**Design Brief**

**Instructions:** You will use your knowledge of friction and surface roughness to design a table-top game that uses sliding friction as a main game mechanic, such as a shuffleboard, table hockey, etc. Your prototype will include the design and construction of:

* A game board with a score pattern.
* Game rules and directions to play.

Design requirements and constraints:

* The design fits in a box that measures 80 cm x 30 cm x 5 cm.
* The surface of the board is modified to alter surface roughness.
* Game rules and directions are easy to understand.
* The game is safe to play indoors; no moving part is too heavy or too sharp to cause harm.
* The game is fun for children ages 12 to 14.

Use the engineering design process and what you have learned about friction and surface roughness to design and build a prototype. You have a budget of $100, and the following materials are available to you.

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| **Project budget: $100** |
| **Item Description** | **Cost per Unit** |
| Cardboard | $5 per square foot |
| Sandpaper | $2 per sheet |
| Masking tape | $5 per foot |
| Rubber band | $10 each |
| Cardboard cutter | $5 per rental per day |
| Glue stick | $3 per stick (free glue gun rental!) |
| Scissors  | $1 per rental per day |
| Rulers | $1 per rental per day |
| Recycle/reuse material | $0 (free) |
| Other material | Market price (at your teacher’s discretion)  |