

Ritual Recycling Feature Brief

Document Status	DRAFT
Release	4.X
Sprints	TBD
Target Date	TBD
Dashboard	
Jira Release Tag	

Changelog

Date	Editor	Change
7/24/24	JW	Added Spec to Confluence
7/25/24	JW	Updated Ritual Mint Graph
8/1/24	JW	Removed Shadow Forge Dark Marks feature.
29 Aug 2024	RS	Adding implementation section (design and technical plans are out of sync)
30 Aug 2024	RS	Deprecating v1 design

Table of Contents

- [Changelog](#)
- [Design Version 1](#)
- [Summary](#)
- [Goals](#)
- [Philosophy](#)
- [Requirements](#)
- [User Stories](#)
 - [As a Player](#)
 - [As a Designer](#)
- [Design](#)
 - [New Functionality: Ritual Recycler](#)
- [Analytics Needed](#)
- [Feature Tools Needed](#)
- [Summary](#)
- [Min-Spec \(v2\) Design](#)
 - [Refund Math](#)
 - [Caveat](#)
 - [Legacy Ritual Math](#)
- [Analytics](#)
- [Web Implementation](#)
 - [Miscellaneous](#)
- [Blockchain Implementation](#)
 - [Ritual NFT](#)
 - [ShadowForge Contract](#)
 - [Miscellaneous](#)

Related Shadow Forge Docs

- [New Shadow Forge Ritual Pools](#)
- [Increasing Shadow Forge Levels from 20 to 30 Brief](#)
- [Changing Shadow Forge Daily Reward Points to be on a Logarithmic Curve](#)

