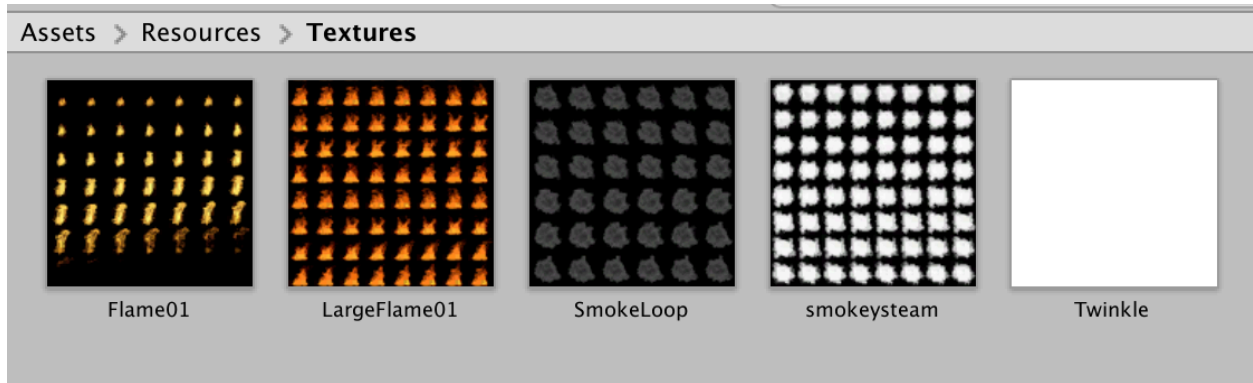


# Quest 7 - Particle Systems

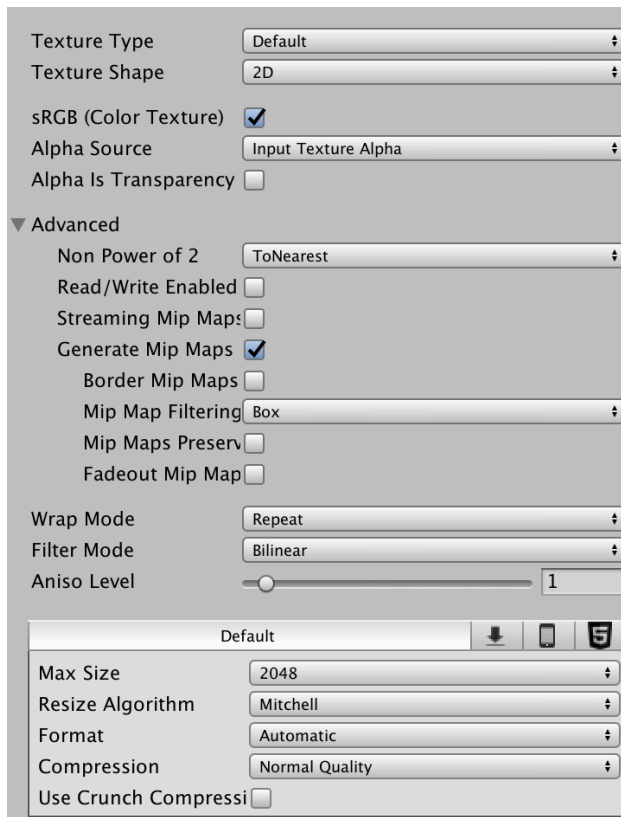
## 1) Import Texture Files

Download the quest source files and bring them into your project.



## 2) Import Settings

Check that each of the 5 textures has the correct import settings. Not all of them will have the "Non Power of 2" setting.

