Let's define the events as follows:

A: Suspect A is guilty.

B: Suspect B is guilty.

E: The blood type found at the crime scene is found in 10% of the population.

We are given the following information:

P(A) = P(B) = 0.5 (initially equal evidence against both suspects)

P(E|A) = 1 (Suspect A matches the blood type found at the crime scene)

P(E|B) = 0.1 (Unknown if Suspect B matches the blood type found at the crime scene)

(a) We want to find P(A|E), the probability that Suspect A is guilty given the blood type match.

By Bayes' theorem, we have:

P(A|E) = (P(E|A) \* P(A)) / P(E)

To find P(E), we can use the law of total probability:

P(E) = P(E|A) \* P(A) + P(E|B) \* P(B)

Since P(A) = P(B) = 0.5, we can simplify it further:

P(E) = P(E|A) \* 0.5 + P(E|B) \* 0.5

Substituting the given values:

P(E) = 1 \* 0.5 + 0.1 \* 0.5 = 0.5 + 0.05 = 0.55

Now, we can substitute the values into Bayes' theorem:

P(A|E) = (1 \* 0.5) / 0.55 ≈ 0.9091

Therefore, the probability that Suspect A is guilty given the blood type match is approximately 0.9091 or 90.91%.

(b) We want to find P(E|B), the probability that Suspect B's blood type matches that found at the crime scene.

By Bayes' theorem, we have:

P(E|B) = (P(B|E) \* P(E)) / P(B)

To find P(B), we can use the law of total probability:

P(B) = P(B|E) \* P(E) + P(B|E') \* P(E')

Since P(E') = 1 - P(E) since E and E' are complementary events, we have:

P(B) = P(B|E) \* P(E) + P(B|E') \* (1 - P(E))

Substituting the given values:

P(B) = P(B|E) \* 0.55 + 0 \* (1 - 0.55) = P(B|E) \* 0.55

Now, we can solve for P(B|E):

P(B|E) = (P(E|B) \* P(B)) / 0.55

Substituting the given values:

P(B|E) = (0.1 \* 0.5) / 0.55 ≈ 0.0909

Therefore, the probability that Suspect B's blood type matches that found at the crime scene is approximately 0.0909 or 9.09%.