## 1. Lesson Title:

**Fractions & Embossing: Creating Milagros with Math and Meaning**

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## 2. Objectives:

**Academic Objective(s):**

- Students will identify and represent fractions (½, ¼, etc.) as parts of a whole using visual models.
- Students will understand how numerators and denominators express part-whole relationships.

**Artistic Objective(s):**

- Students will design and emboss metal foil milagros that reflect fractional relationships in their design.
- Students will demonstrate understanding of focal point, symmetry, and balance in visual composition.

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## 3. Standards:

**Academic Standards:**

- TEKS Math: 111.5(b)(6)(A) Represent fractions as parts of a whole or parts of a set using concrete and pictorial models.
- TEKS Math: 111.5(b)(6)(C) Explain that the denominator of a fraction tells how many equal parts the whole is divided into and the numerator tells how many parts are being considered.

**Arts Standards:**

- National Core Arts Standards (Visual Arts):

- VA:Cr1.2.3a: Apply knowledge of available resources, tools, and technologies to investigate personal ideas through the art-making process.
- VA:Cr2.1.3a: Create personally satisfying artwork using a variety of artistic processes and materials.

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## 4. Vocabulary Table:

| Arts Vocabulary | Content Vocabulary (Math) |
|---|---|
| Embossing | Fractions |
| Focal Point | Whole |
| Symmetry | One Half (½) |
| Balance | One Fourth (¼) |
| Composition | Parts of a Whole |
| | Numerator |
| | Denominator |

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## 5. Materials/Resources Needed:

**General Materials:**

- Paper
- Pencils
- Rulers
- Tape

**Specialized Arts Materials:**

- Metal art foil sheets (or heavy-duty foil + cardboard backing)
- Felt sheets (as backing and to press against while embossing)
- Embossing tools (ballpoint pens, styluses, or wooden dowels)
- Compass (optional, for circular designs)

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## 6. Lesson Introduction (5–10 minutes):

Begin by introducing **milagros**, small devotional folk charms often used in Mexican and Latinx cultures to represent hope, healing, and prayer. Ask students:
**"Have you ever shared something in parts, like a piece of pan dulce or a slice of pizza?"**
**"What do you think it means when we say something is divided into 'equal parts'?"**
Explain that today they'll use **math and art** together to create their own milagros by dividing shapes into **fractions** and using **embossing** to turn those shapes into meaningful metal artworks.

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## 7. Guided Practice (15–20 minutes):

**Step 1: Real-Life Fractions Discussion**
Start with a think-pair-share where students describe something they've divided into parts (e.g., a sandwich cut in half, a pizza divided into fourths).

**Step 2: Math Demonstration**
Using a whiteboard or projector, demonstrate how to fold and draw shapes (circles, squares, rectangles) and divide them into **halves, fourths**, and other fractions. Label numerator and denominator.

**Step 3: Artistic Demo – Embossing**
Show students how to sketch a symmetrical milagro on paper (e.g., heart, cross, arm, animal). Then model how to transfer the image onto foil, divide it into fractional segments, and use an embossing tool to push from the back to create raised lines.

**Step 4: Design Planning**
Students sketch their milagro designs and indicate where and how they will divide them using fractions. Discuss focal points and symmetry in the design.

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## 8. Independent Practice (15–20 minutes):

Students will:

- Sketch and label their milagro design, incorporating at least **one or more fractional divisions** into the layout.
- Transfer their design to foil and emboss it using a stylus or pen on felt backing.
- Mount the final piece on felt or another surface for support.

As students work, encourage them to explain which parts represent **½, ¼**, or other fractions and how symmetry enhances their design.

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## 9. Closing (5–10 minutes):

Facilitate a class reflection and sharing circle. Ask:
**“What part of your milagro shows a fraction?”**
**“What does your design mean to you?”**
Display the milagros gallery-style, allowing students to walk around and view each other's work with a partner or small group.

Optionally, ask students to write a short caption that explains:

- What the milagro symbolizes
- What fraction is represented in the design

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## 10. Assessment:

**Academic Assessment:**

- Students accurately identify and represent fractions in their artwork.
- Check for correct use of numerator and denominator in labeling or explanation.

**Artistic Assessment:**

- Rubric assessing:
    - Thoughtful composition and layout
    - Application of focal point and symmetry
    - Use of embossing tools and materials
    - Integration of fractional knowledge

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## 11. Differentiation Strategies:

- Provide visual fraction cards and shape templates for support.
- Allow for collaboration or verbal explanations for students needing writing or language support.
- Use pre-folded paper templates for students who need step-by-step shape division.
- Offer alternate materials (e.g., cardboard + yarn) if foil is difficult to manipulate.

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## 12. Reflection (Post-Lesson):

- Were students able to transfer mathematical concepts into a visual format?
- How did they use symmetry and fractions to enhance their milagro’s design?
- What connections did students make between sharing, equality, and fractions?
- How can future projects continue to build cross-disciplinary bridges?

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## Notes:

**Extensions:**

- Create a **math-art milagro wall** that shows how fractions appear in both cultural and everyday contexts.

- Invite students to write a **short story or poem** about their milagro and the person, hope, or idea it represents.

- Have students create a **fraction quilt** with foil milagros grouped into fractional sets (e.g., four ¼ hearts = 1 whole).

**Age Range:**
Grades 3–5
**Risk Level:** Low – moderate with embossing tools, requires care but no sharp objects or heat.

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## Community Cultural Wealth Objectives:

Aligned with **CULTIVAR guiding principles** by:

- Tapping into **familial and aspirational capital** through the symbolic nature of milagros.

- Connecting math to **narrative, artistic, and cultural knowledge**, empowering students to see themselves as makers and thinkers.

- Honoring **resistant and linguistic capital** by allowing students to use bilingual labels and personal symbolism to tell their stories of wholeness, care, and equality.