

11.3 (Day 2) Independent vs. Dependent Events

Review: Decide if the events are independent or dependent, then find the probability.

1. Two number cubes are rolled. One number cube showed a 6 and the other showed a number less than 3.

I
$$\frac{1}{6} \cdot \frac{2}{6} = \frac{1}{18}$$

2. Two number cubes are rolled—one white and one yellow. The yellow cube shows an even number and the sum is 5.

D
$$\frac{3}{6} \cdot \frac{2}{18} = \frac{1}{9}$$

$$\frac{1}{2} \cdot \frac{1}{9} = \frac{1}{18}$$

$$P(A \cap B) = P(A) \cdot P(A/B)$$

21 22 23 24 25 26
 (1/18) (4/6)

Feb 10-7:45 PM

A bag contains 10 beads—2 black, 3 white, and 5 red. A bead is selected at random. Determine whether the events are independent or dependent. Find the indicated probability.

3. P(selecting a white bead, replacing it, and then a red)=

I
$$\frac{3}{10} \cdot \frac{5}{10} = \frac{3}{20}$$

4. P(selecting a black, no replacement, and then another black)=

D
$$\frac{2}{10} \cdot \frac{1}{9} = \frac{1}{45}$$

5. P(selecting 3 nonred beads without replacement)=

D
$$\frac{5}{10} \cdot \frac{4}{9} \cdot \frac{3}{8} = \frac{1}{24}$$

$$\frac{1}{2} \cdot \frac{4}{9} \cdot \frac{3}{8}$$

Feb 24-9:25 AM

The table shows student participation in different sports at a high school. Suppose a student is selected at random.

| Sports Participation by Grade | | | | | |
|-------------------------------|-------|------------|------------|--------|----------|
| | Track | Volleyball | Basketball | Tennis | No Sport |
| Grade 9 | 12 | 18 | 15 | 9 | 66 |
| Grade 10 | 6 | 20 | 12 | 2 | 95 |
| Grade 11 | 15 | 11 | 8 | 5 | 61 |
| Grade 12 | 7 | 6 | 10 | 12 | 50 |

40 55 45 23 272 440 total

Sum the columns and the rows first.

6. $P(\text{grade 11}) = \frac{100}{440} = \frac{5}{22}$

7. $P(\text{a 9th grade tennis player}) = \frac{9}{440}$

8. $P(\text{10th grader, given they are in Volleyball}) = \frac{20}{55}$

9. $P(\text{in Track, given 11th grader}) = \frac{15}{100} = \frac{3}{20}$

Feb 10-8:47 PM

A student must have a B average or better for all courses to qualify for any athletic team at Jefferson High School. The table below shows the distribution of students' grades in three sports at the school.

| Sport | Students with an A Average | Students with a B Average |
|--------------|----------------------------|---------------------------|
| Field hockey | 15 | 4 |
| Basketball | 7 | 13 |
| Football | 2 | 22 |

Find sums.

24 39 total 63

An athlete is randomly selected. Find each probability.

10. $P(\text{the student is a basketball player with a B average}) = \frac{13}{63}$

11. $P(\text{the student has an A average given they play field hockey}) = \frac{15}{19}$

12. $P(\text{the student has an A average given they do not play football}) = \frac{22}{39}$

Feb 10-8:52 PM

Using 2 standard number cubes, find the following:

13. P(a cube showing a six given the sum of the two cubes is seven).

$$\frac{6}{36} \cdot \frac{2}{6} = \frac{1}{18}$$

$\begin{array}{ccc} 34 & 61 & 52 \\ 43 & 16 & 25 \end{array}$

14. P(the total being greater than nine, given one cube shows a five).

$$\frac{1}{6} \cdot \frac{2}{6} = \frac{1}{18}$$

$\begin{array}{ccc} 51 & 54 \\ 52 & 55 \\ 53 & 56 \end{array}$

15. P(the second cube is less than the first cube, given the first cube is a four).

$$\frac{1}{6} \cdot \frac{1}{2} = \frac{1}{12}$$

$\begin{array}{ccc} 41 & 44 \\ 42 & 45 \\ 43 & 46 \end{array}$

Feb 25-1:33 PM

Assignment: 11.3 Worksheet B/C

Feb 10-8:34 PM