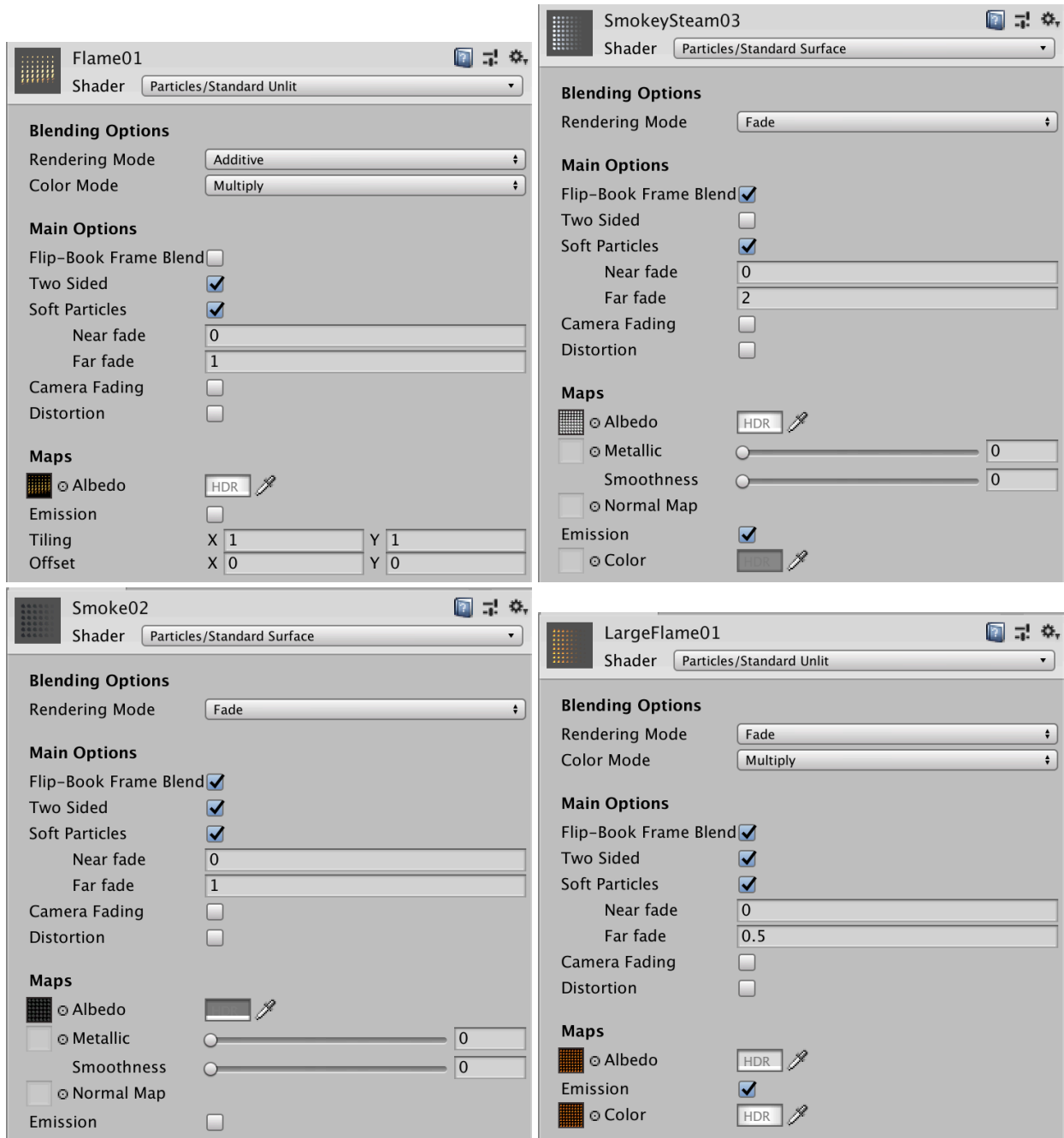


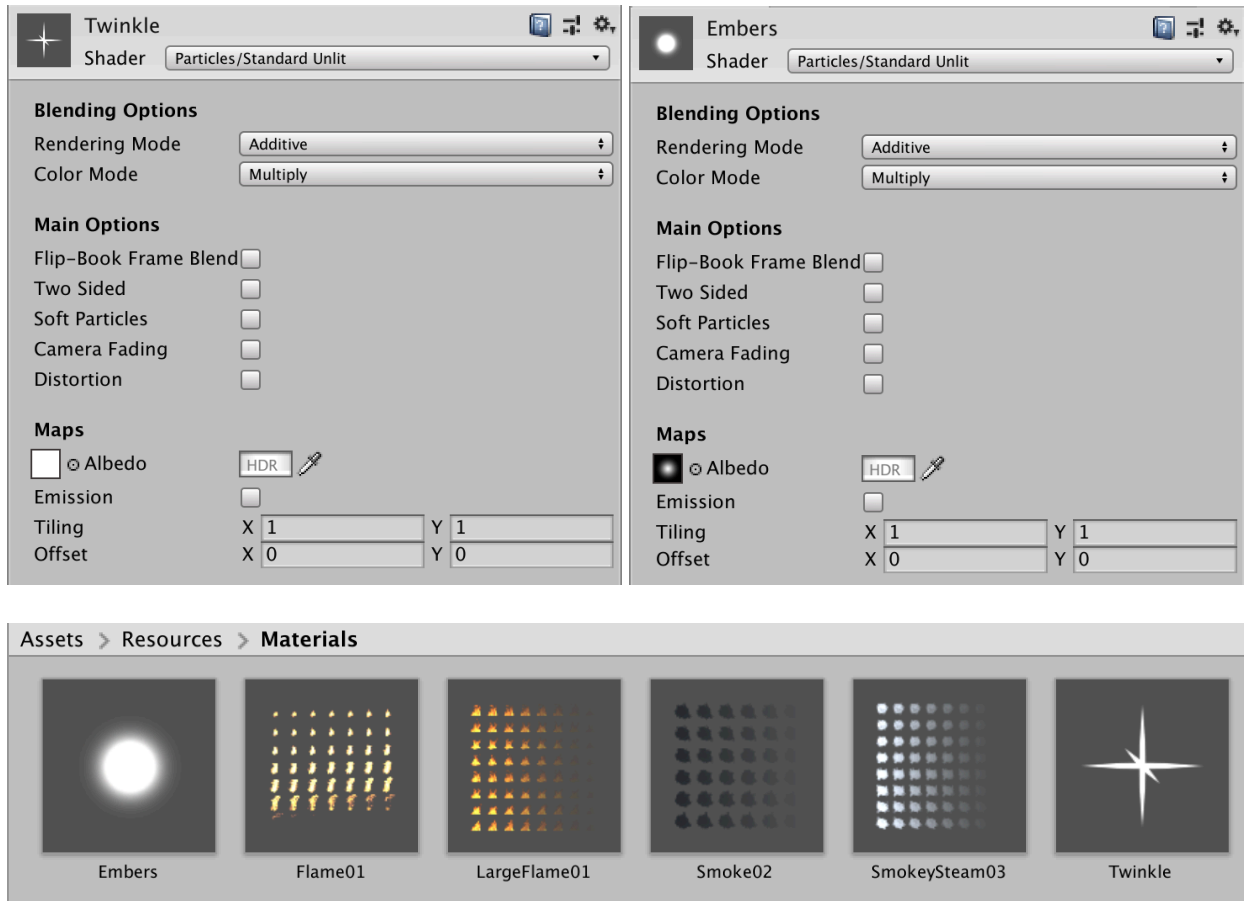
### 3) Create Materials

Before Textures can be sent to a Renderer, they are applied to a Material which processes the texture(s) through a Shader. Texture(s) + Shader + Settings -> Material -> Renderer

Shaders have many differentiators, but notice how some of these materials will use a standard shader vs. an unlit shader.

