

😊 7.1 Adolescence and Puberty

- **Adolescence:** Period of life when the body undergoes changes to become capable of reproduction.
- Starts around 11 years and lasts till 18–19 years.
- Adolescents are also called teenagers (13–19 years).
- **Puberty:** Age when reproductive organs mature and body shows noticeable changes.

✅ In girls, adolescence usually begins earlier than boys.

🌱 7.2 Changes at Puberty

Changes	Details
Increase in Height	Sudden growth in height. Bones of arms and legs elongate.
Change in Body Shape	Boys: Broad shoulders; Girls: Wider hips.
Voice Change	Boys: Deep, hoarse voice due to enlarged larynx (Adam's apple).
Development of Sex Organs	Testes, penis (boys) and ovaries (girls) mature and start producing gametes.
Increased Sweating & Pimples	Sweat and oil gland activity increases.
Mental & Emotional Maturity	Adolescents become self-aware, emotional, and develop critical thinking.

✅ Growth during adolescence depends on genes and proper nutrition.

🌟 Activity 7.1 — Predicting Full Height

Task:

1. Use present height and age.
2. Use percentage growth chart.
3. Calculate estimated full height using:

Full Height = Present Height \times 100% of Full Height at Current Age

$$\text{Full Height} = \frac{\text{Present Height} \times 100}{\% \text{ of Full Height at Current Age}}$$

✓ Example: A 9-year-old boy, 120 cm tall, will grow to about 160 cm.

🌟 Activity 7.2 — Draw a Height Graph

Task:

- Plot Age vs % Height Growth on graph paper.
- Highlight your current age.

✓ Observe growth trends!

🧬 7.3 Secondary Sexual Characters

- Secondary sexual characters are features that distinguish males and females.
- In Boys:
 - Facial hair (beard, moustache)
 - Deep voice
 - Broader chest
- In Girls:
 - Development of breasts
 - Wider hips
- In Both:
 - Hair growth under arms and pubic regions.

✓ Changes triggered by sex hormones:

- Testosterone (boys)
- Estrogen (girls)

🔬 7.4 Role of Hormones in Initiating Reproductive Function

Endocrine Gland	Hormone	Function
Testes	Testosterone	Develops male secondary sexual features.
Ovaries	Estrogen	Develops female secondary sexual features.
Pituitary	Growth hormone + others	Controls other glands.
Thyroid	Thyroxine	Controls metabolism, body growth.
Pancreas	Insulin	Controls blood sugar levels.
Adrenal Glands	Adrenalin	Helps body respond to stress.

✅ Hormones are chemical messengers sent by glands to target organs.



7.5 Reproductive Phase of Life in Humans

- In females:
 - Starts at puberty (~10–12 years).
 - Ends around 45–50 years → Menopause.
- Menstruation:
 - Uterus prepares for pregnancy every month.
 - If no fertilisation → uterus lining breaks → bleeding occurs.
 - First menstrual flow → Menarche.
 - Stoppage of menstruation → Menopause.

✅ Menstrual cycle ≈ 28–30 days.

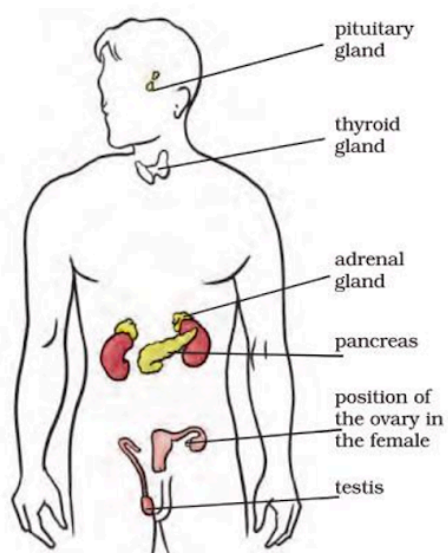


7.6 How is the Sex of the Baby Determined?

Fertilisation Condition	Result
Sperm with X chromosome + Egg (X)	Girl (XX)
Sperm with Y chromosome + Egg (X)	Boy (XY)

- ✓ Father's sperm determines the sex of the child –
- ✓ Blaming mother for baby's sex is scientifically wrong.

7.7 Hormones other than Sex Hormones



Hormone	Secreted By	Role
Thyroxine	Thyroid	Controls metabolism.
Insulin	Pancreas	Controls blood sugar.
Adrenalin	Adrenal glands	Manages stress responses.
Growth Hormone	Pituitary	Controls growth and height.

✅ Disorders:

- Lack of thyroxine → Goitre.
- Lack of insulin → Diabetes.

7.8 Role of Hormones in Completing the Life History of Insects and Frogs

- Insects:
 - Metamorphosis controlled by insect hormones.
- Frogs:
 - Metamorphosis controlled by thyroxine (needs iodine).

✅ Lack of iodine → Tadpoles cannot grow into adult frogs.

7.9 Reproductive Health

Area	Key Points
Balanced Diet	Include proteins, vitamins, minerals, carbohydrates, fats.
Personal Hygiene	Bath daily, especially during menstruation.
Physical Exercise	Essential for fitness and mental health.
Avoid Drugs	Drugs are addictive and harmful.
Say No to Early Marriage	Teenage mothers are at risk. Legal marriage age: 18 (girls), 21 (boys).

✓ HIV/AIDS can spread through:

- Sharing infected syringes
- Mother to child
- Sexual contact

✓ Educate yourself → Avoid myths and wrong taboos.