

# SOLVED PROBLEMS CONDITIONAL PROBABILITY

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### Solved Problems in Conditional Probability

Conditional probability plays a vital role in understanding the likelihood of an event occurring given that another event has already happened. Here are some solved problems to illustrate the concept:

**Problem 1:** A bag contains 6 red marbles, 4 blue marbles, and 2 yellow marbles. If one marble is drawn at random, what is the probability of drawing a red marble, given that it is not blue?

**Answer:**

- The probability of drawing a red marble is  $6/12 = 1/2$ .
- The probability of drawing a blue marble is  $4/12 = 1/3$ .
- The probability of drawing a non-blue marble is  $1 - 1/3 = 2/3$ .
- Therefore, the probability of drawing a red marble, given that it is not blue, is  $(1/2) / (2/3) = 3/4$ .

**Problem 2:** A survey found that 40% of people like coffee and 60% like tea. If a person is chosen at random who likes coffee, what is the probability that they also like tea?

**Answer:**

- The probability of liking coffee is 0.4.

- The probability of liking tea is 0.6.
- The probability of liking coffee and tea is  $0.4 * 0.6 = 0.24$ .
- Therefore, the probability of liking tea, given that a person likes coffee, is  $0.24 / 0.4 = 0.6$ .

**Problem 3:** A disease affects 1% of the population. A test for the disease is 95% accurate, meaning that it correctly identifies 95% of those who have the disease and 95% of those who do not. If a person tests positive for the disease, what is the probability that they actually have it?

**Answer:**

- The probability of having the disease is 0.01.
- The probability of not having the disease is 0.99.
- The probability of testing positive, given that a person has the disease, is 0.95.
- The probability of testing positive, given that a person does not have the disease, is 0.05.
- Using Bayes' theorem, the probability of having the disease, given that a person tests positive, is  $0.01 * 0.95 / (0.01 * 0.95 + 0.99 * 0.05) = 0.167$ .

These solved problems demonstrate the application of conditional probability in various scenarios, helping to quantify the likelihood of events based on given conditions.

## Section 23.1 Review: Prokaryotes

### Paragraph 1

**Question:** What are the three main characteristics that distinguish prokaryotes from eukaryotes?

**Answer:**

- Lack of a nucleus or membrane-bound organelles
- Smaller cell size (typically 0.1-5.0 micrometers)

- Simpler cell structure

## **Paragraph 2**

**Question:** Describe the structure of a typical prokaryotic cell.

**Answer:**

- Cell membrane
- Cytoplasm (containing ribosomes)
- Circular DNA located in the nucleoid region
- May or may not have pili, fimbriae, or a capsule

## **Paragraph 3**

**Question:** How do prokaryotes reproduce?

**Answer:**

- Asexual reproduction by binary fission
- Rapid cell division with a generation time of approximately 20 minutes
- Some prokaryotes can also exchange genetic material through conjugation or transformation

## **Paragraph 4**

**Question:** What is the role of prokaryotes in the environment?

**Answer:**

- Essential for nutrient cycling in ecosystems
- Participate in nitrogen fixation, carbon dioxide fixation, and other biogeochemical processes
- Some prokaryotes are beneficial while others are disease-causing

## **Paragraph 5**

**Question:** How can we control the growth of harmful prokaryotes?

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**Answer:**

- Antibiotics
- Disinfection and sterilization techniques
- Vaccination and proper hygiene practices

**What does DF stand for on a Suzuki outboard?**

**How do I clear my Suzuki outboard code?**

**How much does a Suzuki 2.5 outboard cost?**

**How do I reset my Suzuki outboard computer?**

**Should I run my outboard at full throttle?** While running your occasionally at WOT can help with carbon buildup, the best thing to is check your engine manufacture recommended guidelines and ask your local mechanic for recommendations on how often and how long to run your boat wide-open.

**How to tell what year your Suzuki outboard motor is?** Not sure about the year of your outboard motor? The serial number can help you determine the year of your engine. Your serial number or model number can be found on the engine's mid-section. Often this plate is also marked with the engine's year too.

**How to reset service on Suzuki?**

**How do you manually reset engine codes?** Simply place your key into the ignition and turn it on for 1-2 seconds, then turn it off for 1-2 seconds. Repeat this step three or four times. If the check engine light remains after the reset, you might still have a problem with your vehicle.

