Total Entropy is →

$$-\left(\frac{1}{2}\log\left(\frac{1}{2}\right)\right)+\frac{1}{2}\left(\log\left(\frac{1}{2}\right)\right)$$

$$= \boxed{0.301}$$

Lets say we divide along smell, then entropy is for woody

$$-\frac{2}{5}\left(\log\frac{2}{5}\right)+\frac{3}{5}\log\frac{3}{5}$$

$$= 0.292$$

for fruity entropy is also 0.292

So info gain = $0.301 - 0.292$

$$= 0.009$$

Taste split →

for sweet, entropy = 0

for sour, entropy = 0

for salty, entropy = 0.301

Info gain = $0.301 - 0.4(0.301)$

$$= 0.6 \times 0.301$$

$$\simeq 0.18$$

Portion split →

small = large entropy = 0.217

info = $0.301 - 0.217 = 0.084$

Maximum info gain if we do Taste split

after taste split →

Review	smell	taste	size
+ve	fruity	salty	small
+ve	fruity	salty	small
-ve	fruity	salty	large
-ve	fruity	salty	large

Clearly only portion size has +ve info gain so. final desicion tree becomes