Design Version 1

▼ Version 1 backup

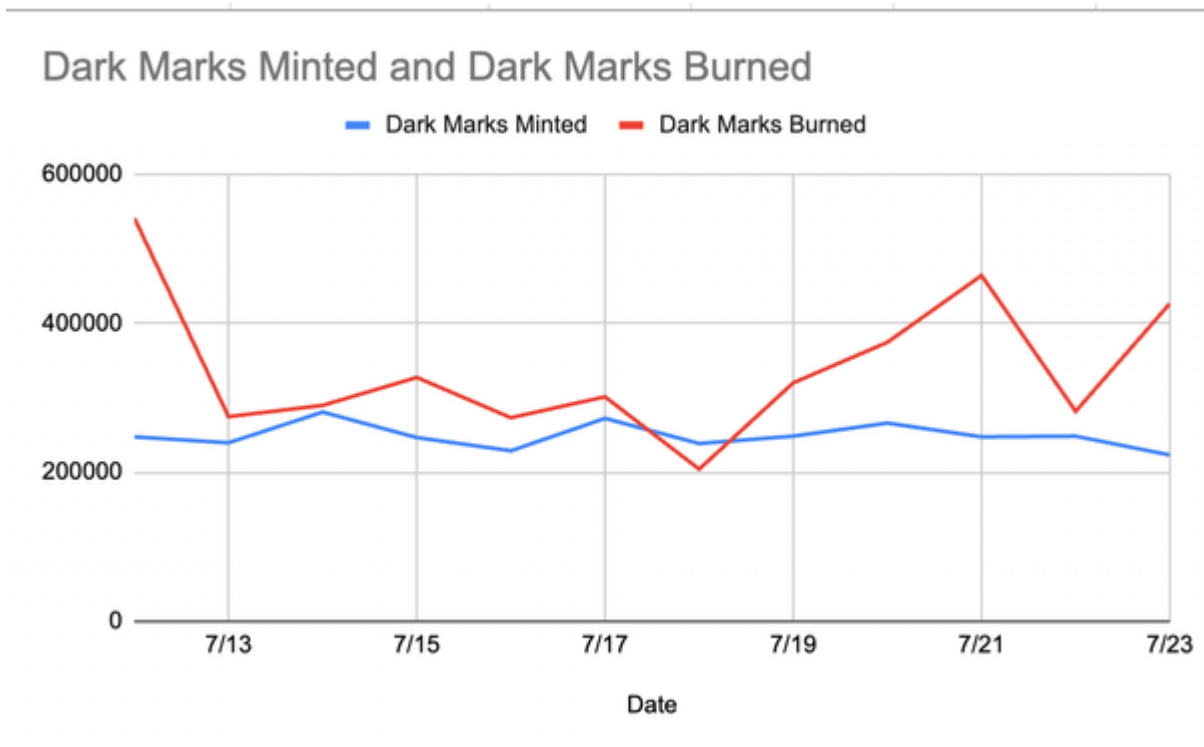
Summary

Create a feature for Players to be able to burn unwanted Rituals in exchange for Dark Marks. Add Dark Marks to a Player's Daily Rewards based on their Shadow Forge Level.

Goals

Currently big whale Shadowcorn Holders are earning the vast majority of Dark Marks from Daily Rewards. This has caused more regular Shadowcorn Holders to not get enough Dark Marks, limiting their ability to both upgrade the Forge and purchase Rituals. The Ritual Recycler is meant to both unblock more regular Shadowcorn holders from purchasing Rituals and upgrading the Shadow Forge as well as improve Shadow Forge's current KPIs.

By allowing Players to burn their Rituals to get Dark Marks, we should see both Dark Marks Minted and Dark Marks burned increase. Similarly by adding Dark Marks to daily rewards so that Players are getting "free" Dark Marks daily will increase Dark Marks minted and Burned. The Goal is for Dark Marks burned to always be around or above the Dark Marks minted, with Dark Marks minted increasing at by at least 100%.



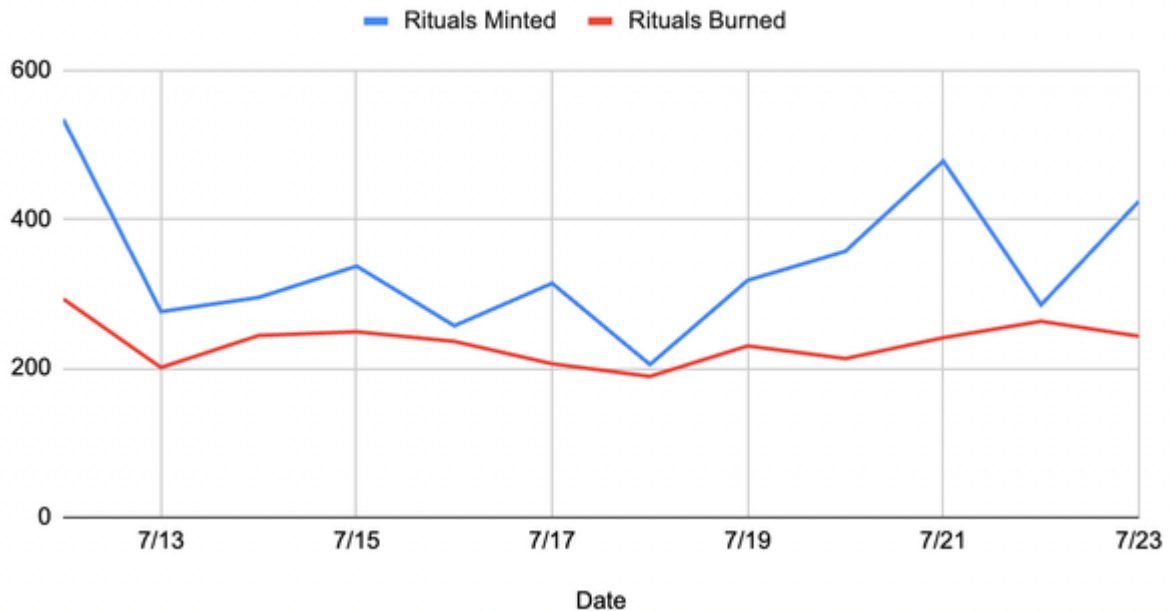
By getting more Dark Marks into Players' hands, we should see an increase in CU Tokens sunk through Ritual buying as well. We anticipate a 33%-50% increase in CU Tokens sunk through Ritual Buying.

