$I(p,n) = -pp \times \log_2(pp) - pn \log_2(pn)$

$E(A) = \frac{pA+nA}{p+n} \times I(p,n)$ $\quad G(A) = I(p,n) - E(A)$

$I(p,n) = -\frac{3}{6} \log_2\left(\frac{3}{6}\right) \times 2 = -\log_2\left(\frac{3}{6}\right) = -\log_2\left(\frac{1}{2}\right)$

$= \log_2 2 = 1$ ← Conteúdo informativo para o nó inicial

$[3^+, 3^-]$

→ Atributo cor

$[2+, 1-]$ (vermelho) → $-\frac{2}{3}\log_2\left(\frac{2}{3}\right) - \frac{1}{3}\log_2\left(\frac{1}{3}\right) =$

$= 0,4 - 0,5 = -0,9$

$[1+, 0-]$ (azul) → $-1\log_2(1) - 0\log_2(0) = 0$

$[0+, 2-]$ (verde) → 0

$E(cor) = E_{vermelho} + E(azul) + E(verde) = 3/6 \times 0.9 = \boxed{0,45}$

→ Atributo forma

$[2+, 2-]$ (quadrado) → $-\frac{1}{2}\log_2\left(\frac{1}{2}\right) - \frac{1}{2}\log_2\left(\frac{1}{2}\right) = 1$

$[1+, 1-]$ (círculo) → 1

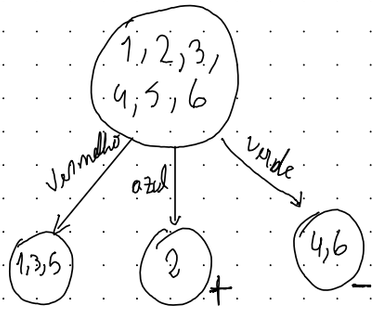
$E(forma) = \frac{4}{6} + \frac{2}{6} = 1$

→ Atributo Tamanho

$[3+, 1-]$ (grande) → $-\frac{3}{4}\log_2\left(\frac{3}{4}\right) - \frac{1}{4}\log_2\left(\frac{1}{4}\right) = 0,8$

$[0+, 2-]$ (pequeno) → $-\log_2(1) - 0\log_2(0) = 0$

$G(A) = I(p,n) - E(A)$ → atributo cor



$[2+, 1-]$

$I(p,n) = -\frac{2}{3}\log_2\left(\frac{2}{3}\right) - \frac{1}{3}\log_2\left(\frac{1}{3}\right) = 0,9$

→ Atributo Forma

$[1+, 0-]$ (quadrado) ↓ $-\log_2(1) - 0\times\log_2(0) = 0$

$[1+, 1-]$ (círculo) ↓ 1

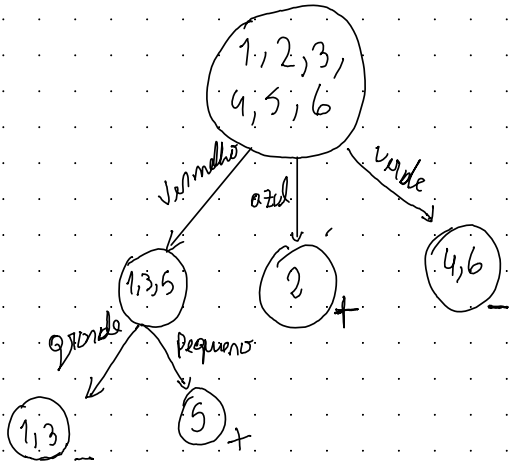
$E(forma) = \frac{1}{3}\times 0 + \frac{2}{3}\times 1 = \frac{2}{3} = 0,7$

→ Atributo Tamanho

$[2^+, 0^-]$ (grande) ↓ 0

$[0^+, 1^-]$ (pequeno) ↓ 0

$E(tamanho) = \frac{2}{3}\times 0 + \frac{1}{3}\times 0 = 0$


1,2,3,
4,5,6
vermelho
azul
verde
1,3,5
2
4,6
+
−
grande
pequeno
1,3
5
−
+