We will create 6 materials:





## 4) Particle System 1 - Flames

Create a GameObject (LargeFlames) and a Child Game Object (FireEmbers):



For LargeFlames, attach a Particle System component and use the following settings:

**LargeFlames** ! +

Duration 10.00

Looping ☒

Prewarm ☒

Start Delay 0 ▾

Start Lifetime 4 ▾

Start Speed 0 ▾

3D Start Size ☐

Start Size 1 3 ▾

3D Start Rotation ☐

Start Rotation 0 ▾

Flip Rotation 0

Start Color

Gravity Modifier 0 ▾

Simulation Space World ▴ ▾

Simulation Speed 1

Delta Time Scaled ▴ ▾

Scaling Mode Local ▴ ▾

Play On Awake\* ☒

Emitter Velocity Rigidbody ▴ ▾

Max Particles 1000

Auto Random Seed ☒

Stop Action None ▴ ▾

Culling Mode Always Simulate ▴ ▾

Ring Buffer Mode Disabled ▴ ▾

☒ **Shape**

Shape Circle ▴ ▾

Radius 0.5360138

Radius Thickness 1

Arc 360

Mode Random ▴ ▾

Spread 0

Texture None (Texture 2D) Ⓞ

Position X 0 Y 0 Z 0

Rotation X 0 Y 0 Z 0

Scale X 1 Y 1 Z 1

Align To Direction ☐

Randomize Direction 0

Spherize Direction 0

Randomize Position 0

☒ **Emission**

Rate over Time 1 ▾

Rate over Distance 2 ▾

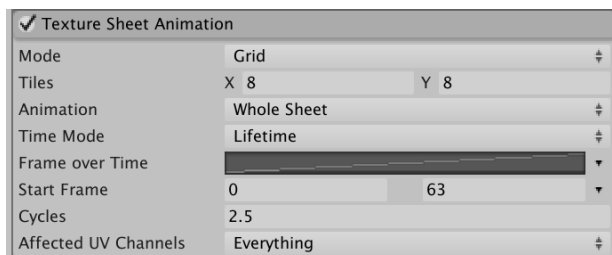
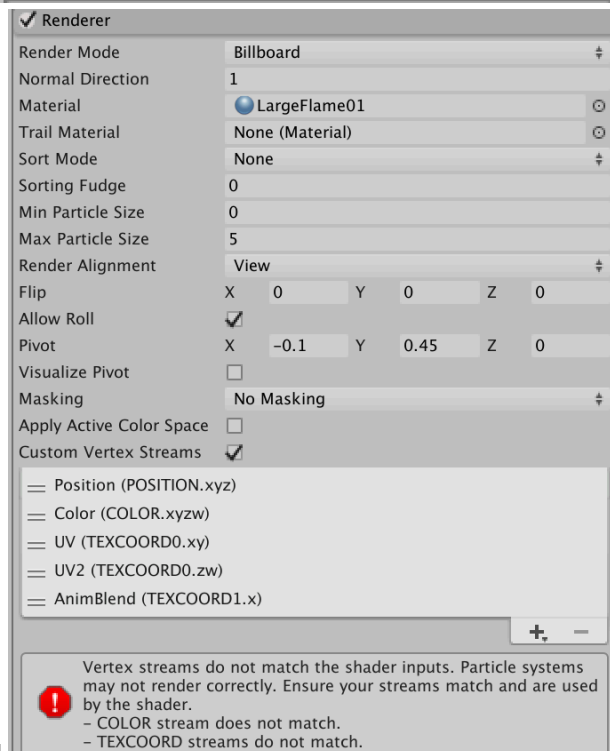
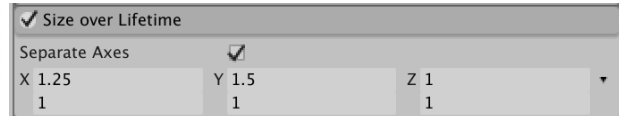
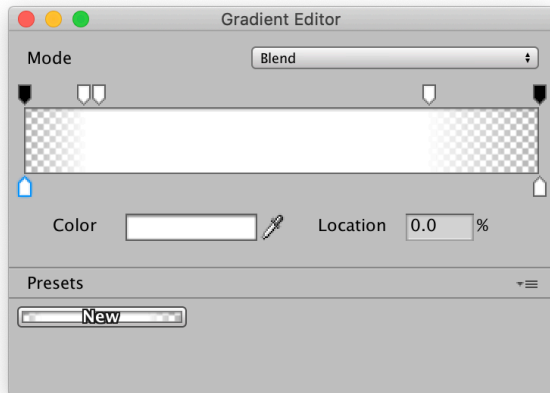
Bursts