CU Sunk vs. Date



Due to the increased amount of Dark Marks being minted, we expect both Rituals minted and Rituals burned to go up. Like Dark Mark Minting and Burning though, the goal is for Rituals burned to always be at or above Rituals minted. Because Players will be minting more Dark Marks, we expect Rituals minted to go up by about 33%-50%.

Rituals Minted and Rituals Burned



Philosophy

Since the Shadow Forge launched, we've noticed that Players have been burning Dark Marks more or less at the rate that they've been earning them. The RBW/CU Tokens sunk by spending Dark Marks on minting Rituals has rivaled Tokens sunk by Breeding and Evolution. Given the current need of average Shadow Forge Players for more Dark Marks, we are not worried about giving them access to more Dark Marks through the Ritual Recycler.

Requirements

- Have Feature be Evergreen--not needing any more Dev work after it launches
- Works with new types of Rituals that we add going forward

User Stories

As a Player

I want to get rid of unwanted Rituals in exchange for Dark Marks

- Click on RITUALS
- Click on RECYCLE RITUALS Button
 - Ritual Inventory Screen comes up
- Click on Rituals Player wants to burn
 - Each Ritual clicked on would add to the projected Total Dark Marks minted
- Click on RECYCLE button
 - A transaction is prompted
- After the transaction is finished, Player gets reward Popup with Dark Marks
 - The selected Rituals are burned and no longer show up in the Inventory

I want to get more Dark Marks for Rituals with unused Charges

- Click on Rituals of the same rarity that have full charges
- Click on Rituals of the same rarity that have some spent charges
- The Ritual with full charges should give more Dark Marks when recycled than the Ritual that had spent some of their Charges

