Phase 3C Enhanced Filtering System - Test Cases

Testing Goal: Verify all 6 filter types work individually and in combination

Time Required: 15-20 minutes for comprehensive testing

Prerequisites: Run `npm start` and ensure application loads without errors

🧪 Pre-Test Setup Verification

Initial Application State Check

☐ Application loads without TypeScript errors

☐ Filter panel is visible on the left side

☐ All filter controls are present and styled properly

☐ Collection area shows cards (Popular Cards by default)

☐ Collapse/Expand button (←/→) is visible in filter panel header

---

📋 Test Suite 1: Individual Filter Testing

1.1 Format Filter Testing

Objective: Verify format filtering works correctly

Test Cases:

1. **Standard Format Test**
   - Select "Standard" from format dropdown

   - **Expected:** Only Standard-legal cards appear

   - **Verify:** No cards from sets like Unlimited, Arabian Nights, etc.

2. **Custom Standard Test**
   - Select "Custom Standard (Standard + Unreleased)"

   - **Expected:** Standard cards + any future unreleased cards

   - **Verify:** Similar results to Standard for now (architecture ready for future)

3. **Commander Format Test**
   - Select "Commander" from format dropdown

   - **Expected:** Commander-legal cards appear

   - **Verify:** Should include older cards not legal in Standard

4. **Format Clearing Test**

- Select "All Formats"

- **Expected:** Filter clears, shows broader card pool

1.2 Color Identity Filter Testing

Objective: Verify color filtering with different matching modes

Test Cases:

1. **Single Color Test**
   - Click "R" (Red) button

   - Keep mode as "Include these colors"

   - **Expected:** Red and multicolor cards containing red

2. **Multiple Colors Test**
   - Click "U" and "R" buttons (Blue + Red)

   - **Expected:** Cards that include blue and/or red

3. **Exact Color Match Test**
   - Select "U" and "R" buttons

   - Change mode to "Exactly these colors"

   - **Expected:** Only cards that are exactly blue/red (no mono-color, no 3+ colors)

4. **At Most Colors Test**
   - Select "W" and "U" buttons

   - Change mode to "At most these colors"

   - **Expected:** White cards, blue cards, white/blue cards, but no red/green/black

5. **Color Clearing Test**
   - Click selected color buttons to deselect them

   - **Expected:** Color filter clears, shows all colors

1.3 Mana Cost (CMC) Filter Testing

Objective: Verify CMC range filtering works correctly

Test Cases:

1. **Minimum CMC Test**
   - Set Min to "3"

- Leave Max empty

- **Expected:** Only cards with CMC 3 or higher

2. **Maximum CMC Test**

   - Clear Min field

   - Set Max to "2"

   - **Expected:** Only cards with CMC 2 or lower

3. **Range CMC Test**

   - Set Min to "2", Max to "4"

   - **Expected:** Only cards with CMC 2, 3, or 4

4. **High CMC Test**

   - Set Min to "7"

   - **Expected:** Only expensive cards (7+ mana)

5. **CMC Edge Cases**

   - Set Min to "0", Max to "0"

   - **Expected:** Only 0-cost cards (artifacts, some spells)

1.4 Card Type Filter Testing

Objective: Verify card type multi-selection works

Test Cases:

1. **Single Type Test**

   - Click "Creature" button only

   - **Expected:** Only creature cards appear

2. **Multiple Types Test**

   - Click "Instant" and "Sorcery" buttons

   - **Expected:** Only instant and sorcery cards

3. **Artifact Filter Test**

   - Click only "Artifact" button

   - **Expected:** Only artifact cards (equipment, vehicles, etc.)

4. **Land Filter Test**

   - Click only "Land" button

   - **Expected:** Only land cards

5. **Type Clearing Test**
   - Click selected type buttons to deselect
   - **Expected:** All card types appear again

1.5 Rarity Filter Testing

Objective: Verify rarity filtering with visual symbols

Test Cases:

1. **Common Only Test**
   - Click "C" (Common) button
   - **Expected:** Only common cards with black set symbols

2. **Rare/Mythic Test**
   - Click "R" (Rare) and "M" (Mythic) buttons
   - **Expected:** Only rare (gold) and mythic (red-orange) symbol cards

3. **Uncommon Test**
   - Click only "U" (Uncommon) button
   - **Expected:** Only uncommon cards with silver set symbols

4. **Mixed Rarity Test**
   - Click "C", "U", and "R" buttons (exclude Mythic)
   - **Expected:** Common, uncommon, and rare cards (no mythic)

1.6 Creature Stats Filter Testing

Objective: Verify power/toughness range filtering

Test Cases:

1. **High Power Test**
   - Set Power Min to "4"
   - **Expected:** Only creatures with 4+ power (and non-creatures filtered out)

2. **Low Toughness Test**
   - Set Toughness Max to "1"
   - **Expected:** Only creatures with 1 or less toughness

3. **Balanced Stats Test**

- Set Power Min to "2", Max to "4"

- Set Toughness Min to "2", Max to "4"

- **Expected:** Only creatures with 2-4 power AND 2-4 toughness

4. **Big Creature Test**

- Set Power Min to "6", Toughness Min to "6"

- **Expected:** Only large creatures (dragons, demons, etc.)

