

Identify and sketch each sedimentary structure and answer the questions on the right.

1 Horizontal stratification	<p><u>Marine</u> / Nonmarine / Either</p> <p>What environmental controls would exclude burrowing organisms and allow horizontal stratification to be preserved?</p> <p><u>Anoxic, oxygen depleted, deep water e.g. deep marine</u></p> <p><u>Fast burial regardless of the oxygenation level, e.g. pyroclastic surge, turbidite</u></p> <p>Extraterrestrial, e.g. Martian</p>
2. Cross-bedding	<p>Marine / Nonmarine / <u>Either</u></p> <p>The arrow on this sample indicates right-side up. Draw an arrow on your sketch indicating the current direction.</p>
3. Ripple Marks 1	<p><u>Marine</u> / Nonmarine / Either</p> <p>Symmetrical or <u>asymmetrical</u>?</p> <p>Draw an arrow on your sketch indicating the current direction.</p>

<p>4. Ripple Marks 2</p>	<p><u>Marine</u> / Nonmarine / Either</p> <p><u>Symmetrical</u> or asymmetrical?</p> <p>Draw an arrow on your sketch indicating the current direction.</p>
<p>5. Mudcracks</p>	<p>Marine / Nonmarine / Either</p> <p>What do mudcracks suggest about the conditions of the environment?</p> <p><u><i>Formed in sediment that was once saturated with water</i></u> <u><i>Very fine clay material that has dried out.</i></u> <u><i>As water content is rapidly removed, the surface will split into cracks that extend a short way down into the mud.</i></u></p> <p><u><i>e.g. playa lakes (dry lakes)</i></u></p>
<p>6. Graded Bedding</p>	<p>Marine / Nonmarine / Either</p> <p>What type of event would cause the coarser sediments to be deposited first and then finer sediments to be deposited later?</p> <p><u><i>A large amount of mixed sediment being discharged into quiet water</i></u></p> <p><u><i>e.g. underwater landslides, turbidity currents</i></u></p>

7. Stromatolite

Marine / Nonmarine / **Either**

What are stromatolites? And what are they composed of?

Layered mounds, columns, and sheet-like sedimentary rocks formed by microbial mats

Mostly carbonate minerals, e.g. calcite

8. Horizontal trace fossil

Under what environmental conditions (high or **low energy**) was this trace produced?

9. Tool marks

Marine / Nonmarine / **Either**

Draw an arrow to indicate probable flow direction

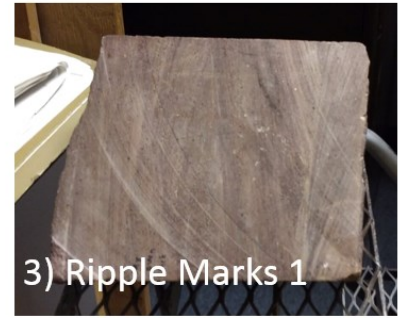
**Could be either direction*



1) Horizontal stratification



2) Cross-bedding



3) Ripple Marks 1



4) Ripple Marks 2

LAB 3



5) Mudcracks



6) Graded Bedding



7) Stromatolite



8) Horizontal trace fossil



9) Tool marks

Lab 3 specimens overview for LSU GEOL1602 Spring 2020 by Eric Z.