*This is the **Higher Separate** version — includes all Higher Tier content (marked ★) and all Separate Science content.*

The lungs are adapted for efficient exchange of O■ and CO■ between air and blood.

- Inhalation: diaphragm contracts → moves down; intercostal muscles contract → ribcage moves up and out; volume increases → pressure decreases → air flows in
- Exhalation: diaphragm relaxes → moves up; ribcage moves down and in; volume decreases → pressure increases → air flows out
- Alveoli: large SA, one cell thick, moist, dense capillaries — maximise diffusion
- O■ diffuses from alveoli to blood (high → low). CO■ diffuses from blood to alveoli (high → low)
- Concentration gradient maintained by blood flow and breathing

Key Terms

Alveolus	Tiny air sac in lung — site of gas exchange between air and blood
Diaphragm	Muscle beneath lungs — contracts during inhalation to increase lung volume

■ **Exam Tip:** Inhalation: diaphragm DOWN, ribcage UP AND OUT, volume INCREASES, pressure DECREASES. Exhalation: reverse. Know this sequence for mechanism of breathing questions.