Teacher Notes for ***A Radical Board Game*** Transfer Task

*Board game considerations should be tailored* – *only share as much as you feel is necessary (differentiated instruction). Teachers should feel free to add any suggestions that may move students along. For example, chance cards could be created that would require students to use (an additional) law or power rule before moving.*

Teacher Notes for **Rubric**

* *No score is awarded for the* ***Insufficient/Blank*** *column**, because there is no evidence of student performance.*
* ***Limited*** *is considered a pass. The only failures come from* ***Insufficient/Blank*.**
* *When work is judged to be* ***Limited*** *or* ***Insufficient/Blank****, the teacher makes decisions about appropriate intervention to help the student improve.*

**Implementation note:**

Teachers need to consider what performances and products will reveal evidence of understanding?

What other evidence will be collected to reflect the desired results?

 *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!







**Struggling?**

* Make a long list of math problems and come up with the solutions - every problem you include may represent a game card, or a board space.
* Look for inspiration for your game. Feel free to use ideas from other games that you have played in the past (e.g., Monopoly, Snakes and Ladders, Sorry!, Trivial Pursuit, Cranium, etc.).

**Still stuck?...**

* Use colour markers to assign a point value to each square on your math game board. For example, use red to denote spaces that are worth ten points. Use yellow to denote spaces that are worth five points. Try not to assign points to every square, you can add some fun to the board by including lose your turn spaces, roll again spaces, free points spaces, a bet-your-own points space, chance cards etc.
* Equally divide the math problems on your list into categories that match the colour point values. Make sure that the most challenging math problems are placed into the category with the most points assigned to it and that all others are grouped accordingly, as well.
* Write the math problems onto cards. If you can find colour note cards to match the various point categories, use them. If you cannot, just colour the edges of the note cards with a marker for identification. Group the note cards into piles.

 **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