**Title:** Exponent Forest Board Game

**Appropriate Grade Level:** 8th grade

**Activity Objective:** To help students familiarize and provide practice opportunities solving simple exponents using a game

**Rules of the Game & Materials Needed:**

* It is recommended to be played amongst only 2 people at a time
* Make sure ***all materials*** are gathered and printed out, including:
	+ Strips of paper labeled 0-4, and the additional “pass” pieces included
		- *Dice can be substituted if preferred for larger exponent options*
	+ The board game layout provided
	+ A deck of playing cards
	+ A pawn for each player
		- *Any item may be used as your pawn*
	+ Each player should have scratch paper and a pencil for solving
	+ Something to keep time with
* Grab your strips of paper and place them in a cup that can be shaken and pulled from
	+ *If using dice, you can skip this step!*
* Take your deck of cards, and remove any Kings, Queens, Jacks, and Joker cards. You will not need these for the game.
* Shuffle the remaining cards well and leave them between the two players in a neat stack, facedown
* Place the two pawns on the “Start” tab before beginning the game
* ***Starting the game:***
	+ Each player will draw one card from the middle stack, along with one piece of paper from the jar. The card will serve as the integer, and the small piece of paper (or dice) will serve as the exponent. Players will each take a turn at drawing the cards and solving.
	+ Players will have one minute each to solve the equation on their scratch paper.
	+ If the correct answer is provided within the time frame, the player may move the number of spaces equivalent to their exponent number.
	+ If an Ace card is drawn, the player must move back one space on the board
	+ If player draws a “pass” slip instead of an exponent number, *they must skip a turn*
* Whoever gets to the “finish” tab first wins the game!
	+ *\*Reward incentives may be added based on need or desire\**

**What is an Exponent?**

[Exponents](https://www.cuemath.com/algebra/exponents/)

An exponent refers to the number of times a number is multiplied by itself.

**Ex:** 5^2 **=** 5x5**=**25

**Louisiana Grade Level Standards:**

* **8.EE.A.1** Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, 32*  *3–5 = 3–3 = 1/33 = 1/27.*
* **LC.8.EE.A.1** Use properties of integer exponents to produce equivalent expressions*.*
* *Source:*
	+ <https://louisianabelieves.com/docs/default-source/students-with-disabilities/grade-8-math-connectors.pdf?sfvrsn=747d971f_4>

**Rationale:**

* This game can be used to educate and help students learn how to solve these problems quickly by administering the skills used through a game
	+ Time management: students will have one minute to solve the problem, and if they do not solve it correctly within the time frame, they will not progress in the game
	+ Learning how to break down numbers involving exponents in order to exercise working memory and make math feel less overwhelming

**Careers Associated with Using Exponents:**

* Electrician
	+ Plan layout and installation of electrical wiring, equipment, or fixtures, based on job specifications and local codes.
	+ Electricians use formulas that include exponents. For example, the formula for the watts in a circuit is **W= I2 x R.**
	+ <https://www.bls.gov/ooh/construction-and-extraction/electricians.htm>
	+ *Sources:*
		- <https://www.onetonline.org/link/summary/47-2111.00>
		- <https://eric.ed.gov/?id=ED020327>
* Biologist
	+ Collect and analyze biological data about relationships among and between organisms and their environment.
	+ Biologists use exponents through completing statistical operations used on their data.
	+ <https://www.bls.gov/ooh/field-of-degree/biology/biology-field-of-degree.htm>
	+ *Sources:*
		- <https://www.onetonline.org/link/summary/19-1029.04>
		- <https://www.sciencedirect.com/science/article/pii/S0167278919301137?casa_token=o1D0JJw5YO8AAAAA:qJwahA1w9xBwbVCUvUMAC9B30mZELRlADAV5kLW9WrL5BXzI9a8LiuHnXMn009q5p7J7EVj4JTE>
* Ecologist
	+ Identify environmental impacts caused by products, systems, or projects and develop strategies or methods to minimize the environmental impact.
	+ Ecologists who study ecosystems use exponential equations to calculate population growth.
	+ <https://www.bls.gov/ooh/life-physical-and-social-science/environmental-scientists-and-specialists.htm>
	+ *Sources:*
		- <https://www.onetonline.org/link/summary/19-2041.03>
		- [How-populations-grow-the-exponential-and-logistic-13240157](https://www.nature.com/scitable/knowledge/library/how-populations-grow-the-exponential-and-logistic-13240157/)

***YouTube Link:***

[Learn How to Play the Exponent Forest Board Game](https://youtu.be/MI1KyBC_qj8)

* *Printable number sheet and board game template provided on next 2 pages  -*

**Additional Follow-Up Resources (Click on the Links Provided Below):**

[https://www.learn-with-math-games.com/exponent-game.html](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.learn-with-math-games.com%2Fexponent-game.html&data=05%7C01%7Cjcurry%40lsu.edu%7Ceceb05ca4c1d4b6862a108da315da311%7C2d4dad3f50ae47d983a09ae2b1f466f8%7C0%7C0%7C637876575470070556%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=SPwBF2finfbCSxc2zsJmltHgLyeEF6GHGhvW7kicuDo%3D&reserved=0)

[https://www.ezschool.com/Games/Math/ExponentsAndRoots/Exponents/AlienPowers/](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ezschool.com%2FGames%2FMath%2FExponentsAndRoots%2FExponents%2FAlienPowers%2F&data=05%7C01%7Cjcurry%40lsu.edu%7Ceceb05ca4c1d4b6862a108da315da311%7C2d4dad3f50ae47d983a09ae2b1f466f8%7C0%7C0%7C637876575470070556%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=556BhZwN55sLAW%2BbUxYMWK8CQSuyV2nd8SNi56T3arI%3D&reserved=0)

[https://youtu.be/5w5zPSEwvqw](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fyoutu.be%2F5w5zPSEwvqw&data=05%7C01%7Cjcurry%40lsu.edu%7Ceceb05ca4c1d4b6862a108da315da311%7C2d4dad3f50ae47d983a09ae2b1f466f8%7C0%7C0%7C637876575470070556%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=eDka6V9aubMp2M7kmz2MSUKcIK0wgeuuasAjEOhmCUM%3D&reserved=0)

Instructions: Before beginning, print out these numbers and cut them up into separate pieces so they may be used in the game as intended in the video! Dice may be used in place of this if participants prefer.

0 1 2 3 4

0 1 2 3 4

0 1 2 3 4

0 1 2 3 4

PASS PASS

PASS PASS