Time	Count	Cycles	Interval	Probability
List is Empty				

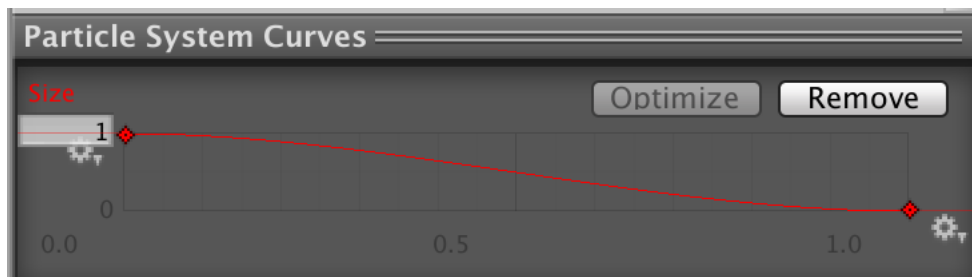
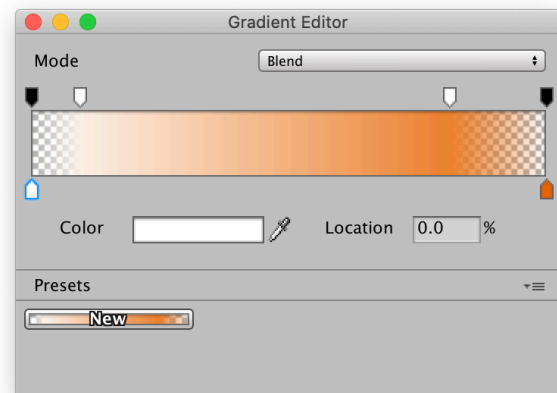
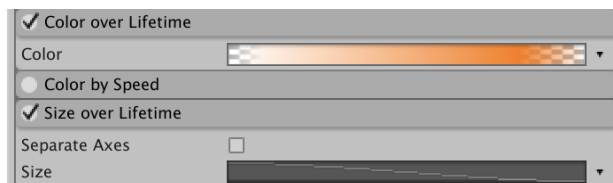
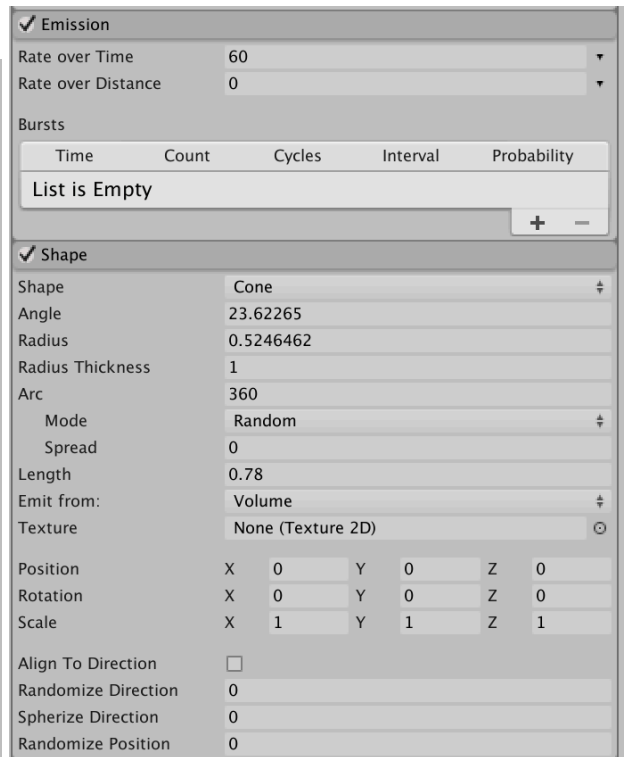
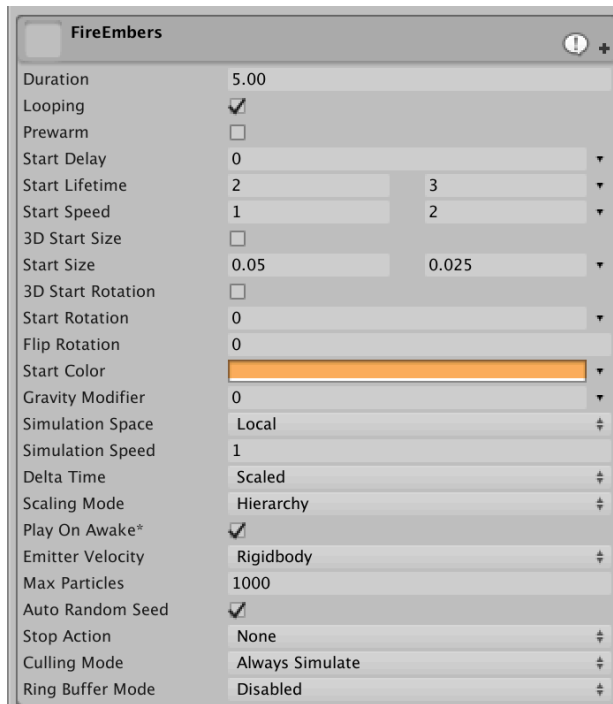
+ -

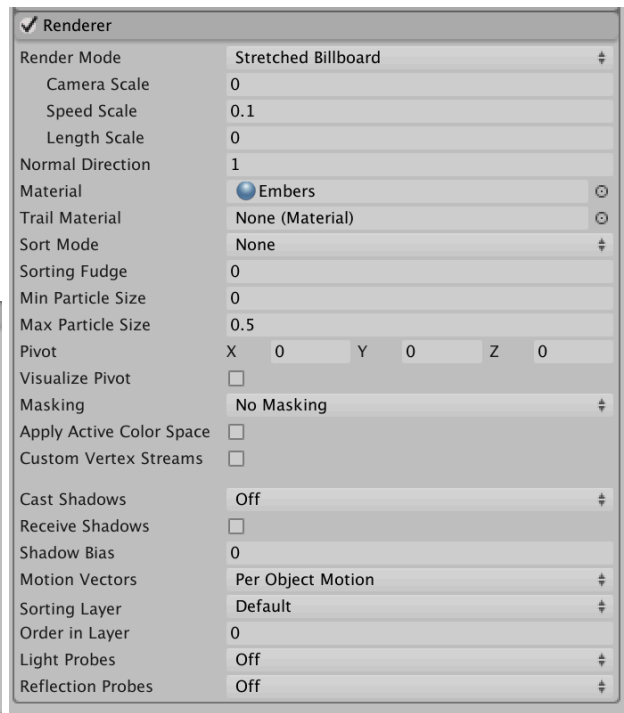
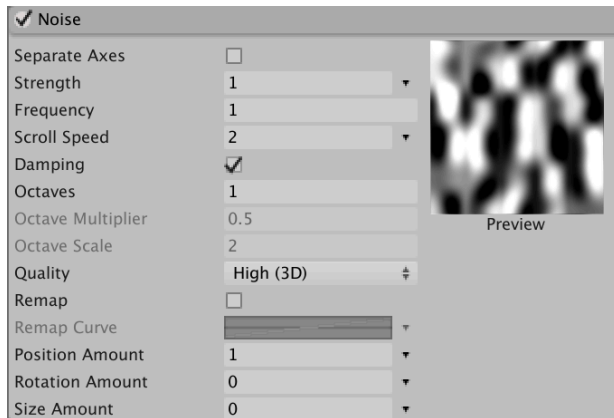
☒ **Color over Lifetime**