🎯 Test Suite 2: Combined Filter Testing

2.1 Two-Filter Combinations

Objective: Verify filters work together correctly

Test Cases:

1. **Color + Format Test**

- Select "Standard" format + "R" color

- **Expected:** Only red Standard-legal cards

2. **Type + CMC Test**

- Select "Creature" type + CMC Min "3", Max "5"

- **Expected:** Only creatures costing 3-5 mana

3. **Rarity + Color Test**

- Select "M" (Mythic) + "U" and "B" colors

- **Expected:** Only mythic cards that include blue and/or black

---

2.2 Three-Filter Combinations

Test Cases:

1. **Color + Type + CMC Test**

- Select "R" color + "Creature" type + CMC Max "3"

- **Expected:** Red creatures costing 3 or less

2. **Format + Rarity + Stats Test**

- Select "Standard" + "R" (Rare) + Power Min "3"

- **Expected:** Standard-legal rare creatures with 3+ power

2.3 Complex Multi-Filter Test

Test Cases:

1. **Kitchen Sink Test**
   - Format: "Standard"
   - Colors: "G" (Green)
   - Type: "Creature"
   - Rarity: "U" (Uncommon) + "R" (Rare)
   - CMC: Min "2", Max "4"
   - Power: Min "2"
   - **Expected:** Standard-legal green uncommon/rare creatures, 2-4 CMC, 2+ power

---

🔧 Test Suite 3: UI Functionality Testing

3.1 Filter Panel UI Tests

Test Cases:

1. **Collapse/Expand Test**
   - Click "←" button to collapse panel
   - **Expected:** Panel shrinks to ~40px width, filters hidden
   - Click "→" button to expand
   - **Expected:** Panel returns to full width, filters visible

2. **Clear All Filters Test**
   - Set multiple filters (any combination)
   - Click "Clear" button in panel header
   - **Expected:** All filters reset to default state, broad results return

3. **Filter State Persistence Test** (if implemented)
   - Set several filters
   - Refresh the page
   - **Expected:** Filters maintain their state (if localStorage implemented)

3.2 Search Integration Tests

Test Cases:

1. **Search + Filter Test**
   - Enter "Lightning" in search box
   - Add "R" color filter
   - **Expected:** Lightning cards that include red

2. **Filter-Only Search Test**
   - Leave search box empty
   - Set format to "Standard"
   - **Expected:** All Standard cards (no search text needed)

3. **Clear Search Test**
   - Set filters and search text
   - Clear search box
   - **Expected:** Filter results remain (filters work without search)

🚨 Test Suite 4: Error Handling & Edge Cases

4.1 No Results Tests

Test Cases:

1. **Impossible Combination Test**
   - Select "Standard" format + very high CMC (15+) + "Common" rarity
   - **Expected:** "No results" or empty grid (no crashes)

2. **Conflicting Filters Test**
   - Select "Land" type + Power Min "5"
   - **Expected:** Empty results (lands don't have power)

4.2 Performance Tests

Test Cases:

1. **Rapid Filter Changes Test**
   - Quickly click multiple filters in succession
   - **Expected:** No lag, no duplicate API calls, final state correct

2. **Filter During Search Test**
   - Start typing in search box
   - Immediately change filters

- **Expected:** Race conditions handled properly, correct final results

---

✅ Test Results Recording Template

Test Execution Checklist

For each test, record:

- [ ] **PASS** - Works as expected
- [ ] **FAIL** - Doesn't work, note what happened
- [ ] **PARTIAL** - Works but with issues, note the issues

Common Issues to Watch For:

- **API Errors:** Network requests failing

- **UI Glitches:** Buttons not updating visual state

- **Performance:** Slow responses or lag

- **Race Conditions:** Wrong results from rapid changes

- **Empty States:** How app handles no results

- **Filter Conflicts:** Logical impossibilities

🎯 Success Criteria

Phase 3C is successful if:

- [ ] All 6 filter types work individually
- [ ] Filters work correctly in combination
- [ ] UI is responsive and professional
- [ ] No crashes or TypeScript errors
- [ ] Search integration works seamlessly
- [ ] Collapse/expand functionality works smoothly
- [ ] Performance is acceptable (< 2 second response times)

🐛 Bug Reporting Template

If you find issues, report like this:

Bug: [Brief description]
Steps to Reproduce:

1. [Step 1]

2. [Step 2]

3. [Step 3]

Expected: [What should happen]
Actual: [What actually happened]
Browser Console Errors: [Any error messages]

🚀 Quick Smoke Test (5 minutes)

For rapid verification:

1. **Basic Function Test:** Select "Standard" format → should show Standard cards

2. **Color Test:** Click "R" color → should show red cards

3. **Combine Test:** Add "Creature" type → should show red Standard creatures

4. **Clear Test:** Click "Clear" → should reset all filters

5. **UI Test:** Click collapse button → panel should shrink/expand

If these 5 tests pass, the core functionality is working!