

O = Observed.

Male Cat = 10.

Male dog = 5

Female dog = 12.

Female cat = 5.

	gender		
	Male	Female	Total
dog	5	12	17
Cat	10	5	15
Total	15	17	32

Expected
Freq.

(E) $\rightarrow \frac{(\text{Row Total}) \times (\text{Column Total})}{\text{Grand Total}}$

$$\begin{aligned}
 1) \frac{17 \times 15}{32} &= \frac{255}{32} = 7.97 \\
 2) \frac{17 \times 17}{32} &= \frac{289}{32} = 9.03 \\
 3) \frac{15 \times 15}{32} &= \frac{225}{32} = 7.03 \\
 4) \frac{15 \times 17}{32} &= \frac{255}{32} = 7.97
 \end{aligned}$$

7.96875

	O	E
1	5	7.97
2	10	9.03
3	12	7.03
4	5	7.97

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

(Chi-Square)

$$\chi^2 = 5.83$$

3.84

$$1) \frac{(5 - 7.97)^2}{7.97} = \frac{-2.97^2}{7.97} = \frac{8.82}{7.97} = \boxed{1.107}$$

$$2) \frac{(10 - 9.03)^2}{9.03} = \frac{.97^2}{9.03} = \frac{.94}{9.03} = \boxed{0.104}$$

$$3) \frac{(12 - 7.03)^2}{7.03} = \frac{4.97^2}{7.03} = \frac{24.70}{7.03} = \boxed{3.514}$$

$$4) \frac{(5 - 7.97)^2}{7.97} = \frac{-2.97^2}{7.97} = \frac{8.82}{7.97} = \boxed{1.107}$$

$$df = \frac{(V_1 - 1) \times (V_2 - 1)}{(2 - 1) \times (4 - 1)}$$

$$1 \times 1 = \boxed{1}$$

Calculated Value
= 5.83

Critical Value
= 3.84