

Complete each of the following problems, showing evidence of the calculations you made for each problem. Work is important for these – don't just write down an answer. 😊

1. If one flight is randomly selected, what is the probability that the flight was an Upstate Airlines flight which was on time?

	Number of flights which were on time	Number of flights which were late
Podunk Airlines	33	6
Upstate Airlines	43	5

0.494

2. If two flights are randomly selected without replacement, what is the probability that the first is a Podunk Airlines flight and the second is an Upstate Airlines flight?

0.250

3. If one flight is randomly selected, what is the probability that it was late given that it was a Podunk Airlines flight?

0.154

4. If one flight is randomly selected, what is the probability that it was on time or an Upstate Airlines flight?

0.931

5. In a certain class of students, there are 11 boys from Bettendorf, 7 girls from Bettendorf, 4 girls from LeClaire, 5 boys from LeClaire, 4 boys from Pleasant Valley, and 4 girls from Pleasant Valley.

- a. If the teacher calls on a student at random to answer a question, what is the probability that the student will be a boy?

0.571

- b. If the teacher calls on two students at random, what is the probability that the first is a girl and the second is a boy?

0.252

- c. If the teacher calls on a student at random, what is the probability the student is from Bettendorf or a girl?

0.743

- d. If the teacher calls on a student at random, what is the probability that the student is a girl given that they are from Pleasant Valley?

0.5

- e. If the teacher calls on three students at random, what is the probability that at least one of them is from LeClaire?

0.603

6. A certain sports team plays in a somewhat diverse division where they are very likely to beat certain opponents but not very likely to beat others. Considering the team's next three match-ups, there is a 50% chance the team will win their first game, a 35% chance the team will win the second game, and an 80% chance the team will win their third game.

a. Find the probability that the team wins all three of their games.

$$0.14$$

b. Find the probability that the team wins at least one of their games.

$$0.935$$

c. Find the probability that the team wins at most two of their games.***

$$0.86$$

d. Given that the team has won their first two games, what is the probability they lose their last game?

$$0.2$$

7. A certain young man has dated two young ladies. He is very bad at remembering dates, so looking for patterns can sometimes help him avoid trouble but can also sometimes get him in trouble.

a. What is the probability that his second romantic interest has a birthday in the same month as his first girlfriend?

$$\frac{1}{12} \approx 0.0833$$

b. What is the probability that both young ladies he has dated have a birthday on his birthday?

$$7.51 \times 10^{-6} \text{ or } 0.00000751$$

c. If he started dating his first girlfriend on a Wednesday, what is the probability that he started dating his current interest on the same day of the week?

$$\frac{1}{7} \approx 0.143$$

8. My PIN number has 4 digits. Once used, digits are not allowed to be repeated.

a. What is the probability that my pin number has no 6 in it?

$$0.6$$

b. What is the probability that my pin number starts with a 2?

$$0.1$$

c. What is the probability that my pin number is an even number?

$$0.5$$

9. Given 5 items are to be selected from a warehouse where 20 defective items and 45 good items are stored, find the probability of:

a. Exactly 4 of the items being defective

$$P = \frac{20}{125}$$

b. At least 2 of the items being good

$$\boxed{\text{or}} \quad 0.00275$$

$$0.00217$$

$$0.997 \quad \boxed{\text{or}} \quad 0.998$$