Unit 5

The chi-squared (χ^2) test

Null hypothesis: NO statistically significant difference between observed & expected results - any results are due to chance.

If null hypothesis is false, then alternative hypothesis must be true.

e.g. There is no correlation between protein in diet and height.

If → Null hypothesis accepted = variation due to chance
rejected = variation significant

chi-squared (χ^2) test

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

Σ = sum of
O = observed numbers
E = expected numbers

1. Record observed numbers
2. Calculate expected numbers (from expected ratios)
3. Calculate $O-E$, then $(O-E)^2$.
4. Divide $(O-E)^2$ by E.
5. Add up the numbers in the last column = χ^2

- Bigger the value of χ^2, more certain of significant difference

1. Determine degrees of freedom - one less than class.
2. Cross reference with $p = 0.05$ = critical value.

critical value $< \chi^2 >$ critical value = significant difference; accept experimental hypothesis.

Accept null hypothesis
⇒ no significant diff
⇒ any diff due to chance.