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|  | **MARBLE SORTING RUBRIC** |
| Performance & Programming | * Machine takes less than 2:00 * Separation process fully automated * Machine sorts up to 25 marbles correctly into individual sorting bins * At least three sensors used in design * No marbles fallout, get stuck, and hopper never jams * Transport, sensing, hopper, and bins are comprised of only VEX or 3D materials. * At least two motors used in design |
| Structural | * Product is of high quality * Students do not adjust machine in motion * Product is of high quality * Wiring is secure * Pieces and parts are within building platform * At least two 3D parts are incorporated into solution |
| Cover Page | Document must be kept in a google drive accessible by instructor. All of the following are included on title page:   * Title * Name * School * Class * Date |
| Revision History | Revision history must include:   * Initial research * Prototype designs (brainstorming) * Decision matrix * Initial design and test results * Final design and test results * Reflection |
| Detailed Drawings | * Drawings are carefully done * Prototype drawings need to be at a quality that the design is properly presented and easily understood * Use of straight edge or CAD software for initial design and CAD software for final design * Detailed drawings are labeled identifying parts * Proportional in nature * Final product matches final design |
| Research, Design, and Decision Matrix | * Schedules * Design statement/requirements * Six criteria over at least two designs * Prototype drawing for each design * Effectively justify the decision * Depth and complexity of ideas support by rich, engaging pertinent details. * Uses examples that indicate substantial research including at least five different resources |
| Program, parts description, and operation narrative | * A copy of the flow chart and program is included * A parts list including every part and quantity is accurately described * Uses language that is fluent and content-specific with awareness of purpose and sentence structure * Clearly written step-by-step documentation of the operation with sufficient description |
| Journal Entries | * Appendix to document * Each day of work is documented including identify student doing the task * Details include individual assignments and expected and actual completion dates and evidence of teamwork * At least 3 Pictures are included with appropriate labeling * Careful organization is present * Problems and resolutions are documented * Any changes to machine are accurately sketched, documented, and explained (identified with revision history) |
| Reflection | * Changes/modifications are accurately described (the why) * Successes and failures and how they were overcome are well documented * Evidence analysis, reflection, and insight |