**How many hours can you get out of a Suzuki outboard?** As we mentioned, 1,500 – 4,000 hrs is what modern outboard motors can get on average for lifespan (mainly about the powerhead) under proper maintenance.

**What is the life expectancy of a Suzuki outboard motor?** Suzuki Marine Motors Despite the variations in specifications, it's estimated that a Suzuki outboard motor can last anywhere from 1,500 to 2,000 hours, and longer if you maintain it correctly.

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**How fast is a Suzuki 2.5 hp outboard?** Both motors reached maximum speed with wide open throttle (WOT). Yamaha : 31 kms/hr ~ 20 Miles/hr. Suzuki: 7 Kms/hr, ~ 4 Miles/hr.

**How fast will 2.5 hp outboard go?** Top speed might be 6 - 7 MPH. You would need to be in the teens to be on plane.

**What does 3 beeps mean on a Suzuki outboard?** I understand the visual and audibles warning so that 3 beeps along with rev light means water in the fuel.

**How do I manually reset my PCM?**

**How to reset fuel used on Suzuki outboard?** The Total Fuel Used gauge may be reset to zero using the submenu. Pressing and holding the "Mode" button causes the display to change to the "settings" submenu (see Figure 3, page 9). There is one item in the Fuel Used "Settings" Menu; Reset. Pressing the "Up" or "Down" button resets the Total Fuel Used gauge to zero.

**Should outboard pee all the time?** Why is it dangerous when a motor isn't peeing? An outboard could overheat and cease to function, leaving you stranded with no way on. Do you want to be stuck drifting across Breton Sound? Nope!

**What is the best cruising RPM for an outboard motor?** Generally, once the boat is fully on plane, the most efficient cruise is likely to come in the 3000 to 5000 rpm range, with steadily deteriorating efficiency after it peaks.

**Should you leave your outboard up or down?** Tilting the outboard down reduces its vulnerability to accidents. As for the theft part of it, a nice shiny propeller exposed by an up-tilted outboard makes a tempting target for a thief.

**What does DF mean in Suzuki Outboard?** The Suzuki motors can be easily identified by their model numbers. and additional letters that provide information about the motor's features and. specifications: 1. "DF" indicates the motor is part of Suzuki's four stroke series.

**How long is the Suzuki outboard warranty?** The standard warranty for any new Suzuki Outboard is as follows: 5 Year Limited Warranty for Pleasure or Recreational

non-Commercial use only. 3 Year Limited Warranty for Rental or Boat Club as of July 1, 2024. 1 Year Warranty for Commercial use.

### **How do you check engine hours on a Suzuki outboard?**

**What is the oil warning light on a Suzuki?** This warning light indicates that your Suzuki requires an oil change and/or oil filter change. This must be changed as soon as possible as continuing to drive can cause engine damage. For further advice on this warning light, get in contact with our specialist team.

**How to do service reset?** If your car has an electronic color display dashboard, just navigate to “Settings,” “Vehicle Settings,” and “Scheduled Maintenance” using the arrows on your steering wheel. Just press “OK” and “Yes” to reset the maintenance data and turn off the light.

**How do you reset the service engine after an oil change?** What's the fix? Turn the key to the “on” position without starting the vehicle. Then, press the gas pedal slowly 3 times in a row within 5-10 seconds to reset the oil pressure sensor. If that doesn't work, look on your dashboard for a “reset” stick and press it down until the check engine light blinks and goes away.

**Does disconnecting the battery clear codes?** 3) Disconnect the Battery then Reconnect Ideally, this will clear the data, turning off the light. You can then reconnect the battery and turn the ignition on. After about a minute, the check engine light code should be off.

### **What is the most common check engine code?**

**What happens if you don't clear engine codes?** However, failing to clear a code after a repair could leave you second-guessing the issue or doubling your work to recheck the codes. That's why you should always make clearing codes an essential part of your repair process.

### **What does DF stand for in fuel? DUAL-FUEL ENGINES (DF)**

**How do I know if my lower unit is bad on my outboard?** If you notice oil leaking from the propeller shaft, it's a sign that the seals in the lower unit are damaged. Oil leaks can also be caused by a cracked case or a bent propeller shaft. If you notice

that the propeller is bent or damaged, it's a sign that the lower unit is probably damaged.

**What does direct injection mean on a outboard motor?** DI (Direct Injection) is the next evolution of fuel injection where the fuel is injected after the intake valve directly into each cylinder at over 3000 psi. What are the advantages DI of over the old SFI system?