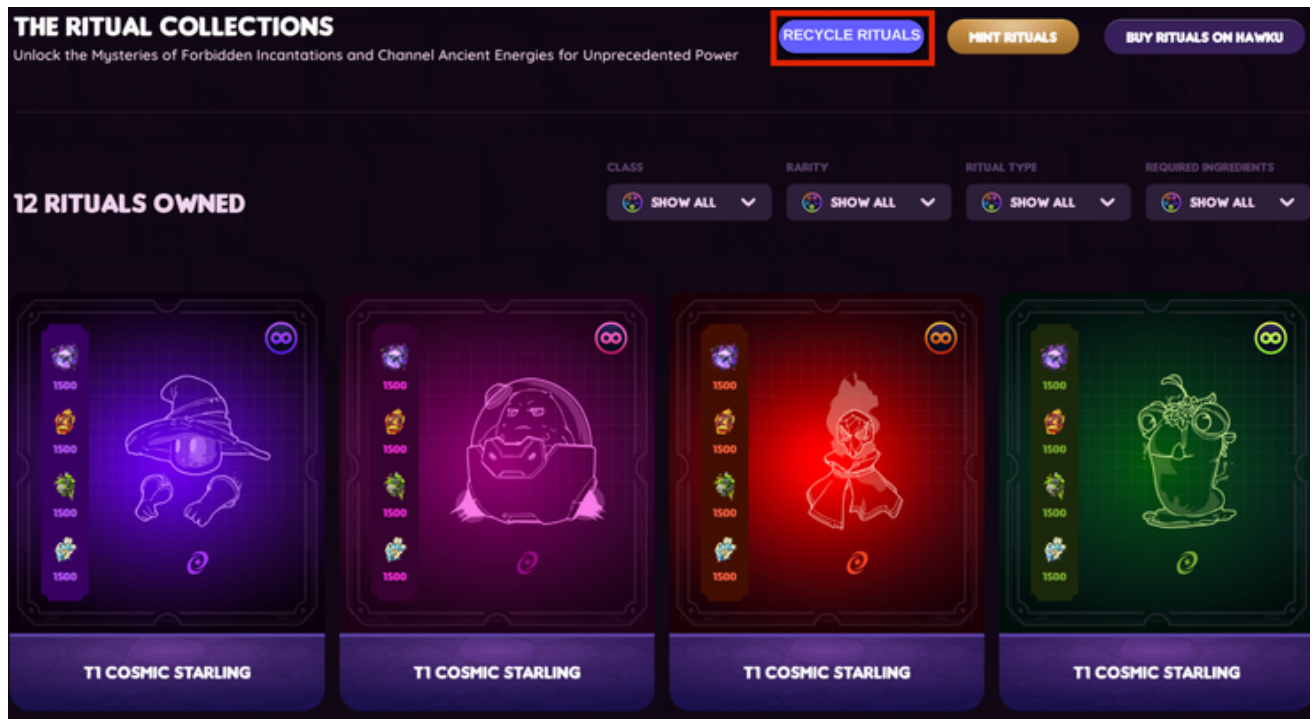
As a Designer

I want to set what type of Rituals give how many Dark Marks when recycled

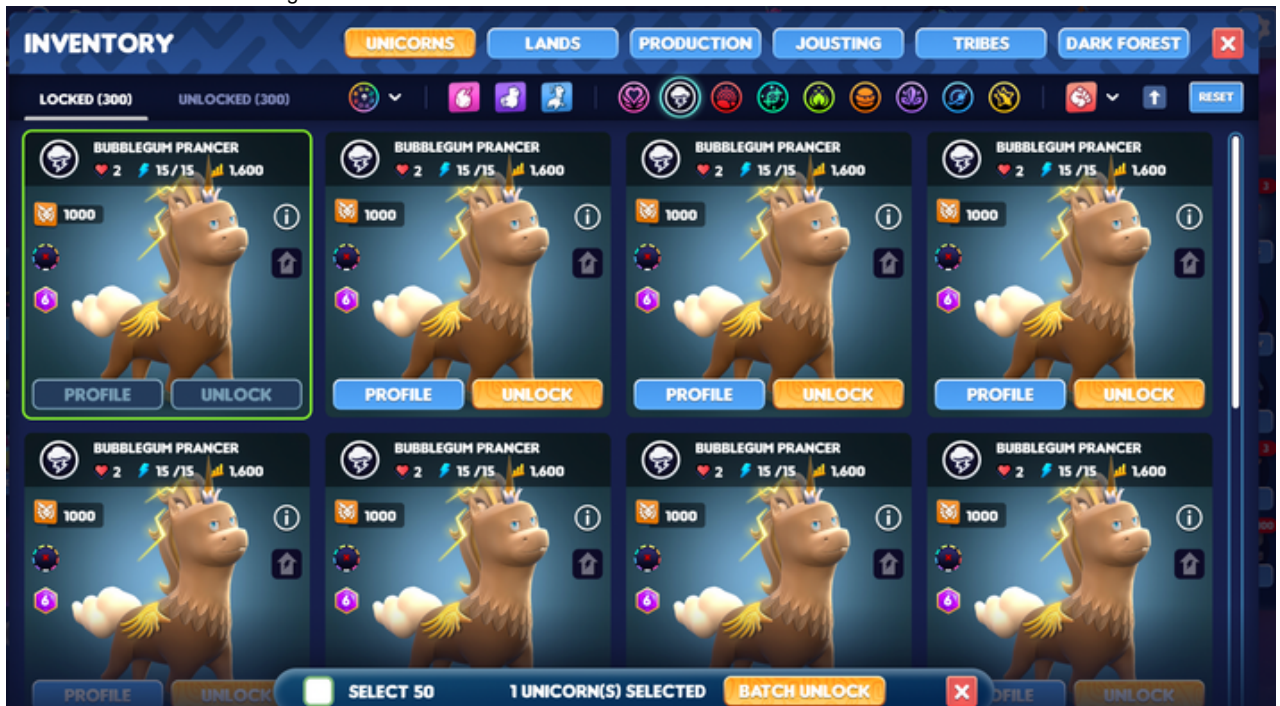
Design

New Functionality: Ritual Recycler

- There is a new button in the RITUALS tab called RECYCLE RITUALS



- Clicking on the RECYCLE RITUALS button brings up the Ritual Inventory Screen
- Clicking on a Ritual will add it to the list of Rituals to be recycled
 - Note: we should use similar logic like we do with other batch-actions.



