Costal cartilages

- Prolong ribs anteriorly, contribute to elasticity of thoracic wall and provide flexible attachment
- Costal margin: lower edge of the thorax formed from the costal cartilage of the false ribs 8-10 and true rib 7

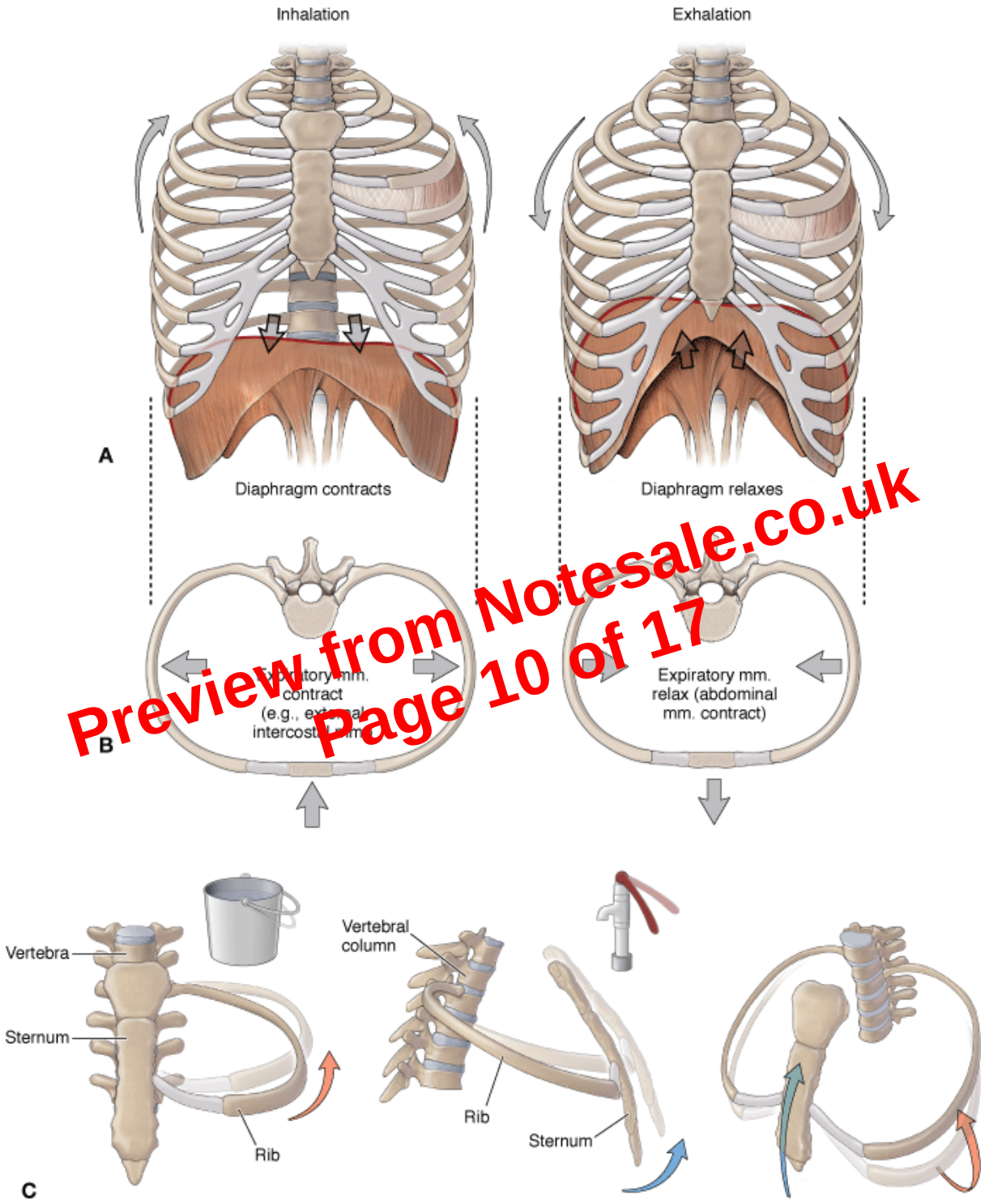
Intercostal spaces

- Separate the ribs and costal cartilages from each other; named according to the rib forming the superior border of the space
- Eleven intercostals spaces with 11 intercostal nerves
- Spaces are occupied by intercostals muscles and membranes, with two sets (main and collateral) vessels and nerves
- Below rib 12 is the subcostal space; anterior branch of spinal nerve T12 is the subcostal nerve
- Widest anterolaterlally, widen with inspiration, and further widen by extension/lateral flexion of the thoracic vertebral column on the contralateral side

Thoracic vertebrae

- Most thoracic vertebrae are independent, have bodies, vertebral arches and seven processes for muscular and articular attachment
- Characteristic features
    - **Bilateral costal facets** (demifacets) on bodies: usually inferior and superior pairs, articulate with rib heads
        - Facets are **arranged in pairs** with superior and inferior vertebrae, to form a **single socket** for a rib head
            - e.g. head of rib 6 forms socket with superior costal facet of T6 and inferior costal facet of T5
            - **Atypical thoracic vertebrae** have **whole costal facets** rather than demifacets**;** T1 has an inferior costal facet but no superior costal facet as no corresponding ones on C5 above
            - **T10** has one bilateral pair of costal facets located on body
            - T11 and T12 have single pair of costal facets on pedicle
    - **Costal facets on transverse process**: articulate with rib tubercles; not present on inferior 2/3 thoracic vertebrae (T11-12 +/- T10)
    - Long, inferior slanting **spinous processes**
        - Usually overlap with vertebra below
        - Cover intervals between laminae of adjacent vertebrae, preventing sharp objects from entering the vertebral canal and damaging the spinal cord
    - The inferior articulate processes slope anteriorly
- Planes of the articular facets form an arc, centring on an axis of rotation in the vertebral body; small rotary movements allowed, limited by the rib cage

- Rib movement at costovertebral joints causes rise of anterior ends of ribs; due to inferior sloping of the ribs, the sternum also rises anteriorly
- Contraction of intercostals also causes transverse rise in ribs



Taken from Morton et al, The Big Picture: Gross Anatomy