Color

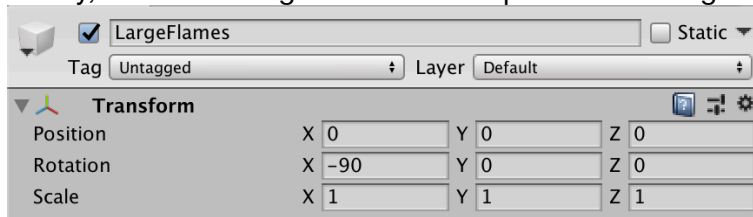


For the FireEmbers, attach a Particle System and use the following settings:





Finally, rotate the LargeFlames so the particles are aligned properly:

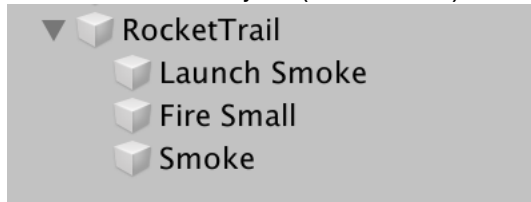


The completed particle effect:

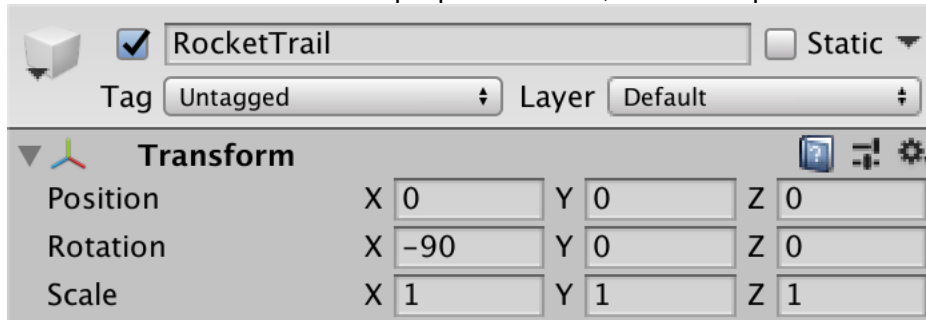


## 5) Particle System 2 - Rocket Trails

Create a GameObject (RocketTrail) and these 3 Child Game Objects:

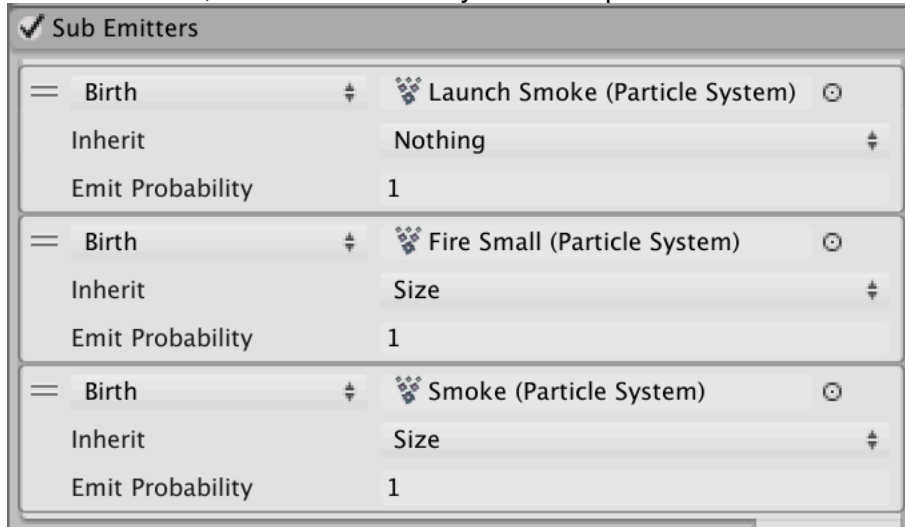


So that our rockets fire in the proper direction, rotate the parent:



This RocketTrails setup is interesting because the parent particle system is not visible, while its sub-emitters are.

For RocketTrail, attach a Particle System component and use the following settings:





**Rocket Trail**

Duration: 6.00

Looping: ☒

Prewarm: ☐

Start Delay: 0

Start Lifetime: 4

Start Speed: 20

3D Start Size: ☐

Start Size: 1

3D Start Rotation: ☐

Start Rotation: 0

Flip Rotation: 0

Start Color:

