 *A Radical Board Game* - Student Assessment Task

**Task:** You have been hired by HAZBRO to create an award-winning mathematical board game focusing on exponents and radicals. You are expected to present your game idea and a working prototype to the board of directors. A sheet with the complete solutions to the questions in the game must also be provided. The following concepts need to be included in your design:

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Definition** | **Example** | **Completed** |
| Zero Exponent Law |  |  |  |
| Product of Powers |  |  |  |
| Quotient of Powers |  |  |  |
| Power of a Power |  |  |  |
| Power of a Product |  |  |  |
| Power of a Quotient |  |  |  |
| Negative Exponent |  |  |  |
| Rational Exponents |  |  |  |
| Converting from Mixed to Entire | A radical with a coefficient of 1 |  |  |
| Converting from Entire to Mixed | Product of a rational number and a radical |  |  |
| Number Line | Placing radicals in order on a number line |  C:\Program Files\Microsoft Office\MEDIA\OFFICE12\Bullets\BD14583_.gif C:\Program Files\Microsoft Office\MEDIA\OFFICE12\Bullets\BD14583_.gif C:\Program Files\Microsoft Office\MEDIA\OFFICE12\Bullets\BD14583_.gif C:\Program Files\Microsoft Office\MEDIA\OFFICE12\Bullets\BD14583_.gif C:\Program Files\Microsoft Office\MEDIA\OFFICE12\Bullets\BD14583_.gif  |  |
| Rational and Irrational Numbers | Real Numbers | Rational: Irrational:  |  |

3.

2.

1.

**Board Game Considerations**

 You **may** want to include the following:

* Board design (Do you need a game board?)
* Example: Locate some cardboard that can be used to form the playing board for your math board game. You can use whatever you have on hand, as long as one side contains no writing. Use a black marker and a meter stick to mark evenly spaced squares around the perimeter.
* Playing cards
* Game pieces
	+ Instead of using standard dice, create one where each side’s value is a radical. You may choose a die with 8, 12 or 20 sides. For Example, if you rolled, whose value of that is 2.236067977… so you would move 2 spaces. Essentially, you would **always** round to the nearest whole number.
	+ Moving pieces
* Rules
* How to start
* How to win
* How to move or score points
* Example: Roll the dice--the player who rolls the highest roll goes first. Take turns rolling the dice and moving game pieces around the board. Each time you land, your opponent will read a math problem from a card that matches the space you have landed on. If you answer correctly, you get the points assigned to that colour. If you answer incorrectly, you do not get any points. The first player to reach 100 points wins!

**Note: Each member of the group must hand in a set of solutions for the questions they wrote. Their questions must cover all of the concepts in the chart on the previous page.**







 **Assessment**

**Mathematics 10C**

**Real Numbers**

**Rubric**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  **Level** **Criteria** | **Excellent****4** | **Proficient****3** | **Adequate****2** | **Limited\*****1** | **Insufficient / Blank\*** |
| **Performs Calculations** | Performs **precise** and **explicit** calculations. | Performs **focused** and **accurate** calculations. | Performs **appropriate** and **generally accurate** calculations. | Performs **superficial** and **irrelevant** calculations. | No score is awarded because there is no evidence of student performance. |
| **Presents Data** | Presentation of data is **insightful** and **astute**. | Presentation of data is **logical** and **credible**. | Presentation of data is **simplistic** and **plausible**. | Presentation of data is **vague** and **inaccurate**. | No data is presented. |
| **Explains Choice** | Shows a solution for the problem; provides an **insightful** explanation. | Shows a solution for the problem; provides a **logical** explanation. | Shows a solution for the problem; provides explanations that are **complete** but **vague**. | Shows a solution for the problem; provides explanations that are **incomplete** or **confusing**. | No explanation is provided. |
| **Communicates findings** | Develops a **compelling** and **precise** presentation that **fully considers** purpose and audience; uses **appropriate** mathematical vocabulary, notation and symbolism. | Develops a **convincing** and **logical** presentation that **mostly considers** purpose and audience; uses **appropriate** mathematical vocabulary, notation and symbolism. | Develops a **predictable** presentation that **partially considers** purpose and audience; uses **some** **appropriate** mathematical vocabulary, notation and symbolism. | Develops an **unclear** presentation with **little** **consideration** of purpose and audience; uses **inappropriate** mathematical vocabulary, notation and symbolism. | No findings are communicated. |

**Glossary**

**accurate** – free from errors

**astute** – shrewd and discerning

**appropriate** – suitable for the circumstances

**compelling** – convincing and persuasive

**complete** – including every necessary part

**convincing** – impressively clear or definite

**credible** – believable

**explicit** – expressing all details in a clear and obvious way

**focused** – concentrated on a particular thing

**incomplete** – partial

**inaccurate** – not correct

**inappropriate** – not suitable

**insightful** – a clear perception of something

**irrelevant** – not relevant or important

**logical** - based on facts, clear rational thought, and sensible reasoning

**precise** - detailed and specific

**plausible** – believable

**predictable** - happening or turning out in the way that might have been expected

**simplistic** – lacking detail

**superficial** - having little significance or substance

**unclear** – ambiguous or imprecise

**vague** - not clear in meaning or intention