Core Concept: Casting/Molding/Forming

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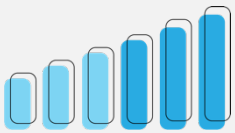
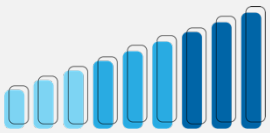
Engineering Literacy Dimension: Engineering Practices
Practice: Material Processing
Overview: *Casting and Molding* are the processes that give materials shape by introducing a liquid material into a mold that has a cavity of the desired size and shape, and then, allowing the material to solidify before being removed from the mold. *Forming* is the process of applying pressure to a material to cause it to flow into a new shape. This core concept includes knowledge related to (a) *producing and implementing molds*, (b) *forging*, (c) *extruding*, and (d) *rolling*. This core concept is important to the practice of Material Processing as most metals, ceramics, and plastics can be shaped and sized to meet specified needs through the processes of casting and molding as well as forming. Engineering professionals apply an understanding of these processes to inform their decisions when developing a design and actually changing the shapes of materials.

Performance Goal for High School Learners
I can successfully use knowledge of Casting/Molding/Forming to inform my decisions when developing a design as well as to physically change the shapes of materials.

	 Basic	 Proficient	 Advanced
PRODUCING & IMPLEMENTING MOLDS	I can describe when and why the process of producing and implementing molds is most appropriate for changing the shapes of specific materials.	I can analyze how a certain material to be formed would change its shape when being molded.	I can correctly and safely practice the process of producing and implementing molds in building a physical solution.
FORGING	I can describe when and why the forging process is most appropriate for changing the shapes of specific materials.	I can analyze how a certain material to be formed would change its shape when being forged.	I can correctly and safely practice the forging process in building a physical solution.
EXTRUDING	I can describe when and why the extruding process is most appropriate for changing the shapes of specific materials.	I can analyze how a certain material to be formed would change its shape when being extruded.	I can correctly and safely practice the extruding process in building a physical solution.
ROLLING	I can describe when and why the rolling process is most appropriate for changing the shapes of specific materials.	I can analyze how a certain material to be formed would change its shape when being rolled.	I can correctly and safely practice the rolling process in building a physical solution.