Gravity Modifier: 0

Simulation Space: Local

Simulation Speed: 1

Delta Time: Scaled

Scaling Mode: Local

Play On Awake\*: ☒

Emitter Velocity: Rigidbody

Max Particles: 1000

Auto Random Seed: ☒

Stop Action: None

Culling Mode: Automatic

Ring Buffer Mode: Disabled

☒ Emission

Rate over Time: 0

Rate over Distance: 0

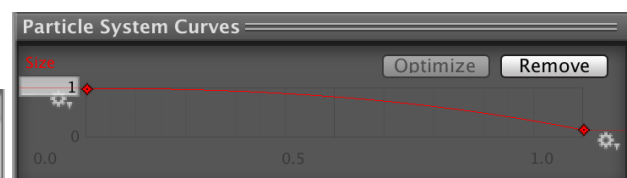
Bursts

Time	Count	Cycles	Interval	Probability
0.000	1	1	0.010	1.00

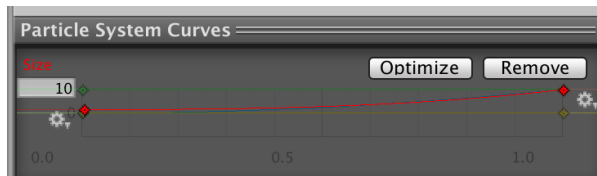
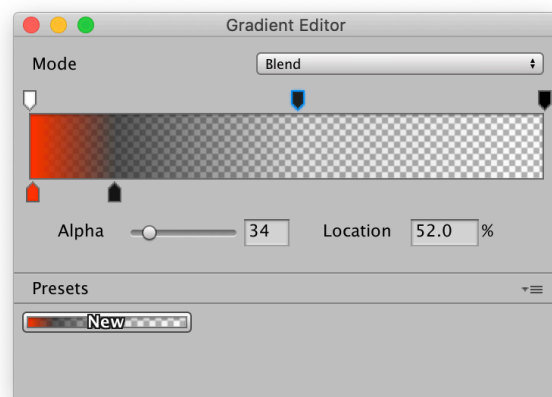
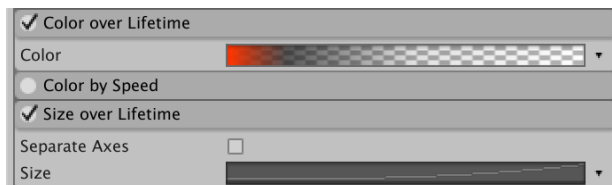
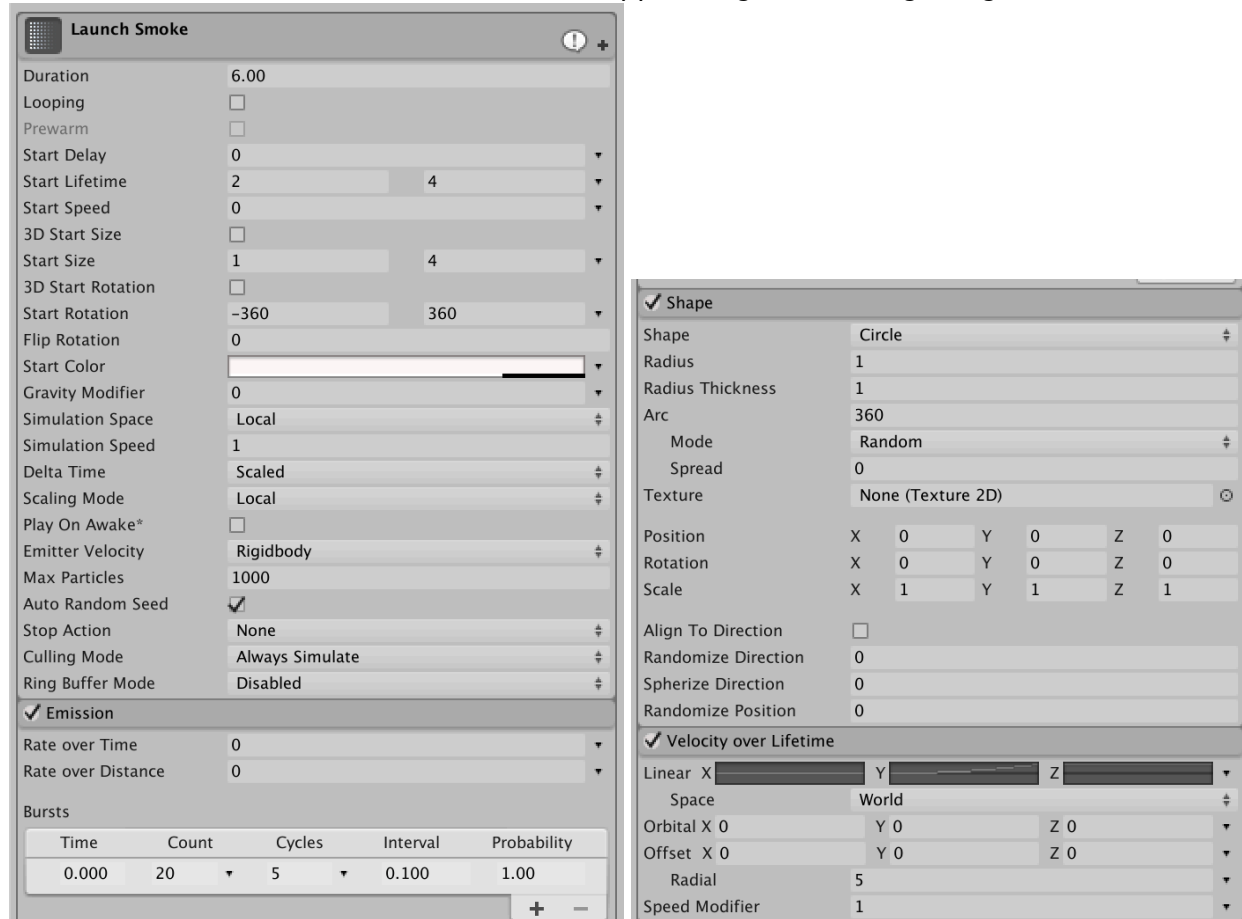
☒ Size over Lifetime

Separate Axes: ☐

Size:



Our first subemitter is the Launch Smoke that appears right at the beginning:



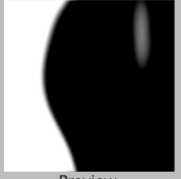
✓ Texture Sheet Animation

Mode	Grid
Tiles	X 8 Y 8
Animation	Whole Sheet
Time Mode	Lifetime
Frame over Time	
Start Frame	0
Cycles	1
Affected UV Channels	Everything

