

VIDYA BHAWAN BALIKA VIDYA PITH

शक्तिउत्थानआश्रमलखीसरायबिहार

Class :- 09(Maths)

Date:- 18.02.2021

1. In a cricket match, a batswoman hits a boundary 6 times out of 30 balls she plays. Find the probability that she did not hit a boundary.

Solution:

According to the question,

Total number of balls = 30

Numbers of boundary = 6

Number of time batswoman didn't hit boundary = $30 - 6 = 24$

Probability she did not hit a boundary = $24/30 = 4/5$

2. 1500 families with 2 children were selected randomly, and the following data were recorded:

Number of girls in a family	2	1	0
Number of families	475	814	211

Compute the probability of a family, chosen at random, having

(i) 2 girls

(ii) 1 girl

(iii) No girl

Also check whether the sum of these probabilities is 1.

Solution:

Total numbers of families = 1500

(i) Numbers of families having 2 girls = 475

Probability = Numbers of families having 2 girls/Total numbers of families

= $475/1500 = 19/60$

(ii) Numbers of families having 1 girls = 814

Probability = Numbers of families having 1 girls/Total numbers of families

= $814/1500 = 407/750$

(iii) Numbers of families having 2 girls = 211

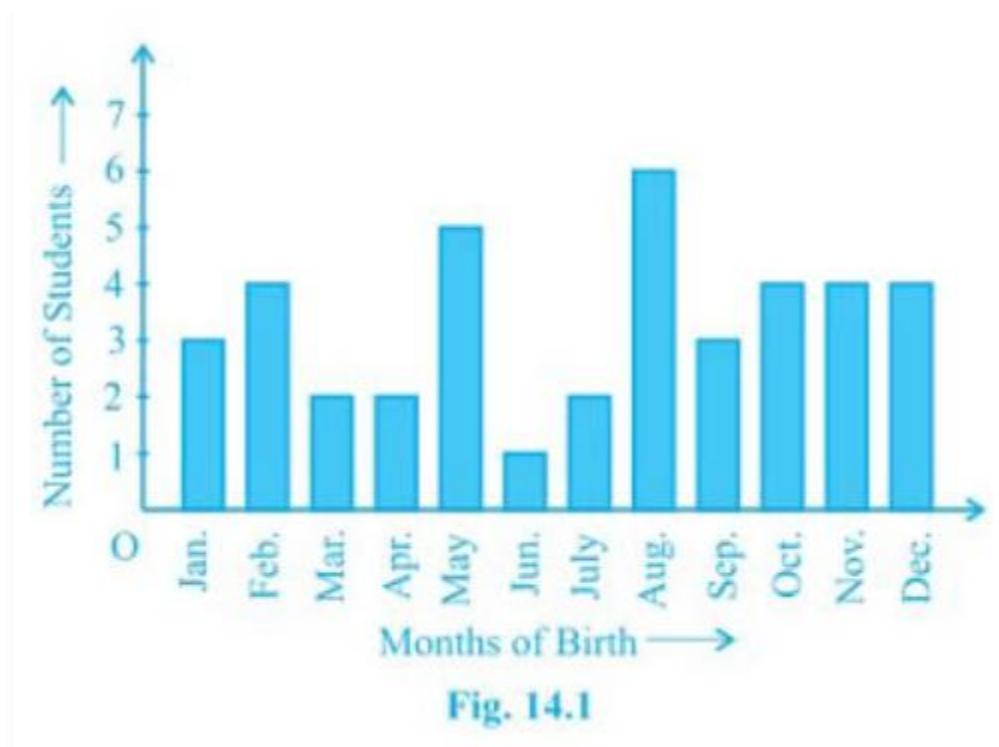
Probability = Numbers of families having 0 girls/Total numbers of families
= $211/1500$

Sum of the probability = $(19/60)+(407/750)+(211/1500)$
= $(475+814+211)/1500$
= $1500/1500 = 1$

Yes, the sum of these probabilities is 1.

3. Refer to Example 5, Section 14.4, Chapter 14. Find the probability that a student of the class was born in August.

Solution:



Total numbers of students in the class = 40

Numbers of students born in August = 6

The probability that a student of the class was born in August, = $6/40 = 3/20$

4. Three coins are tossed simultaneously 200 times with the following frequencies of different outcomes:

Outcome	3 heads	2 heads	1 head	No head
Frequency	23	72	77	28

Swipe left

If the three coins are simultaneously tossed again, compute the probability of 2 heads coming up.

Solution:

Number of times 2 heads come up = 72

Total number of times the coins were tossed = 200

∴, the probability of 2 heads coming up = $\frac{72}{200} = \frac{9}{25}$

5. An organisation selected 2400 families at random and surveyed them to determine a relationship between income level and the number of vehicles in a family. The information gathered is listed in the table below:

Monthly income (in ₹)	Vehicles per family			
	0	1	2	Above 2
Less than 7000	10	160	25	0
7000-10000	0	305	27	2
10000-13000	1	535	29	1
13000-16000	2	469	59	25
16000 or more	1	579	82	88

Suppose a family is chosen. Find the probability that the family chosen is

- (i) earning ₹10000 – 13000 per month and owning exactly 2 vehicles.**
- (ii) earning ₹16000 or more per month and owning exactly 1 vehicle.**
- (iii) earning less than ₹7000 per month and does not own any vehicle.**
- (iv) earning ₹13000 – 16000 per month and owning more than 2 vehicles.**
- (v) owning not more than 1 vehicle.**

Solution:

Total number of families = 2400

(i) Numbers of families earning ₹10000 –13000 per month and owning exactly 2 vehicles = 29

∴, the probability that the family chosen is earning ₹10000 – 13000 per month and owning exactly 2 vehicles = $29/2400$

(ii) Number of families earning ₹16000 or more per month and owning exactly 1 vehicle = 579

∴, the probability that the family chosen is earning ₹16000 or more per month and owning exactly 1 vehicle = $579/2400$

(iii) Number of families earning less than ₹7000 per month and does not own any vehicle = 10

∴, the probability that the family chosen is earning less than ₹7000 per month and does not own any vehicle = $10/2400 = 1/240$

(iv) Number of families earning ₹13000-16000 per month and owning more than 2 vehicles = 25

∴, the probability that the family chosen is earning ₹13000 – 16000 per month and owning more than 2 vehicles = $25/2400 = 1/96$

(v) Number of families owning not more than 1 vehicle =
 $10+160+0+305+1+535+2+469+1+579$

= 2062

∴, the probability that the family chosen owns not more than 1 vehicle =
 $2062/2400 = 1031/1200$