap B)}{n(B)}$$

$$= \frac{1}{6}$$

Required probability $= \frac{1}{6}$

Probability Ex 31.3 Q22

A pair of die is thrown

E = Sum is greater than or equal to 10

$= \{(4,6),(5,5),(6,4),(5,6),(6,5),(6,6)\}$

Case I:

F = 5 appears on first die

$= \{(5,1),(5,2),(5,3),(5,4),(5,5),(5,6)\}$

$E \cap F = \{(5,5),(5,6)\}$

$$P\left(\frac{E}{F}\right) = \frac{n(E \cap F)}{n(F)}$$

$$= \frac{2}{6}$$

$$P\left(\frac{E}{F}\right) = \frac{1}{3}$$

Case II:

F = 5 appears on at least one die

$= \{(1,5),(2,5),(3,5),(4,5),(6,5),(5,1),(5,2),(5,3),(5,4),(5,5),(5,6)\}$

$E \cap F = \{(5,5),(5,6),(6,5)\}$

$$P\left(\frac{E}{F}\right) = \frac{n(E \cap F)}{n(F)}$$

$$= \frac{3}{11}$$

$$P\left(\frac{E}{F}\right) = \frac{3}{11}$$

Probability Ex 31.3 Q23

Given,

Probability to pass mathematics (M)

$$P(M) = \frac{4}{5}$$

Probability to pass in mathematics (M) and computer Science (C)

$$P(M \cap C) = \frac{1}{2}$$

To find, $P\left(\frac{C}{M}\right)$

We know that,

$$P\left(\frac{C}{M}\right) = \frac{P(M \cap C)}{P(M)}$$

$$= \frac{\frac{1}{2}}{\frac{4}{5}}$$

$$= \frac{1}{2} \times \frac{5}{4}$$

$$= \frac{5}{8}$$

Required probability $= \frac{5}{8}$

Probability Ex 31.3 Q24

Given,

Probability that a person buys a shirt $(S) = P(S) = 0.2$

Probability that he buys a trouser $(T) = P(T) = 0.3$

$$P\left(\frac{S}{T}\right) = 0.4$$

We know that,

$$P\left(\frac{S}{T}\right) = \frac{P(S \cap T)}{P(T)}$$

$$0.4 = \frac{P(S \cap T)}{0.3}$$

$$P(S \cap T) = 0.4 \times 0.3$$

$$P(S \cap T) = 0.12$$

Probability that he buys a shirt and a trouser both $= 0.12$

$$P\left(\frac{T}{S}\right) = \frac{P(S \cap T)}{P(S)}$$

$$= \frac{0.12}{0.2}$$

$$P\left(\frac{T}{S}\right) = \frac{12}{20}$$

$$= \frac{3}{5}$$

$$= 0.6$$

Probability that he buys a trouser given that he buys a shirt $= 0.6$

Probability Ex 31.3 Q25

Total students = 1000

Number of girls = 430

% of girls in class XII = 10%

Let A = Student chosen studies in class XII

B = Student chosen is a girl

Then $P(B) = \frac{430}{1000}$

$$P(A \cap B) = \frac{43}{1000}$$

$\therefore$ $P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)} = \frac{43}{430} = \frac{1}{10}$

Probability Ex 31.3 Q26

Total no. of cards = 10

Let A = drawn number is more than 3

B = drawn number is even

$$P\left(\frac{B}{A}\right)=\frac{P\left(B\cap A\right)}{P\left(A\right)}$$

Now $P\left(A\right)=\frac{7}{10}$

$$P\left(A\cap B\right)=\frac{4}{10}$$

$\therefore$ $P\left(\frac{B}{A}\right)=\frac{4}{7}$

Probability Ex 31.3 Q27

(i) Let 'A' be the event that both the children born are girls.
Let 'B' be the event that the youngest is a girl.
We have to find conditional probability P(A/B).

$$P(A/B)=\frac{P(A\cap B)}{P(B)}$$

$A\subset B\Rightarrow A\cap B=A$

$$\Rightarrow P(A\cap B)=P(A)=P(GG)=\frac{1}{2}\times\frac{1}{2}=\frac{1}{4}$$

$$P(B)=P(BG)+P(GG)=\frac{1}{2}\times\frac{1}{2}+\frac{1}{2}\times\frac{1}{2}=\frac{1}{4}+\frac{1}{4}=\frac{1}{2}$$

$$\text{Hence, } P(A/B)=\frac{1/4}{1/2}=\frac{1}{2}$$

(ii) Let 'A' be the event that both the children born are girls.
Let 'B' be the event that at least one is a girl.
We have to find the conditional probability P(A/B).

$$P(A/B)=\frac{P(A\cap B)}{P(B)}$$

$A\subset B\Rightarrow A\cap B=A$

$$\Rightarrow P(A\cap B)=P(A)=P(GG)=\frac{1}{2}\times\frac{1}{2}=\frac{1}{4}$$

$$P(B)=1-P(BB)=1-\frac{1}{2}\times\frac{1}{2}=1-\frac{1}{4}=\frac{3}{4}$$

$$\text{Hence, } P(A/B)=\frac{1/4}{3/4}=\frac{1}{3}$$