✓ Noise

Separate Axes	<input type="checkbox"/>
Strength	
Frequency	0.25
Scroll Speed	1
Damping	<input checked="" type="checkbox"/>
Octaves	1
Octave Multiplier	0.5
Octave Scale	2
Quality	High (3D)
Remap	<input type="checkbox"/>
Remap Curve	
Position Amount	1
Rotation Amount	0
Size Amount	0

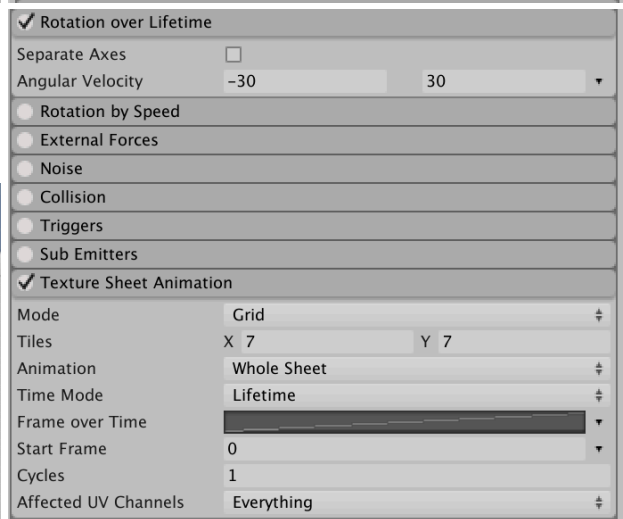
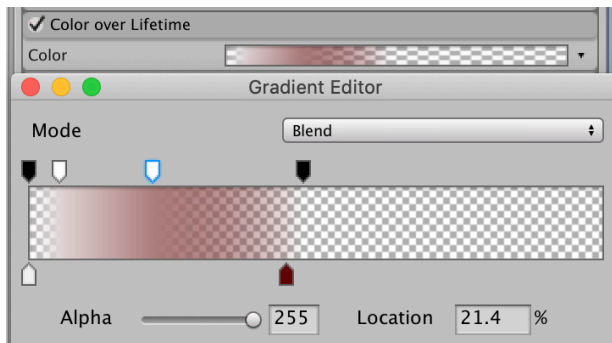
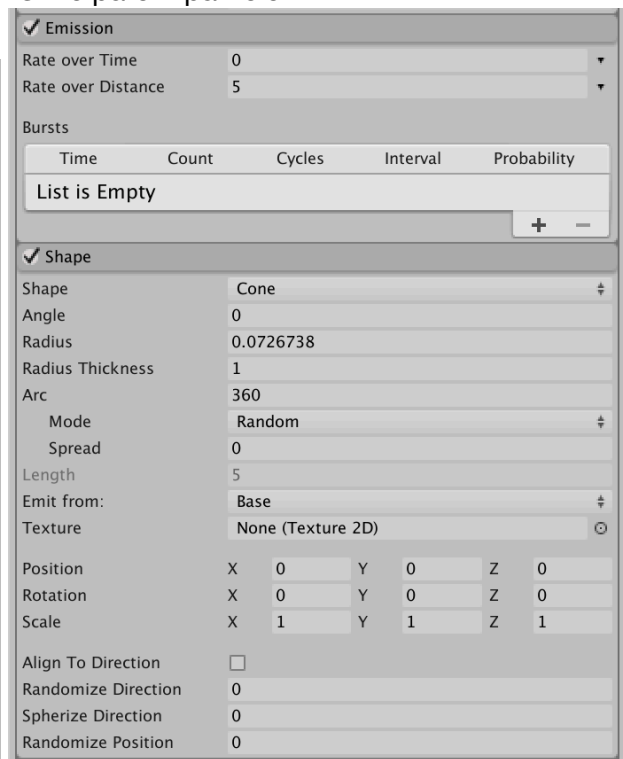
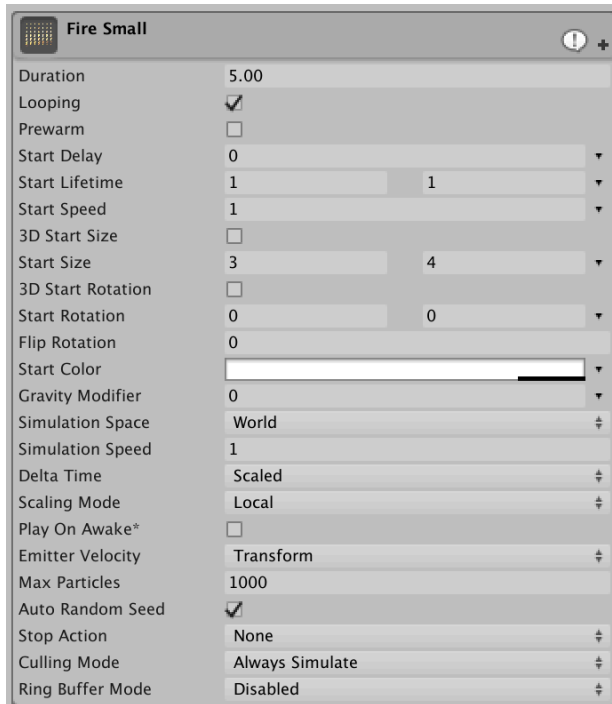
Preview

