Assessment title: **Quiz7: MOC**

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### Question title: Sideways Convection

Sideways convection describes the scenario by which horizontal transport of warm and cold water results from heating and cooling at the ocean surface (in the presence of mixing).

○ True ○ False

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### Question title: Rayleigh Number

The Rayleigh Number relates the importance of:

○ 1.   buoyancy forcing to viscosity.

○ 2.   buoyancy forcing to diffusivity.

○ 3.   geostrophic forcing to viscosity.

○ 4.   Coriolis forcing to viscosity.

○ 5.   advection to Coriolis forcing.

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### Question title: Sandstrom's Theorem

Sandstrom's theorem states that because the ocean is heated and cooled at the same pressure level, there should be no deep circulation in the ocean in the absence of:

○ 1.   mechanical forcing.

○ 2.   tides.

○ 3.   wind.

○ 4.   diffusive mixing.

○ 5.   at least one of the above.

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### Question title: The Stirrers in Stommel's Box Model

The stirrers shown in Vallis figs. 15.6 and 15.8 are crucial to the Stommel Box model because they provide mechanical energy to the system and thus avoid Sandstrom's theorem preventing any exchange flow.

○ True ○ False

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### Question title: Stommel's Box model and multiple solutions.

Stommel's two-box model (Vallis Fig. 15.6) may have:

○ 1.   3 steady solutions: 2 stable and 1 unstable.

○ 2.   3 steady solutions: 1 stable and 2 unstable.

○ 3.   1 unstable steady solution.

○ 4.   2 stable steady solutions.

**Question title: Stommel-Arons and Stommel Westward Intensification**

The Stommel-Arons model for the abyssal circulation with deep western boundary currents has a vorticity equation totally unlike the Stommel wind-driven homogeneous ocean model.

○ True ○ False

**Question title: The thermocline**

The ventilated thermocline is related to the heating and cooling of the ocean surface in the presence of winds.

○ True ○ False