- As Rituals are being clicked on to be recycled, the Player will see the total amount of Dark Marks they would be earning by having the Rituals be recycled.



- Clicking on RECYCLE will prompt a blockchain transaction that will both burn the selected Rituals and give the Player the Dark Marks based on the Rituals burned.
- There should be some Filters that players can use to narrow down the amount of Rituals to choose from:
 - Type/Rarity

- Common
- Rare
- Mythic
- Usable/Unusable
 - Unusable Recipes are those the Player can't immediately use based on the Shadowcorn(s) they have as well as their Shadow Forge Level
- Shadowcorn Class
 - Fire
 - Slime
 - Volt
 - Soul
 - Nebula
- Dark Marks minted from recycling a Ritual is based on the type/rarity of that Ritual:
 - Common: 225 Dark Marks
 - Rare: 450 Dark Marks
 - Mythic: 900 Dark Marks
 - In general players get back 90% of the Dark Marks spent on the Ritual
- The amount of Dark Marks given from recycling Rituals decrease based on Charges used.
 - This is based on the following formula:
 - $\text{Rarity Dark Marks} * (\text{Current Ritual Charge} / \text{Max Ritual Charge})$
 - So if a Rare Ritual had 25 Max Charges, but only 11 Charges remained, the total Dark Marks returned when recycled would be $450 * (11/25) = 198$ Dark Marks

Analytics Needed

- Distinguish between Rituals burned through using all the Charges and Rituals burned through the Ritual Recycler
- Determine how many Dark Marks comes from Ritual Recycler versus how many come from Daily Rewards

Feature Tools Needed

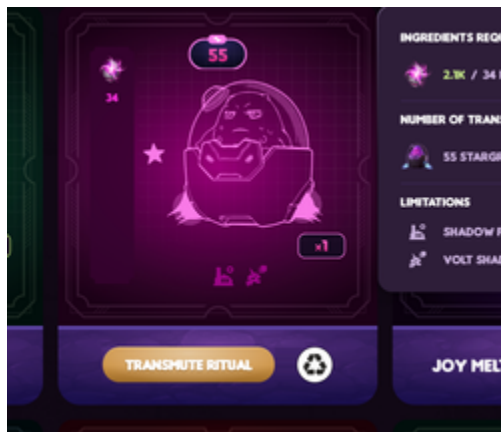
- QA Tools
 - Mint a Common, Rare or Mythic Ritual
 - Gives QA Rituals of different types/rarities to test Dark Marks given by recycling Rituals.

