# THE GREAT MOLE RACE

A Game of Stoichiometric Proportions

On a chilly spring morning, several cute, furry, and ravenously hungry moles went to work, digging tunnels and searching for unsuspecting yummy morsels.


*The Great Mole Race* is a game in which players answer stoichiometry problems with varying levels of difficulty in order to "dig" the longest "tunnel".

*The longer the tunnel, the more points you earn.*

Students are able to select the level of difficulty of their question, thus providing seamless differentiation. The scaffolding aspect of the game allows all students to become confident in completing these problems, and the element of competition encourages them to challenge themselves.

## The Basics

Number of Players

2-4

Game Length

30-60 min

## Components

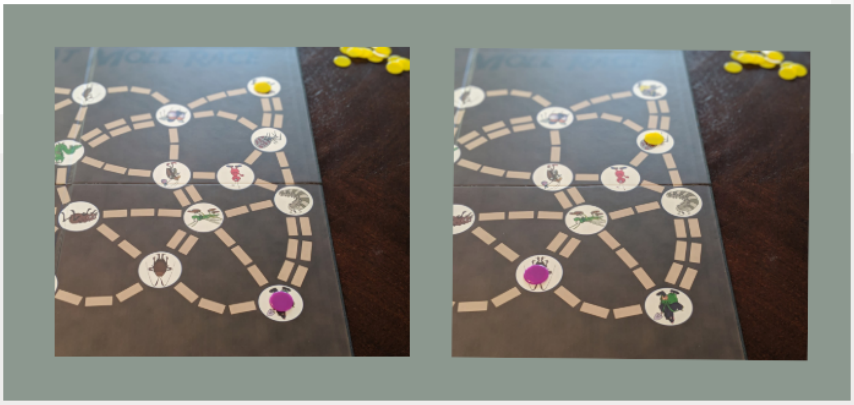
- Game Instructions
- One high resolution pdf of the board
- A total of 104 questions and answers
- Three cover cards
- Colored Player Markers

## Set-Up

Place the board game in the center of the table. Each player takes a set of colored markers. Each player places on of their colored marker on an icon towards one of the four corners of the board. No two players should begin in the same corner.

Shuffle the one-point cards and place the cards answer side down. Without looking at the top card, place the "one point cover card" at the top of the deck. Set the pile on the table next to the board game. Repeat the process for the "two point cards" and set the pile next to the deck of "one point cards." Repeat the process for the "three point cards."

You are now ready to begin.



*Students may begin on any icon located close to one of the corners of the game. The starting location may depend on if the player would like to begin with a 1, 2, or 3 point question.*

## Object

The object of the game is to “dig the longest tunnel” by having the most markers placed on the board in a continuous path of tunnels.

## Game Turn

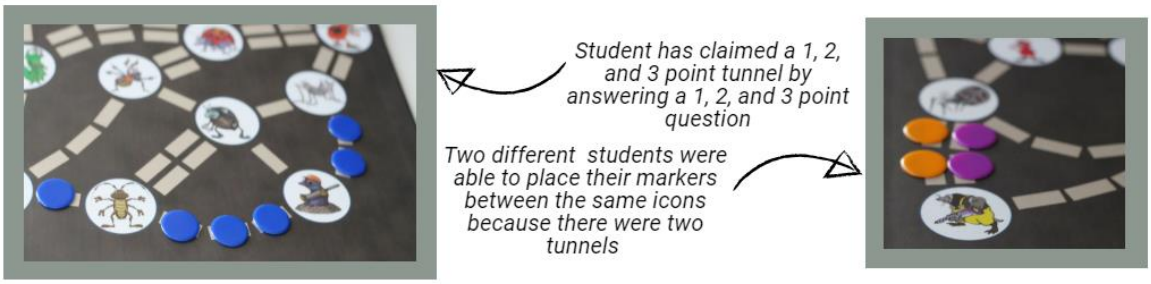
The player with the birthday the closest to the date of play goes first. Play then proceeds clockwise around the table, each player taking one turn at a time until the game ends.

On their turn, a player will select the trail that they would like to dig. The point assignment of the card that they must answer corresponds to the number of steps in that trail. After the student answers the card, they will check the answer on the back of the card.

If they answer correctly, they may put their markers on the steps and claim the tunnel. The card will be placed in a discard pile. If the answer is incorrect, the card is discarded and their turn is over.

## Claiming Tunnels

To claim a tunnel, a player must answer a question that corresponds to the number of steps in that tunnel. Once a tunnel is claimed, the player places a colored marker on each of the steps in the tunnel. Once a tunnel is claimed, it cannot be claimed by another player UNLESS there are multiple tunnels between the icons.



## Tunnel Cards

*1 POINT QUESTION*

Convert 12 grams of C to moles of C

*One point cards are the easiest questions. These cards include questions involving gram to mole or mole to gram (one step) conversion of the same element or compound.*

*2 POINT QUESTION*

$2FeCl_3 + 3MgO \rightarrow Fe_2O_3 + 3MgCl_2$

Using the balanced equation above, convert 52 grams of $FeCl_3$ to moles of $Fe_2O_3$

*Two point cards ask a variety of stoichiometry questions. Students may be prompted to convert from grams of one element/compound to moles of a different element/compound OR moles of one element/compound to grams of a different element/compound. Other questions involving moles of one element/compound to moles of a different element/compound may also be asked.*

*3 POINT QUESTION*

$2FeCl_3 + 3MgO \rightarrow Fe_2O_3 + 3MgCl_2$

Using the balanced equation above, convert 32 grams of $FeCl_3$ to grams of $Fe_2O_3$

*Three point cards are three step conversion questions. These cards ask students to convert from grams of one element/compound to grams of a different element/compound. Given equations may need to be balanced. These are the most difficult problems.*

*3 POINT QUESTION*

$2FeCl_3 + 3MgO \rightarrow Fe_2O_3 + 3MgCl_2$

Using the balanced equation above, convert 32 grams of $FeCl_3$ to grams of $Fe_2O_3$

$$32\ g\ FeCl_3 \left(\frac{1\ mol\ FeCl_3}{162.2\ g\ FeCl_3}\right)\left(\frac{1\ mol\ Fe_2O_3}{2\ mol\ FeCl_3}\right)\left(\frac{159.69\ g\ Fe_2O_3}{1\ mol\ Fe_2O_3}\right)$$

*ANSWER:* 16 grams of $Fe_2O_3$

*Answers are located on the back of the cards for students to receive quick feedback. The instructor will fold the card in half (the fold line is identified by a dash on the question page) and can use an adhesive to attach the back of the question to the back of the answer.*

## Miscellaneous Components

*Markers are included for players to claim their tunnels.*

*There are three types of point cards as well as three cover cards. The three cover cards are used to prevent players from seeing the question at the top of the card pile.*


## Drawing Cards

A player can draw a card and begin answering it at any time. This will prevent game play from taking too long. However, they cannot place their markers until it is their turn. In the event that a player places their markers on a tunnel that a different player was solving a problem for, the second player may choose a different card to begin answering.

## Game End

The game ends when any of the following occurs:

- Either the one-point, two-point, or three-point card piles run out
- The class period runs out
- A player's colored step markers run out

## Calculating Scores

The player with the most colored markers on the board at the end of the game wins.

# THANK YOU!

***Your support is greatly appreciated.***

*If you have any questions, please email me at yourclassroomhelper@gmail.com*

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