

Name:

Ocean Teens

Gas Exchange Worksheet

Year 11 & 13

1. Gas exchange always takes place by a process called:

2. Explain how this process works:

3. The oxygen content in water is _____ the amount of oxygen content in the air.
What does this mean for aquatic animals?

4. List three factors that can affect the amount of oxygen in water:

- a.

- b.

- c.

5. Describe the features of an effective gas exchange surface. Explain the importance of each feature:

6. Label on the diagram how the gas exchange system on sea stars works:



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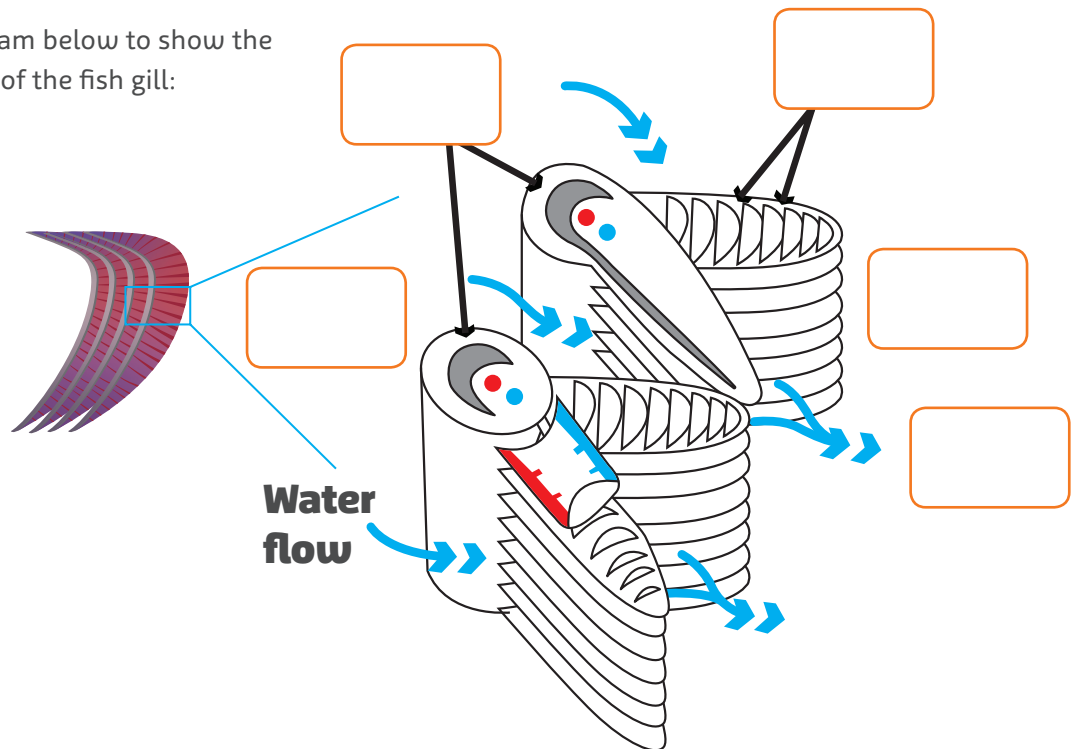
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7. What organ do sea stars use for gas exchange? How does this process occur?

8. Sea jellies do not have gills or lungs. How does gas exchange take place?

9. Label the diagram below to show the different parts of the fish gill:



10. Counter current flow increases the amount of oxygen that the gills can extract from water. What percentage of oxygen is extracted by this flow?

11. How does this compare to mammalian lungs?

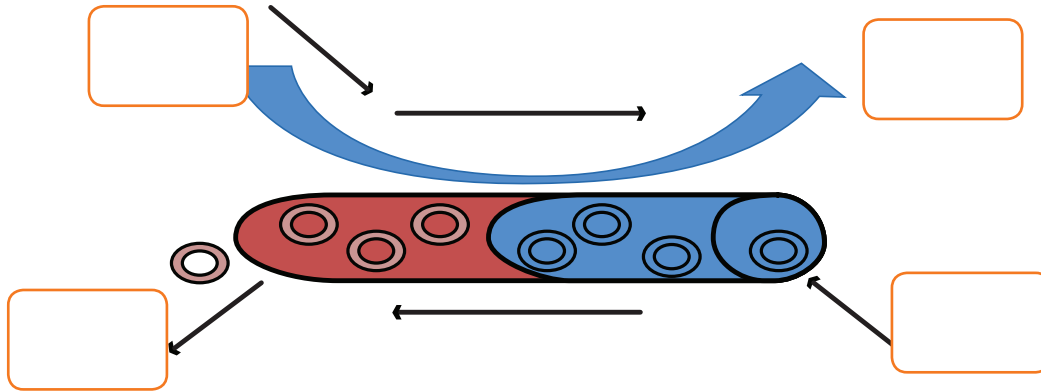
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12. Label the diagram below to demonstrate how counter current flow happens:



13. How does the counter current actually work?

14. How are the gills of a shark and ray different to those of other fish? Do you think these differences have any effect on gas exchange? Why/why not?

15. Describe the gas exchange structure of penguins:

16. How are penguins' lungs different to ours?

17. What advantages do lungs have over gills? Are there any disadvantages? List them.

