★ **HIGHER TIER ONLY** content is highlighted in blue. Foundation students — focus on the un-highlighted sections.

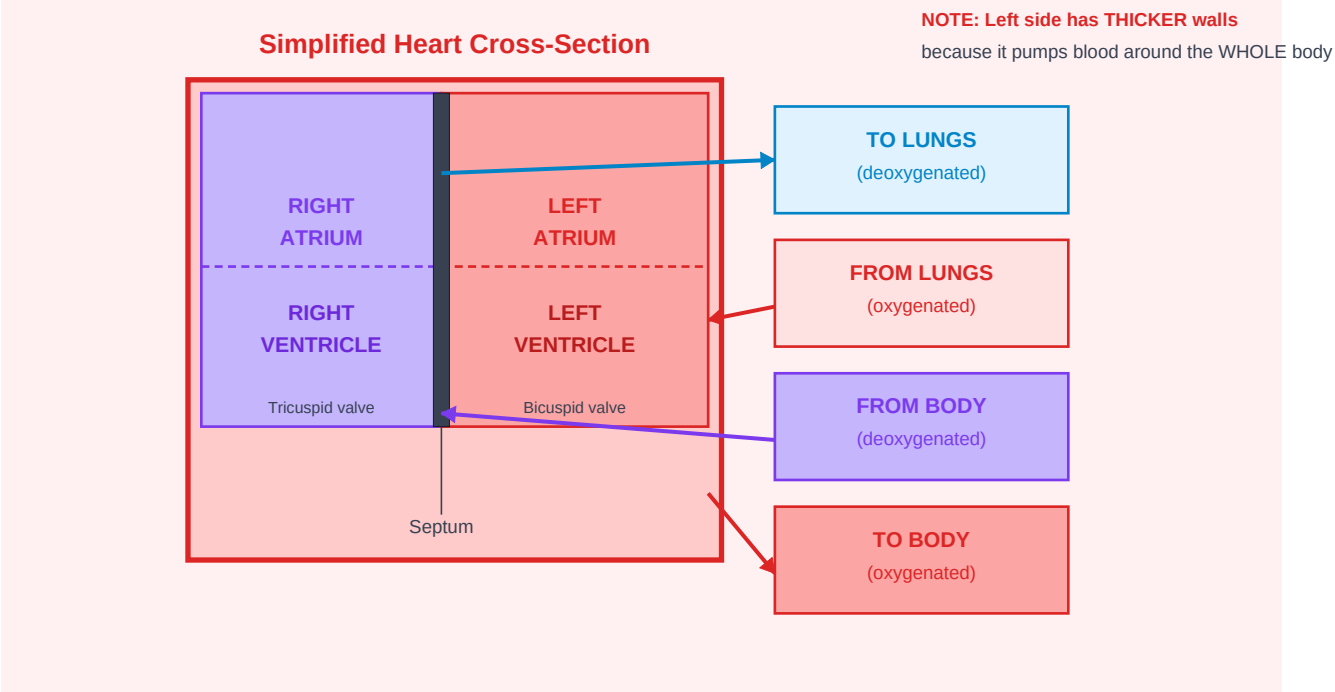

Fig: Simplified heart diagram — the right side pumps to lungs, left side pumps to body

Adaptations for Efficient Gas Exchange

Alveoli adaptations (in lungs)

- LARGE surface area — millions of tiny alveoli
- THIN walls — one cell thick, so short diffusion distance
- GOOD BLOOD SUPPLY — capillaries surround each alveolus
- MOIST lining — gases dissolve before diffusing

Villi adaptations (in small intestine)

- LARGE surface area — millions of finger-like projections with microvilli
- THIN walls — one cell thick
- GOOD BLOOD SUPPLY — dense capillary network for rapid absorption
- Lacteals — absorb fatty acids and glycerol

■ **Exam Tip:** Villi and alveoli both have TWO key adaptations to learn: LARGE surface area AND THIN walls. Always mention both in exam answers!