

BASTILLES & BASILISKS

Big Idea:

Students will be learning introductory Algebra skills/Pre-Algebra skills such as -

- Number Types
- Number Properties
- PEMDAS
- Translating words to math
- Solving Linear Equations
 - One step
 - Two step
 - Multi step
 - Variables on both sides
 - Complex (big divide bar, multiple fractions/decimals)

Students will do this by going on a quest to collect different types of numbers (rational, irrational, integers, whole, natural). To be successful on their journey they must prepare by learning the skills and attributes necessary to defeat each Bastille and release the number. The challenge is local masters require energy in exchange for their knowledge on each specific skill, so first students will have to gain energy to spend to learn the skills they need to complete their quest!

Important Vocabulary:

Energy: this is a type of currency that can be earned by completing order of operations exercises and spent earn skills/attributes (to learn different solving methods)

Skills/Attributes: these are points earned in specific categories by learning different solving methods (ex: by learning to solve linear equations with addition and subtraction you earn 2 strength skill points). Set skill points are needed to enter Bastilles.

Bastilles: a bastille is a prison, but really just a specific type of solving linear equation type problem that needs to be solved.

Basilisk: a lizard or snake, represents the equation you are solving in each bastille

Test of Skill: order of operations worksheet

Master: Answer key

Initial Set Up:

Students in each class will come up with a town name and will get a town [map](#). Students will get a [character sheet](#) to fill out and keep with them as they embark on their quest. Whenever students earn energy they will color in a circle, when they spend energy they will put an 'x' through it. When students earn skill/attribute points they will make a tally mark in the corresponding row, if they lose skill points they will cross it off or erase a tally mark. Students will embark on their quest in a party of 3-4, they will be given time to set up their character sheet by picking a name and creating a backstory. Each student will begin with 5 energy. Students will first work their way through the outskirts of town to earn energy. Once they have acquired energy (after a few days of practice) they will enter the town and pay energy to begin learning skill/attribute points from masters at different institutes. After bolstering their skill/attributes in town they will complete skill level checks to enter different Bastilles to defeat Basilisks to release different numbers to collect one of each number type.

Earning Energy

The masters of each skill in town require energy to learn their skill. To earn energy to pay the masters to learn the skills you need you must dig for energy. There are 4 levels of difficulty dig sites where you can earn energy.

[Level 1](#) - order of operation problems from page 1 earn $\frac{1}{2}$ point of energy per correct answer (rounded in students' favor)

[Level 2](#) - order of operation problems from page 2 earn 1 point of energy per correct answer

[Level 3](#) - order of operation problems from questions 1-12 - earn 1.5 points of energy per correct answer (rounded in students favor)

[Level 4](#) - order or operation problems from questions 13-28 - earn 2 points of energy per correct answer

Skills and Attributes:

Cost 5 energy to enter: [STR](#) (strength is solving with addition and subtraction) [1 - 10](#)

Cost 5 energy to enter: [DEX](#) (dexterity is solving with multiplication and division) [11 - 24](#)

Cost 5 energy to enter: [CON](#) (constitution is solving with variables on both sides) [Page 2](#)

Cost 5 energy to enter: [INT](#) (intelligence is solving with one fraction + solving two step equations) [Full Worksheet](#)

Cost 5 energy to enter: [WIS](#) (wisdom is solving multi step equations with distribution and like terms) [Page 1](#)

Cost 10 energy to enter: [CHA](#) (charisma is solving with multiple fractions)

Cost 10 energy to enter: [STL](#) (stealth is solving with multiple decimals)

Cost 10 energy to enter: [ARC](#) (arcana is solving with big division)

There are 8 masters in town that each specialize in one of the 8 skills above. Students wanting to earn skill points in strength for example, must go to that master's institute and pay them energy to learn that skill. When you enter that master's institute you may spend as much time there as you want/need to learn the skill, but if you leave and come back you must pay them energy again to re-enter.

Once in an institute students will watch a short video about the skill and then begin to practice that skill. To earn the skill point you will complete a test of skill. Each institute will offer 4 different opportunities to complete a test of skill. Once you complete one test of skill you will check with the master and if the work is >50% correct, students will each earn 2 skill points in that specific area (strength). If it is 50% correct, each student will earn 1 skill point and if it is <50% correct each student in the party will not earn any skill points and the master will recommend you either watch the video again or go to another academy (khanacademy.org) and then attempt another test of skill, check with the master again until you have earned at least 1 skill point in that skill/attribute area. They will mark that they have earned a skill point in that specific area on their character sheet.

The institutes that are near the entrance of town are STR, DEX, INT, and WIS. You will encounter these first and thus learn them first. The next district has CON and ARC so you'll encounter them next. Then furthest away are CHA and STL which you will encounter last.

Finally, after attempting to master as many skills as possible and earning as many skill points in those areas as you can (after a few days of practice where students may visit/revisit any institutions they wish) students in their parties will attempt to enter Bastilles (skill check) and defeat the Basilisk (solve the equation) that is holding the numbers captive.

10 Bastilles to Defeat

- 1) Solving a one-step word problem
- 2) Solving a two-step word problem
- 3) Solving a word problem that involves combining like terms/distribution
- 4) Solving a multi-step problem
- 5) Solving a word problem with variables on both sides
- 6) Solving a problem with variables on both sides
- 7) Solving a problem with multiple decimals
- 8) Solving a problem with multiple fractions
- 9) Solving a problem with big division
- 10) Solving a complex problem (involving multiples of $^{\wedge}$)

Each Bastille will have a skill check to enter based on party skills and attributes collected throughout their journey. If the party meets the skill requirement they may enter and attempt to defeat (solve) the Basilisk that is holding the numbers captive. When they believe they have defeated the Basilisk they will check with the instructor (teacher) and if they have completed everything correctly they release and collect the number. If they didn't complete everything correctly, then they take damage (lose skill points) and they can attempt to defeat one more time. If they still don't complete the Bastille correctly they must go back to town to learn more from the skill masters.

Once their party has released/collected one of each number type they can return home as heros!