Soapy Stress Worksheet Answers

1. **Tensional Stress.** Draw a picture of the soap and how it was broken. Draw arrows for the forces acting on the soap to show that you know it was tensional stress.

    **NOTE:** Most of this worksheet is observational, but the pictures the students draw should have the force arrows shown here.

    ![Force Diagram](image)

    Observe and describe the area where the soap broke.

    What is a real life example of tensional stress?
    **A ridge like the Mid-Atlantic Ridge is formed when two tectonic plates pull apart from each other.**

2. **Compressional Stress.** Draw a picture of the soap and how it was broken. Draw arrows for the forces acting on the soap to show that you know it was compressional stress.

    ![Force Diagram](image)

    Observe and describe the area where the soap broke.

    What is a real life example of compressional stress?
    **A mountain range, like the Rocky Mountains, is formed when two tectonic plates are pressed together.**
3. **Shear Stress.** Draw a picture of the soap and how it was broken. Draw arrows for the forces acting on the soap to show that you know it was shear stress.

![Shear Stress Diagram](image)

Observe and describe the area where the soap broke.

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What is a real life example of shear stress?

*The San Andreas Fault is an example, because one tectonic plate is pulling one way, and the other plate is pulling the other way.*

4. **Force Analysis.** Try to break a rock in the same types of ways you broke the soap. Why is it harder to do? Use the word “force” in your answer.

*The rock needs more force to break than the soap.*

True or False: Geotechnical engineers *measure* the amount of force it takes to break a rock using specialized and expensive equipment.

**BONUS PROBLEM**

5. **Combination stresses.** Draw a picture of the soap and how it was broken when you bent it, using both compressional and tensational stresses. Include force arrows and label with a C the arrows that show compression and with a T the arrows that show tension.

![Combination Stresses Diagram](image)

Observe and describe the area where the soap broke.

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