Worksheet 2.1.6 Exploring pressure in a fluid

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1 Describing pressure >

Read the sentences below about pressure and add a word or words to fill the gaps.

a) The pressure at the surface of a swimming pool is …………………………….. than the pressure at a depth of 10 m.

b) A sealed plastic bottle full of air will …………………………….. if you take it to the bottom of a deep lake.

c) Submarines are built of thick steel because they have to …………………………….. when they dive down deep.

d) Deep sea creatures can die if they are brought to the surface quickly because

…………………………….. .

2 Pressure related to depth in water >>

This table shows the pressure at different depths below the surface of water.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Depth in metres (m) | 1 | 10 | 20 | 30 | 40 | 50 |
| Pressure in kilopascals (kPa) | 111 | 201 | 301 | 402 | 503 | 603 |

a) Plot a graph on graph paper to display the data in the table. Put depth on the *x*-axis.

b) How many pascals (Pa) are in 1 kilopascal (kPa)?

c) Explain the advantage of using kPa rather than Pa in this case.

d) Describe the relationship shown by your graph.

e) A student suggested that the pressure at 100 m depth would be 1206 kPa. How confidently can you agree with the student? Explain your answer.

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3 Judging an explanation of liquid pressure >>>

Read the following explanation. Highlight good points and rewrite any parts that are wrong or that you can improve.

‘The pressure in a liquid depends on how deep it is. The closer to the surface you are, the higher the pressure. When you are in deep water the column of water above you presses down to create pressure. Divers can avoid the pressure of the column of water on their ear drums by ensuring their ears do not point towards the surface.

‘Pressure has a variety of different effects. If a dam in a reservoir leaks near its base the water will flow out much more slowly than if the leak is near the surface. Submarines have to be very strong to withstand the pressure in the deep oceans. The huge weight of water particles above the submarine causes very high pressure, which presses onto the submarine from all directions.