Q.

	Cat	Documents
Training	−	just plain boring
	−	entirely predictable and lacks energy
	−	no surprises & very few laughs
	+	very powerful
	+	the most fun film of the summer
Test	?	predictable with no fun

Sol^n Priors: $P(-) = \dfrac{3}{5}$ & $P(+) = \dfrac{2}{5}$ $|v| = 20$

Conditional Probabilities:

$$P(\text{predictable} \mid -) = \frac{1+1}{14+20} = \frac{2}{34} = \frac{1}{17}$$

$$P(\text{with} \mid -) = \frac{0+1}{14+20} = \frac{1}{34}$$

$$P(\text{no} \mid -) = \frac{1+1}{14+20} = \frac{2}{34} = \frac{1}{17}$$

$$P(\text{fun} \mid -) = \frac{0+1}{14+24} = \frac{1}{34}$$

$$P(\text{predictable} \mid +) = \frac{0+1}{9+24} = \frac{1}{33}$$

$$P(\text{with} \mid +) = \frac{0+1}{9+24} = \frac{1}{33}$$

$$P(\text{no} \mid +) = \frac{0+1}{9+24} = \frac{1}{33}$$

$$P(\text{fun} \mid +) = \frac{1+1}{9+24} = \frac{2}{33}$$

$P(+ \mid test) = P(Predictable \mid +) \times P(with \mid +) \times P(no \mid +) \times P(fun \mid +) \times P(+)$

$\qquad = \dfrac{1}{33} \times \dfrac{1}{33} \times \dfrac{1}{33} \times \dfrac{2}{33} \times \dfrac{2}{5}$

$\qquad = \dfrac{4}{5929605}$

$\qquad = 6.7458119 \, e^{-7}$

$\qquad \approx 0.0000007$

$P(- \mid test) = P(Predictable \mid -) \times P(with \mid -) \times P(no \mid -) \times P(fun \mid -) \times P(-)$

$\qquad = \dfrac{1}{17} \times \dfrac{1}{34} \times \dfrac{1}{17} \times \dfrac{1}{34} \times \dfrac{3}{5}$

$\qquad = \dfrac{3}{1670420}$

$\qquad = 1.7959555 I \, e^{-6}$

$\qquad \approx 0.000002$

$\therefore$ The category of test will be `−'.