



Academic Activity Chapter 6

Math and Materials

When an engineer is choosing materials for a project, it is important to consider the load that the project will be subjected to. When a load is put on a material, that material experiences stress and strain. Engineers need to know the limits of the materials they are using—how much stress or strain they can safely endure. These numbers need to be calculated accurately, and need to be used when designing a project.

- 1.** Please find and write a complete definition for stress as it applies to materials.

- 2.** Force is an integral part of a stress, but it has to act on the _____ of a material to create a stress. Write out the equation that defines stress force over area mathematically.

- 3.** Please find and write a complete definition for strain as it applies to materials.

- 4.** Strain is determined by the change in _____ of a material from its original _____ .

- 5.** We use the Greek symbol delta to designate “change in.” Please look up delta and draw it.

- 6.** The equation that defines strain is change in length over original length. Write that out mathematically. _____

- 7.** The combination of stress and strain is elasticity. It was described by Thomas Young and is now referred to as Young’s Modulus. Look up Young’s Modulus and find the date he published, the names of two others who also described elasticity and the dates they published, and find and write the equation we refer to as Young’s Modulus today.