**What is the gear ratio of the Suzuki DF 90?** The first of Suzuki's new generation of four-strokes, the DF90A is a showcase of advancements and achievements – like digital sequential electronic fuel injection, a powerful 2.59:1 final drive ratio, and a zero-maintenance self-adjusting time chain.

**What does DF mean in code?** A dataframe is a data structure constructed with rows and columns, similar to a database or Excel spreadsheet. It consists of a dictionary of lists in which the list each have their own identifiers or keys, such as “last name” or “food group.”

**What is DF1 and DF2 fuel?** DF1 contains little benzene (e.g., less than 0.02%) or polycyclic aromatic hydrocarbons (Millner et al. 1991). DF2 is essentially equivalent to fuel oil No. 2 used for automobiles and boils between 160 and 360°C (IARC 1989). DF2 is more viscous than DF1 and spans a carbon number range of C11 to C20 (IARC 1989).

**What is DF-2 fuel?** There are three options to choose from: Diesel Fuel Grade #1 (DF1); Diesel Fuel Grade #2 (DF2); and a blend of the two called Winterized Diesel. DF1 has a lower viscosity, meaning it is less thick and flows more easily than DF2. In contrast, DF2 is less volatile than DF1, meaning it burns more slowly.

**How much does it cost to repair a lower unit on an outboard motor?** A typical set of parts for the gearcase can cost \$500-600 and may go higher if the gearcase is severely damaged. If you have your local mechanic repair the lower unit, his labor will run about \$300-400 for this type of repair.

**What causes an outboard lower unit to fail?** A cracked case, a stripped pinion gear, some reverse gears, broken seals or gaskets, or any of these items might result in gear lube leakage. The sound of grinding is another hint that the lower unit

of your outboard motor could be damaged.

**What is the average life of an outboard motor?** In general, the average outboard motor will last around 1,500 hours. Depending on how often you use the motor, this can last several years if you maintain it correctly. Maintaining your outboard motor is important because it is often exposed to saltwater and debris.

**What are the disadvantages of direct injection engines?**

**Are fuel injected outboards better?** Thanks to modern fuel injection systems, today's outboard motors are more fuel-efficient and produce fewer emissions, according to OnlineOutboards.com.

**What is direct injection fuel service?** Direct injection allows for more control during the fuel delivery process by atomizing the spray of fuel in the cylinder, providing better distribution of fuel throughout the combustion chamber and allowing the implementation of advanced engine management protocols such as Variable Valve Timing.

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**How much is a 2024 Suzuki 90 hp outboard?** \$ 8,099. A POWERFUL DESIGN. Twelve years after starting the four-stroke revolution, with its award winning DF70 and DF60 outboards, Suzuki has reinvented the category again with the DF90A.

**What is the maximum rpm for a Suzuki 90 outboard?**

**The Vulnerable Observer: Anthropology that Breaks Your Heart**

**By Ruth Behar**

**Question 1: What is the vulnerability of the anthropologist?**

As an anthropologist, Ruth Behar argues that the researcher's own vulnerability is a crucial part of the ethnographic process. She contends that by exposing oneself to the experiences and emotions of others, anthropologists can gain a deeper

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understanding of the human condition.

**Question 2: How does vulnerability impact the research process?**

Vulnerability allows anthropologists to empathize with their subjects, which can lead to more nuanced observations and interpretations. It also challenges the traditional separation between researcher and researched, creating a more collaborative and ethical relationship.

**Question 3: What are the ethical implications of the vulnerable observer approach?**

Behar emphasizes the importance of respecting the privacy and dignity of those who share their stories. Researchers must carefully consider the potential harms and benefits of their work and ensure that their pursuit of knowledge does not exploit or harm their subjects.

**Question 4: What can anthropology learn from the vulnerable observer approach?**

By engaging with the vulnerability of both the anthropologist and their subjects, anthropology can gain a more holistic understanding of social phenomena. It can explore the complexities of human relationships, emotions, and experiences, broadening our perspectives on the human condition.

**Question 5: How can the vulnerable observer approach contribute to social change?**

Behar suggests that the vulnerable observer approach can foster empathy and compassion among readers and researchers alike. By exposing the human struggles and resilience of others, anthropology can motivate individuals and communities to work towards social justice and a more humane world.

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