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Activity 10

1. Calculate Prior Probability

P(Apples)=NumberOfApples/TotalNumberofObjects=5/10=0.5

P(Non-Apples)=NumberofNon-Apples/TotalNumberofObjects=5/10=0.5

2. Calculate Likelihood Probabilities

Features:

Color

P(Color=Red∣Apple)=4/5​=0.8

P(Color=Red|Non-Apple)=1/5=0.2

Size

P(Size=Small∣Apple)=3/5​=0.6

P(Size=Small∣Non-Apple)=2/5=0.4

Texture

P(Texture=Smooth∣Apple)=3/5​=0.6

P(Texture=Smooth∣Non-Apple)=2/5=0.4

Weight

P(Weight=Light∣Apple)=3/5=0.6

P(Weight=Light∣Non-Apple)=3/5=0.6

3. Calculate Posterior Probabilities

P(Features∣Apple)×P(Apple)=P(Color=Red∣Apple)×P(Size=Small∣Apple)×P(Texture=Smooth∣Apple)×P(Weight=Light∣Apple)×P(Apple)

=0.8×0.6×0.6×0.6×0.5=0.0864

P(Features∣Non-Apple)×P(Apple)=P(Color=Red∣Non-Apple)×P(Size=Small∣Non-Apple)×P(Texture=Smooth∣Non-Apple)×P(Weight=Light∣Non-Apple)×P(Non-Apple)

=0.2×0.4×0.4×0.6×0.5=0.0096

4. Therefore

0.0864 greater than 0.0096

Which means it is 100‰ Apple