Summary

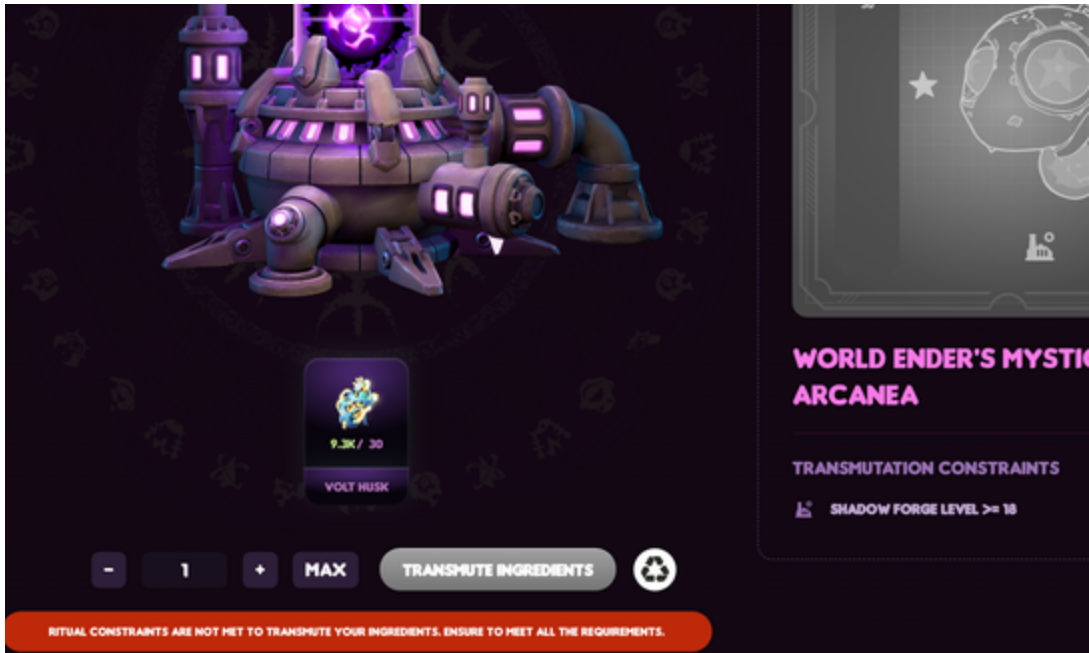
Create a feature for Players to be able to burn unwanted Rituals in exchange for Dark Marks. Add Dark Marks to a Player's Daily Rewards based on their Shadow Forge Level.

Min-Spec (v2) Design

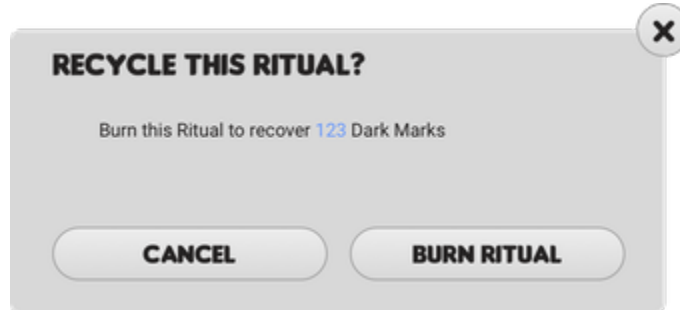
- Add a button to each Ritual card to RECYCLE the NFT



- Add a button on the Transmute Ritual screen to RECYCLE the currently selected NFT



- Both RECYCLE buttons show the player a confirmation modal, with a preview of the DarkMarks that will be recovered



- Choosing to burn the ritual prompts a MetaMask transaction
 - If the transaction is initiated from the Transmute Ritual screen, the player should be navigated back to the list of Rituals

Refund Math

Two factors affect the recycle value: `rarity` and `charges remaining`. A ritual with full charges can be recycled for (tunable) 90% of it's mint cost:

$$darkMarks = 0.90 * (charges / maxCharges) * cost$$

	Common	Rare	Mythic
Cost	250	500	1000
Max refund	225	450	900

Caveat

When we add new Ritual pools, these value will not change. If a new Ritual pool allows a player to mint `mythic` rituals at a different cost (or a different currency), the recycle rate will still be 90% of 1000 DM. – This could create interesting or problematic arbitrage opportunities.

Legacy Ritual Math

Rituals minted before the Recycler feature do not keep track of `maxCharges`. These rituals range from 3 charges when full (for unicorn soul costs) up to 80 charges.

