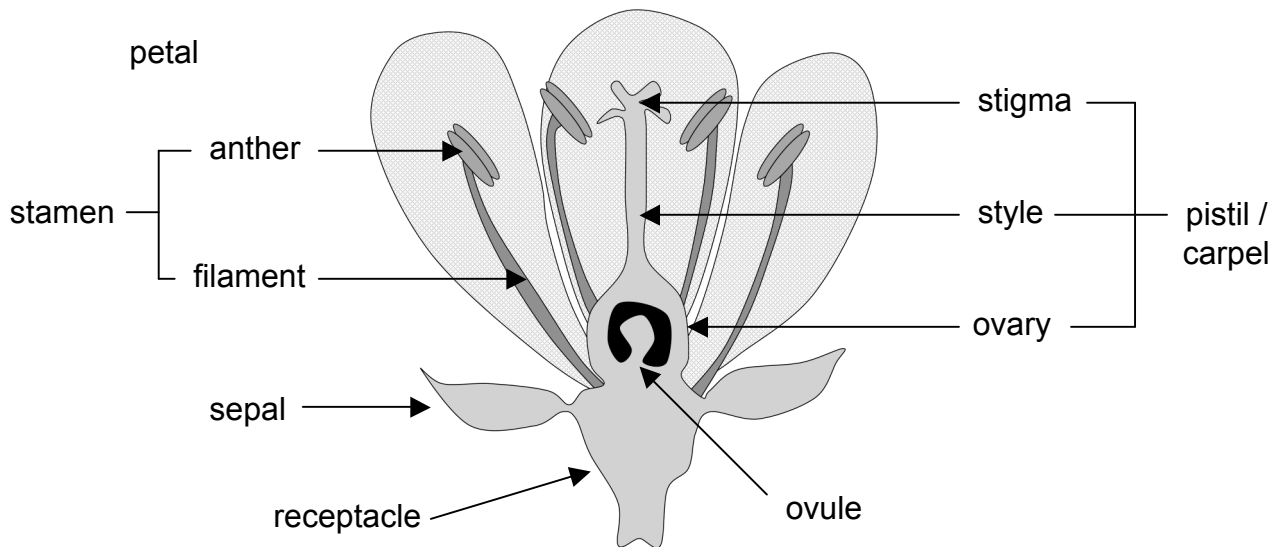


## Reproduction in Angiospermophytes (9.3)

Draw and label a dicotyledonous animal-pollinated flower (9.3.1)



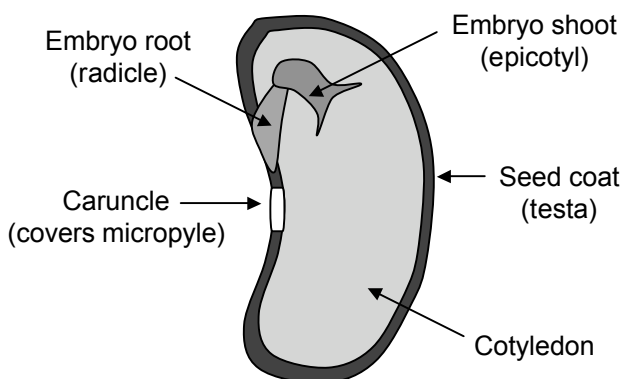
Distinguish between pollination, fertilisation and seed dispersal (9.3.2)

**Pollination:** The transfer of pollen grains from the anther to the stigma

**Fertilisation:** Fusion of male gamete (pollen) with female gamete (ovule) to form a zygote

**Seed Dispersal:** Zygote forms a seed which moves away from parental plant prior to germination (this reduces competition with established parent)

Draw a dicotyledonous seed (9.3.3)



Outline germination (9.3.4 / 9.3.5)

- The conditions needed for germination are:
  - **Oxygen:** For aerobic respiration (makes ATP)
  - **Water:** Metabolically activates the cells
  - **Temperature:** For optimal enzyme activity
- When water is absorbed gibberellin is produced
- Gibberellin causes the synthesis of amylase
- Amylase breaks starch down into maltose
- Maltose is transferred to the embryo where it acts as an energy source and a building material
- Amylase is used for energy until photosynthesis

Explain the role of phytochrome in flowering (photoperiodism) (9.3.6)

- **Photoperiodicity** is the physiological response of an organism (e.g. plant) to day length
- Phytochrome is a photoreceptor protein that exists in two forms:
  - An active far red form ( $P_{fr}$ ) and an inactive red form ( $P_r$ )
  - The inactive form is converted into the active form in daylight, and broken down in dark
- Short day plants require low levels of the active form ( $P_{fr}$ ) to flower
- Long day plants require high levels of the active form ( $P_{fr}$ ) to flower