Marine Biology
Worksheet I

Answers to selected questions
#1 What are the names of the world’s 4 largest ocean basins? List them from largest to smallest.

• The largest and deepest is the ________
• The next largest is the ______
• The 3rd largest is the ______
• The smallest and shallowest is the ______

• Even though you textbook does not list this, Sherry considers the ______ a major ocean basin and an unique ecosystem.
Question # 1 – The World’s Major Ocean Basins

A. Pacific
B. Atlantic
C. Indian
D. Arctic
Question #3

A. ________  
B. ________  
C. ________  
D. ________

Core  
Mantle  
Continental Crust  
Oceanic Crust
**Question #4: (4 not 5 differences)**

**Oceanic versus Continental Crust**

<table>
<thead>
<tr>
<th>Oceanic Crust</th>
<th>Continental Crust</th>
</tr>
</thead>
<tbody>
<tr>
<td>– High Density</td>
<td>– Low Density</td>
</tr>
<tr>
<td>– Thin</td>
<td>– Can be Thick — Think about Mt. Everest</td>
</tr>
<tr>
<td>– Dark in color</td>
<td>– Light in color</td>
</tr>
<tr>
<td>– Rock type is Basalt</td>
<td>– Rock type is Granite</td>
</tr>
</tbody>
</table>
Question #5

- **Density** = \[rac{\text{Mass}}{\text{Volume}}\]

  The “supercontinent” that existed when the dinosaurs were alive. Africa, South America, and Australia had no ocean between them at this time.

- **Pangea**:________________________________

  The sea between Eurasia and Africa at the time the continents were fused into the supercontinent Pangea. Coral reef originated in the

- **Tethys Sea**:________________________________

  Tethys Sea
Question #6

- Where is new crust created?
  Mid-ocean ridges (divergent plate boundaries)

- Where is the earth’s crust destroyed?
  Subduction zones (convergent plate boundaries)
Question # 7

A. ______________________
B. ________________________________  C. _______________

Subduction zone / convergent plate boundary

A. Subduction zone / convergent plate boundary
B. Oceanic plate subducting under continental plate  C. Continental plate
Question # 7

D. ____________  G. ____________
Subduction zone/Convergent plate boundary
E. ____________
Mid-ocean ridge/
F. ____________  I. ____________
Divergent plate boundary  Oceanic plate
Volcanic Island

H. ____________

I. ____________
Mid-ocean ridge

J. Mantle

Convection cell

Mantle
Question #9
What are the 4 major sources of evidence for plate tectonics?

• The east side of South America and the West side of Africa have coastlines and geologic features that fit together like the pieces of a puzzle.

• Fossils of an extinct reptile are found on both the east coast of South America and the west coast of Africa.

• The thickness of sediment on the ocean floor increased as you move away from mid-ocean ridges.

• The age of the oceanic crust increases as you move away from mid-ocean ridges.
Question # 10

A. Continental shelf
B. Shelf break
C. Continental slope
D. Continental rise
E. Sediment
F. Abyssal plain
It would take 10,000 pounds of phytoplankton to create a 10 pound tuna.
Question # 13
Define the following terms:

• Osmolality: A measure of the solute (salt) concentration. Human blood is 300 milliosmoles of 0.9% salt

• Ion: A charged atom. Examples include sodium ions (Na+) and chlorine ions (Cl-)

• Brownian movement: The random movement of molecules due to kinetic energy. The higher the temperature, the higher the kinetic energy, the faster the rate of Brownian movement.

• Solute: The “stuff” to be dissolved when making a solution. (Sugar, salt, etc.)

• Solvent: What the solute is dissolved in. The solvent of living organisms is water.
Question #15

How do the following factors effect the density of sea water?

• An increase in temperature? Decreases density
• An increase in salinity? Increases density
• A decrease in temperature? Increases density
• High evaporation rate? Increases density
• Cold air temperatures near the arctic circle? Increases density since cold air cools the surface water which makes it denser
# 17: Explain how the following diagram is related to getting oxygen into the deep ocean.

1. As you move toward the poles the air temperature decreases.

2. Cold air chills the surface water causing the density to increase.

3. When sea ice forms salt is left behind causing the density to increase.

4. The cold salty dense surface water sinks bringing oxygen to the ocean depths.

5. The surface water has oxygen due to two things:
   - There is enough light at the surface for photosynthesis. Oxygen is a byproduct of photosynthesis.
   - Waves and wind mix oxygen in air into the surface water.
A. Solution I is hyposmotic – it has less salt than the cell.

B. Solution III is isosmotic – it has the same salt concentration as the cell.

C. Solution II is hyperosmotic – it has more salt than the cell.

D. The cell in solution I would gain water by osmosis. Distilled water is 100% water. The cell has a 99.1% water concentration. Water will move into the cell since the water concentration is higher outside the cell.

E. The cell in solution II would lose water by osmosis. The water concentration is higher inside the cell than it is in the solution.