Show your work.

1. Concern an unprepared student who takes a 10-question true-false quiz and guesses at the answer to every question. What is the probability that the student answers every question correctly?

2. Concern an unprepared student who takes a 10-question true-false quiz and guesses at the answer to every question. What is the probability that the student answers exactly one question correctly?

3. If a family has four children, what is the probability of all girls? Assume that it is equally probable for a boy or a girl to be born.

4. If a family has four children, what is the probability of all girls given that there is at least one girl? Assume that it is equally probable for a boy or a girl to be born.

5. Six microprocessors are randomly selected from a lot of 100 microprocessors among which 10 are defective. Find the probability of obtaining no defective microprocessors.

6. Six microprocessors are randomly selected from a lot of 100 microprocessors among which 10 are defective. Find the probability of obtaining at least one defective microprocessor.

7. Six microprocessors are randomly selected from a lot of 100 microprocessors among which 10 are defective. Find the probability of obtaining at least three defective microprocessors.

8. Two dice are rolled. What is the probability of getting a sum of 6 or a sum of 8?

9. Consider the following events in the toss of a single die.
    E: Observe an odd number.
    F: Observe an even number.
    G: Observe a 1 or 2.

    a. Are E and F independent events?

    b. Are E and G independent events?

    c. Are E and F mutually exclusive events?

    d. Are E and G mutually exclusive events?