

2. Leaves	
Job of leaves	To conduct as much photosynthesis as possible as quickly as possible.
Leaf adaptations	To do more photosynthesis, leaves have: a large surface area, a waxy cuticle, palisade cells, a spongy layer, stomata.
*Large surface area	Allows the leaf to absorb more light.
*Waxy cuticle	A waxy coating that stops water evaporating from the leaf.
*Palisade cells	Tall cells in a leaf with many chloroplasts for lots of photosynthesis.
*Spongy layer	A layer of cells with lots of gaps that allows gases to move around inside the leaf.
*Stomata (singular = stoma)	Holes in the bottom of the leaf that allow carbon dioxide in and oxygen and water vapour out.
**Stomata structure	Each stoma is surrounded by two cells called guard cells that can swell to open it or shrink to close it.
**How stomata work	During the day, the stomata open to allow gas exchange. At night the stomata close. Stomata also close during dry spells to stop water loss.

3. Factors affecting photosynthesis	
*Limiting factor	A factor that holds back the rate of photosynthesis when in short supply.
*The limiting factors	Carbon dioxide concentration, light intensity, temperature.
***Limiting factor graphs	The line slopes up when the factor is limiting, the line levels out when the factor is not limiting.
***Carbon dioxide and light intensity	To start with, increasing them will increase the rate of photosynthesis because they are limiting. Eventually increasing them further has no effect as they are no longer limiting.
***Temperature and photosynthesis	Increasing temperature towards the optimum increases the rate as particles move faster and collide more. Increasing past the optimum decreases rate as enzymes denature.

6. Transpiration and translocation	
*Transpiration	The movement of water into a plant's roots, up its stem and evaporating out of the leaves.
*Xylem	Hollow tubes that carry water from the roots, up the stem to the leaves.
**Xylem cells	Role: To carry water from the roots to the leaves. Adaptations: Hollow to let water pass, no walls between neighbours to allow water through, rings of lignin to make them strong.
**Factors increasing transpiration	Air movement (wind), dryer air (low humidity), higher temperatures
*Translocation	The movement of sucrose (sugar) around a plant through the phloem.
*Phloem	Tissue that transports sucrose around plants, made of sieve tubes and companion cells.
**Sieve tubes	Cells in phloem with a large channel running through them to carry sucrose solution.
**Companion cells	Cells in phloem that sit next to the sieve tubes and pump sucrose into the sieve tubes.

2. Thyroxine and adrenaline (HT)	
***Metabolic rate	The rate at which the bod uses the energy stored in food.
***Thyroxine	Role: To control your metabolic rate. Endocrine gland: Thyroid gland Target organ: Most of the body
***Negative feedback	The way the body responds to high levels of something by bringing them down, and low levels by bringing them up.
***Negative feedback and the metabolic rate	1) Low levels of thyroxine stimulates production of TRH in hypothalamus 2) This causes the release of TSH from the pituitary gland 3) TSH causes the thyroid to produce thyroxine 4) Normal levels of thyroxine inhibits the release of TRH and the production of TSH

***Adrenaline	Role: To prepare the body for fight or flight Endocrine gland: Adrenal glands Target organ: Heart (beats faster and stronger), blood vessels going to muscles (get wider), blood vessels going to organs (get narrower), liver (releases glucose)
----------------------	--

5. Contraception and fertility treatment	
*Contraception	Preventing sexual intercourse from leading to fertilisation and pregnancy.
*Condom	Worn on the penis, they prevent sperm from entering the vagina. Also prevent STDs.
*Diaphragm or cap	Placed over the cervix at the top of the vagina. Prevent sperm entering uterus, do not prevent STDs.
*Contraceptive pill / implant	Uses hormones to prevent ovulation. Does not prevent STDs.
***Assisted reproductive technology (ART)	Using hormones and other methods to increase the chance of pregnancy.
***Clomifene therapy	Clomifene increases the levels of FSH and LH to make egg successful ovulation more likely.
***In vitro fertilisation (IVF)	Sperm is extracted from a man, and eggs from a woman. The eggs are fertilised in a laboratory and one or more is placed into the uterus.

Unit 6: Hormones and Homeostasis

1. Hormones	
*Hormone	A chemical messenger that changes the way a part of the body works.
**Important hormones	Insulin, glucagon, adrenalin, oestrogen, progesterone, testosterone, thyroxine, LH, FSH, ACTH, growth hormone.
*Endocrine gland	Parts of the body that produce hormones
**Important endocrine glands	Pituitary gland, thyroid gland, pancreas, adrenal glands, ovaries and testes.
*Target organ	The part of the body affected by a hormone.
**Important hormones	Insulin, glucagon, adrenalin, oestrogen, progesterone, testosterone, thyroxine, LH, FSH, ACTH, growth hormone.
*Sex hormones	Women: oestrogen and progesterone Men: testosterone

3. The menstrual cycle	
*Menstrual cycle	A (roughly) 28 day cycle that prepares a woman's body for pregnancy.
*Ovulation	The release of an egg cell by an ovary
*Fertilisation	When a sperm cell fuses with an egg cell to form a zygote.
**Days 1-5	Menstruation (a period): the lining of the uterus breaks down and leaves the body through the vagina.
**Days 6-12	The uterus lining begins to thicken again.
**Days 13-15	Ovulation happens
**Days 16-28	The uterus lining continues to thicken and would be able to accept an embryo if fertilisation happens.
*Control of the cycle	The menstrual cycle is controlled by the sex hormones: oestrogen and progesterone.

4. Hormones and the menstrual cycle (HT)	
***Egg follicle	A layer of tissue surrounding each of the immature eggs in the ovaries.
***Oestrogen	Causes the release of FSH and the thickening of the uterus lining. High oestrogen levels cause LH release.
***FSH	Causes one follicle to develop and mature the egg cell within it.
***LH	Causes ovulation when the egg is released from the follicle.
***Corpus luteum	The follicle becomes a corpus luteum after ovulation, and releases progesterone. It breaks down over two weeks.
***Progesterone	Maintains the thickness of the uterus lining, inhibits FSH release. Falling progesterone levels trigger ovulation.

6. Controlling blood glucose	
*Homeostasis	Maintaining constant conditions in the body, such as temperature or blood glucose concentration.
*Blood glucose concentration	The concentration (amount) of glucose in the blood. Both too high and too low are dangerous.
**Glycogen	A stored form of glucose made by joining glucose molecules together in long chains.
**Insulin	Role: To reduce blood glucose concentration Endocrine gland: Pancreas Target organ: Liver and muscles which convert glucose into glycogen.
***Glucagon	Role: To increase blood glucose concentration Endocrine gland: Pancreas Target organ: Liver and muscles which convert glycogen back into glucose.

Unit 7: Hormones and Homeostasis