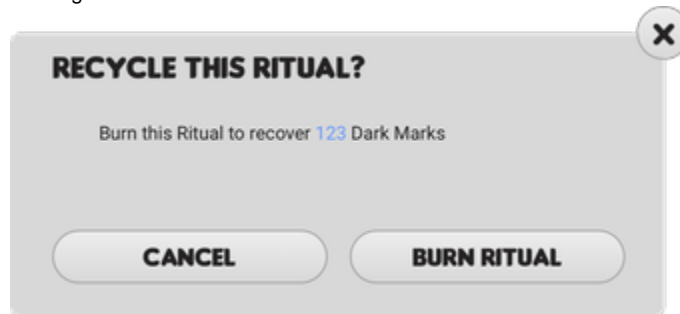
To simplify things, all of these old rituals will be treated as 50% full, regardless of their charges. Players may abuse this by spending all of a Ritual's charges down to 1 and then recycling it, but these Rituals will eventually be depleted and worked out of the system.

Analytics

- A recycled Ritual will emit the following:
 - A “burn” event from the Ritual NFT (eg. `Transfer` from the player to the `0x00` address)
 - A “mint” event from the DarkMarks token (eg. `Transfer` from `0x00` to the player address)
 - A `RitualRecycled` event with the `tokenId` of the burned Ritual, the number of DarkMarks recovered, and the address of the player

Web Implementation

- Add a small `RECYCLE` button to Ritual cards
 - NOTE: This should be hidden for innate rituals
- Add a `RECYCLE` button to the Transmute Ritual page
- The recycle button opens a modal showing the amount of DarkMarks that will be recovered.



- The number of DarkMarks recovered is pulled from the `getRecycleValue` endpoint on the ShadowForge contract.
- If the user clicks the `BURN RITUAL` button, a MetaMask transaction is triggered to call the `recycleRitual` method on the ShadowForge contract.
- When a Ritual is recycled, a `RitualRecycled` event is emitted from the ShadowForge contract.
 - When this is detected, the player's ritual inventory and DarkMarks balance should be refreshed.
 - Stretch goal: Show a success dialog and display the DM gained

Miscellaneous

- Change `batchConsumeRitual` calls to optimized signature below
 - `batchCanConsumeRitual(tokenId[])` returns `(uint256[])`

Blockchain Implementation

Ritual NFT

- Add a field to all Rituals to store `maxCharges`
 - Do not modify the `BasicRitual` struct - add the new field as a `mapping(tokenId => maxCharges)`
 - Set `maxCharges` equal to the charges passed in to `createRitual`
 - `maxCharges` are never decremented
 - When a Ritual is burned (in `consumeRitualCharge` or `recycleRitual`) the `maxCharges` can be deleted
- Add a new endpoint `recycleRitual(tokenId)` on the `RitualFacet`
 - Only callable by `MinionHatchery`
 - emit `MetadataUpdate` event
 - delete `maxCharges`
 - burn the NFT

ShadowForge Contract

- Create a field in `HatcheryRitualStorage` for `recycleMultiplier`
 - Associate a percentage with a rarity (and a default of “no rarity”) - ex. `common = 50%`
 - Getter and setter

- `getRecycleValue(tokenId)` returns `(uint256)`
 - If charges and maxCharges are both 0, revert
 - If `maxCharges == 0` and `charges > 0`
 - common rituals return 125 DM
 - rare rituals return 250 DM
 - mythic rituals return 500 DM
 - If `maxCharges > 0`
 - common rituals return `125 * recycleMultiplier[common]`
 - rare rituals return `500 * recycleMultiplier[rare]`
 - mythic rituals return `1000 * recycleMultiplier[mythic]`
- `recycleRitual(tokenId)`
 - Check NFT ownership
 - Mint DarkMarks to NFT owner, using `getRecycleValue` for amount
 - emit `RitualRecyled(tokenId, darkMarksRecovered, owner)` event
 - Call `recycleRitual` on Ritual contract

Miscellaneous

- `batchCanConsumeRitual(tokenId[])` returns `(uint256[])`
 - Batch version of `canConsumeRitual`
- Optimize `batchConsumeRitualCharges(tokenId, count)`
 - Alternate signature - this version should consume one ritual multiple times.
 - Optimize this endpoint to check constraints once (make sure `count <= charges remaining`)
 - If testing shows this is ok - allow count to go up to 100 charges per call