

Reproduction in plants
Complete the right hand side of the "half view" (cross section) of a flower

Pollination	
Insects or wind carry pollen	pollen tube grows
pollen moves from flower to flower	pollen nucleus moves
pollen is made in anther	fertilisation occurs in ovary
pollen (and ovule) is haploid	fertilisation results a diploid cell

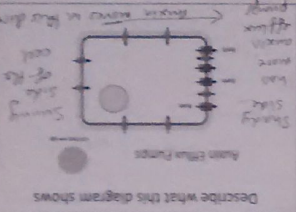
Compare & contrast pollination and fertilization

Describe how a mutualistic relationship can help fertilization
Mutualism is when both species benefit from interaction
eg. sunlight & flowers: pollinators (bees/butterflies) nectar
Describe how a change in gene expression in the shoot apex leads to flowering
Cells in meristem of apex not only make new leaves
A change in gene expression, caused by

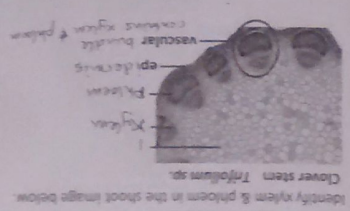
Describe how to make short day plants like chrysanthemums flower out of season
Lighting regime in a greenhouse causes flowering
Short day plants
Name the parts of the internal structure of a seed.
Death (seed coat)
Cotyledon
Embryo
Endosperm

Growth in plants
Auxin is a plant growth substance which causes elongation of cells in shoots and roots
Micropropagation is getting new small plants from small pieces of meristem tissue
Mitosis promotes growth by increasing the number of cells in a part of a plant
Describe the two phytochromes which help a plant to switch to flowering in response to light and dark.
P_{fr} absorbs red light + P_{fr} is converted to P_{fr}
P_{fr} is active form, and is converted to P_r in dark or in FR light

What effect does the alteration of gene expression by auxin in cells have on growth
Auxin causes a change in gene expression which affects elongation of the cell
Cells grow longer



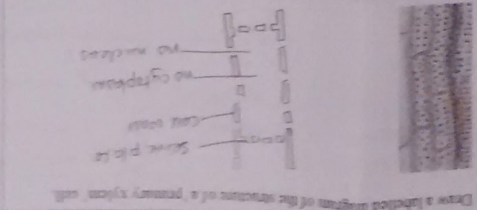
Transport in the phloem
Explain why each of the following is important in the translocation of organic compounds like sucrose
The incompressibility of water allows the increase in hydrostatic pressure
Hydrostatic pressure gradients causes phloem movement from high to low pressure
High concentration of solutes at source causes osmotic pressure which increases
Water uptake by osmosis is the driving force for translocation



Source	Sink
High concentration of sucrose	Low concentration of sucrose
High concentration of sucrose	Low concentration of sucrose
High concentration of sucrose	Low concentration of sucrose

Compare & contrast a source and a sink in terms of organic compounds in plants.

Transport in the xylem
Why can't plants avoid doing transpiration? (What has to happen in leaves?)
Photosynthesis requires CO₂ which enters through stomata along with water vapor
What are the two properties of water which help transpiration?
Adhesion of water molecules help pull water up xylem
Cohesion of water molecules help pull water up xylem
What does active transport in root hair cells do that promotes inward osmosis of water from the soil into root cells?
Active transport moves ions into root cells increasing concentration of ions and increasing osmosis



Describe how to use the apparatus below to test the rate of transpiration at different temperatures.
5 litres of distilled water
10°C, 20°C, 30°C, 40°C
Distribute around the apparatus
Bubble potometer
Bubbles formed
Rate of transpiration