

1. In cats an X-linked pair of alleles, B and b, control colour of fur. The alleles are incompletely dominant: B produces black, b produces yellow, and a hybrid produces tortoiseshell colour, a combination of yellow fur with black spots.

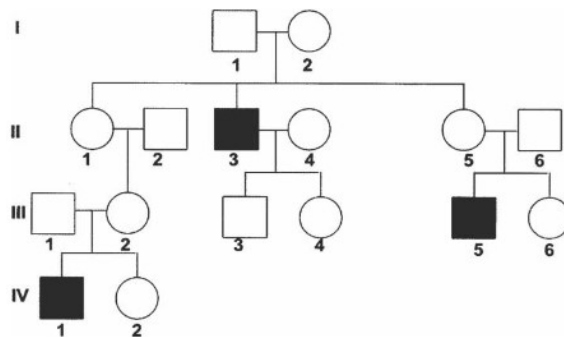
a) Set up a legend in which the genotype, irrespective of gender, of each possible cat fur colour is identified.

b) Give that cat fur colour is also X – linked, would it possible for a male cat to exhibit the hybrid colouration? Explain.

c) A yellow cat had a litter of two tortoiseshell kittens and one yellow kitten. What is the gender of the yellow kitten?

d) A yellow male is crossed with a tortoiseshell female. If the female has all male kittens in her litter of four, what colour(s) would they be?

2. Determine pattern of inheritance for the pedigree below. Your answer must include a minimum of 4 genetic crosses and corresponding Punnett squares in which one individual must be from generation I, II, III and IV.



3. Draw two nonhomologous chromosomes. On the first chromosome identify and alphabetically label 4 unique loci. On the second chromosome identify and alphabetically label 5 unique loci. Illustrate the possible outcome given that a reciprocal translocation took place.