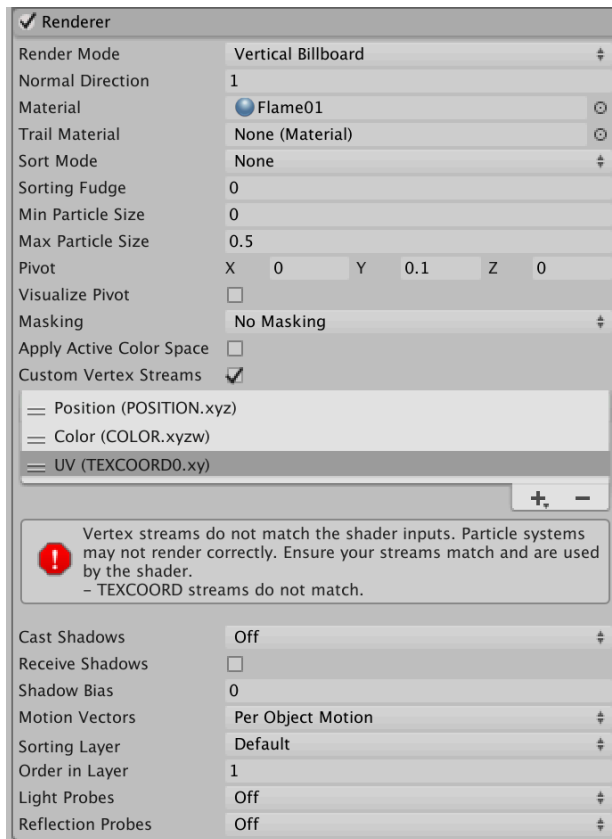


✓ Renderer

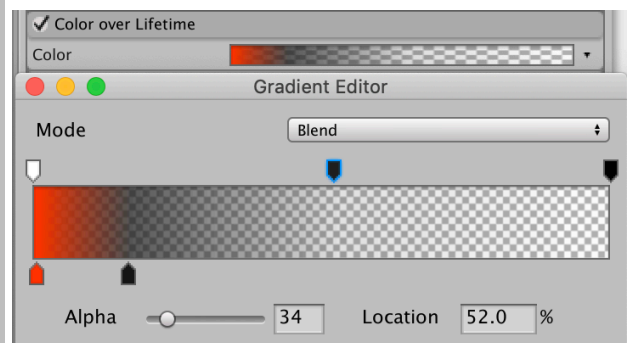
Render Mode	Billboard
Normal Direction	0.5
Material	SmokeySteam03
Trail Material	None (Material)
Sort Mode	By Distance
Sorting Fudge	0
Min Particle Size	0
Max Particle Size	0.5
Render Alignment	View
Flip	X 0 Y 0 Z 0
Allow Roll	<input checked="" type="checkbox"/>
Pivot	X 0 Y 0 Z 0
Visualize Pivot	<input type="checkbox"/>
Masking	No Masking
Apply Active Color Space	<input type="checkbox"/>
Custom Vertex Streams	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>Position (POSITION.xyz)</li> <li>Normal (NORMAL.xyz)</li> <li>Color (COLOR.xzyw)</li> <li>UV (TEXCOORD0.xy)</li> <li>UV2 (TEXCOORD0.zw)</li> <li>AnimBlend (TEXCOORD1.x)</li> </ul>	
Cast Shadows	Off
Receive Shadows	<input type="checkbox"/>
Shadow Bias	0
Motion Vectors	Per Object Motion
Sorting Layer	Default
Order in Layer	0
Light Probes	Off
Reflection Probes	Off

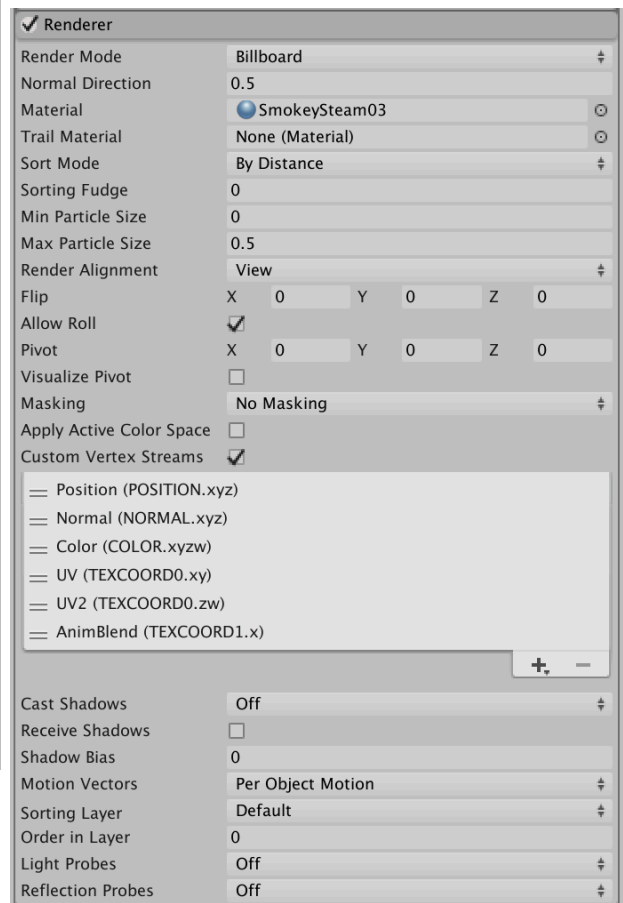
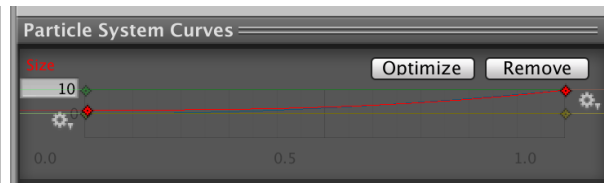
The second submitter is the small fire that follows the parent particle:





The last subemitter is the smoke:





The final composite particle effect:



## **6) Particle System 3 - Experimentation**

Experiment with any available textures and materials to create a particle system design of your own.