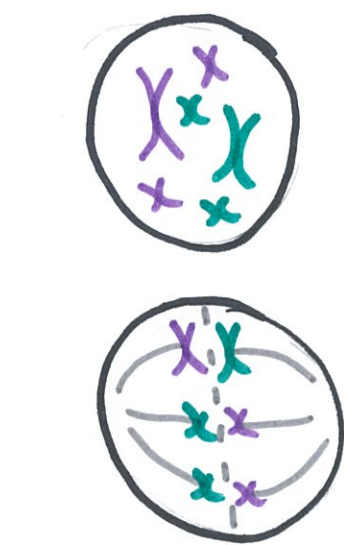
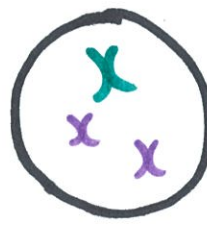
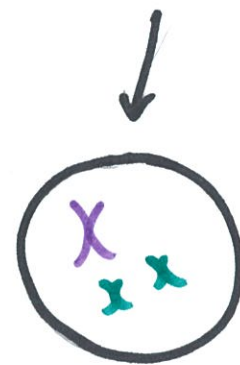
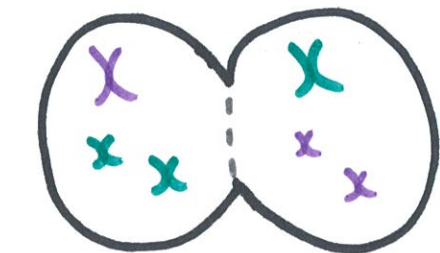




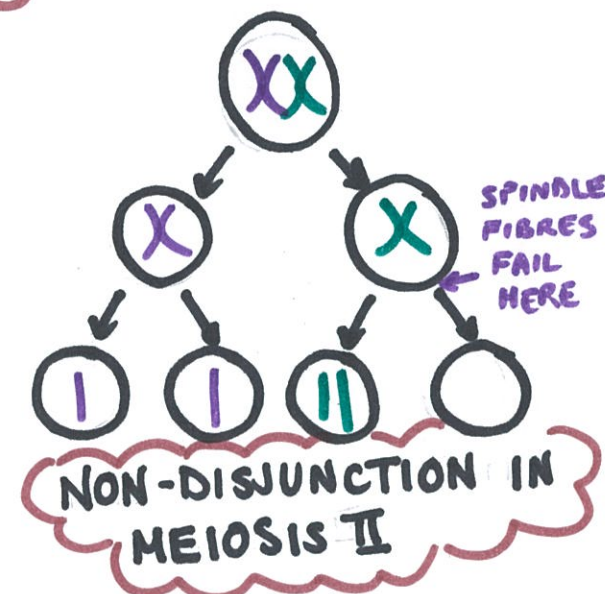
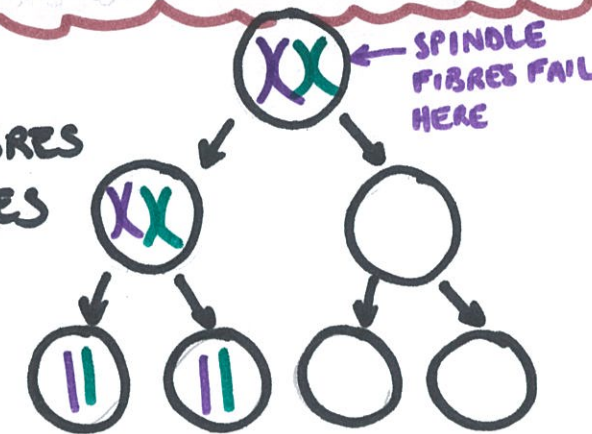
CHROMOSOMES LINING UP ALONG THE MIDDLE OF THE EQUATOR DO SO COMPLETELY AT RANDOM



THE GAMETES THAT WILL RESULT FROM THESE CELLS WILL BE DIFFERENT TO ANY OTHER DUE TO RANDOM ASSORTMENT

FAILURE OF SPINDLE FIBRES TO SEPARATE CHROMOSOMES IN MEIOSIS I OR II

NON-DISJUNCTION IN MEIOSIS I



NON-DISJUNCTION

RANDOM ASSORTMENT

VARIATION

CROSSING OVER

HOMOLOGOUS CHROMOSOMES



CROSSING OVER INCREASES VARIATION FURTHER BECAUSE GAMETES HAVE A MIXTURE OF MATERNAL AND PATERNAL CHROMOSOMES IN DIFFERENT COMBINATIONS



THE POINT AT WHICH CROSSING OVER OCCURS IS CALLED CHIASMATA

CONDITIONS CAUSED BY NON-DISJUNCTION

TRISOMY - CONDITION IN WHICH AN INDIVIDUAL RECEIVES AN EXTRA COPY OF A CHROMOSOME e.g. DOWN'S SYNDROME

MONOSOMY - INDIVIDUAL IS MISSING A CHROMOSOME GET ONE CHROMOSOME INSTEAD OF TWO. RESULTS IN SEVERE MALFORMATIONS & OFTEN MISCARRIAGE

PARTIAL TRISOMY - PART OF AN EXTRA CHROMOSOME IS ATTACHED TO ONE OF THE OTHER CHROMOSOMES. CAN RESULT IN DOWN'S SYNDROME

PARTIAL MONOSOMY - PART OF A CHROMOSOME IS MISSING - PART OF THE CHROMOSOME HAS 2 COPIES, BUT PART ONLY HAS 1 COPY

EACH CHROMOSOME IS GENETICALLY UNIQUE