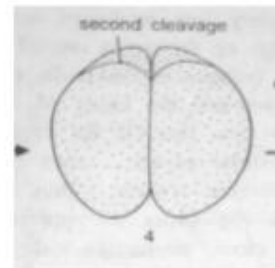
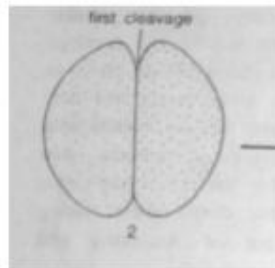
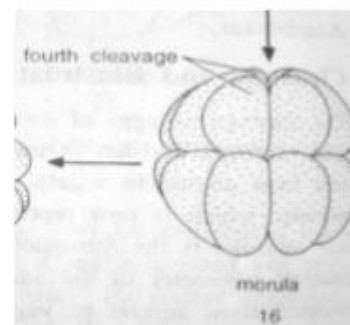
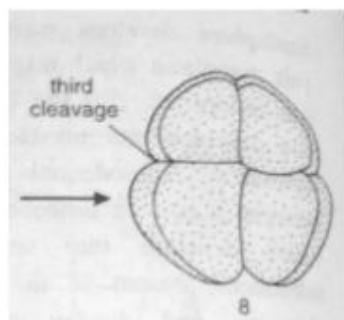


Cleavage and Blastulation

- The cleavage of eggs is **Holoblastic** and is of **Equal type**.
- The **first cleavage** is **Meridional**, i.e. oriented along the median axis from animal to vegetal pole.
- The result of cleavage is the formation of two identical blastomeres establishing the bilateral symmetry of the adult animal.
- The **Second cleavage** is also oriented from animal to vegetal pole but at right angle to the first and divides the first two blastomeres into 4 equal sized cells



- The **third cleavage** is horizontal (transverse) and slightly above the equatorial region. It divides each of four blastomeres into one micromere and one macromere.
- Thus a total of 4 micromeres on the top and 4 macromeres at the bottom.
- The **fourth cleavage** is vertical. It divides each of eight blastomeres into two blastomeres, resulting in all 16 blastomeres. Out of these 16 blastomeres, eight are micromeres on the top and eight are macromeres at the bottom. Since the cleavage is not exactly through the middle, therefore the resulting blastomeres do not have equal sized partners.
- The cleaving zygote is not called **Morula**.



- The **Fifth cleavage** is again horizontal (latitudinal) dividing the 16 blastomeres into 32 blastomeres arranged in four tiers of eight each, the upper two tiers consisting of micromeres and lower two tiers of macromeres.
- The **Sixth cleavage** is vertical (longitudinal or meridional). It divides the 32 blastomeres into 64 blastomeres. These blastomeres are arranged in four tiers, one above the other and each tier is a ring of 16 blastomeres arranged side by side.

