Using **fractions and mixed numbers** in **addition, subtraction, multiplication, and division** is very important in **disaster management**, especially when handling measurements, sharing supplies, calculating doses, and splitting responsibilities.

Here's how each operation is used with **clear, practical examples**:

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## 🔷 1. Addition of Fractions

### 🔹 **Use:** Combining resources or quantities.

### ✅ Example:

Two shelters received:

- $\frac{3}{4}$ of a water tank
- $\frac{1}{2}$ of a water tank

**Total water =**

$$\frac{3}{4} + \frac{1}{2} = \frac{3}{4} + \frac{2}{4} = \frac{5}{4} = 1\frac{1}{4} \text{ tanks}$$

➡️ Enough water for more than one full tank. Helps plan refills.

## 🔷 2. **Subtraction of Fractions**

🔷 **Use:** Measuring what's used or remaining.

✅ **Example:**

A generator has $\frac{5}{6}$ of a fuel tank.

It uses $\frac{1}{3}$ during the night.

**Remaining fuel =**

$$\frac{5}{6} - \frac{1}{3} = \frac{5}{6} - \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$$

➡️ Half a tank left—schedule next refill!

## 🔷 3. **Multiplication of Fractions**

🔷 **Use:** Calculating portion sizes or scaling supplies.

### ✅ **Example:**

Each family receives $\frac{2}{3}$ of a food package.

If 4 families need food:

$$4 \times \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3} \text{ packages}$$

➡️ At least **3 packages** must be prepared.

## 🔷 4. **Division of Fractions**

🔹 **Use:** Sharing or splitting resources evenly.

### ✅ **Example:**

You have $\frac{3}{4}$ of a water tank to share among 3 families.

$$\frac{3}{4} \div 3 = \frac{3}{4} \times \frac{1}{3} = \frac{3}{12} = \frac{1}{4}$$

➡️ Each family gets ¼ **tank of water**.

## 🔷 5. **Using Mixed Numbers in Food Distribution**

🔹 **Use:** Working with larger measurements that include whole and fractional parts.

### ✅ **Example (Addition):**

A relief center has **2½ kg** of rice and receives **3¾ kg** more.

$$2\frac{1}{2} + 3\frac{3}{4} = \frac{5}{2} + \frac{15}{4} = \frac{10}{4} + \frac{15}{4} = \frac{25}{4} = 6\frac{1}{4}\ \text{kg}$$

➡️ Total rice = **6¼ kg**

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### ✅ **Example (Multiplication):**

Each kit has **1½ liters** of water.

How much water is needed for 5 kits?

$$1\frac{1}{2} \times 5 = \frac{3}{2} \times 5 = \frac{15}{2} = 7\frac{1}{2}\ \text{liters}$$

➡️ **7½ liters** of water needed.

## ✅ Example (Subtraction with Mixed Numbers):

A truck carried **6¾ tons** of supplies. After delivery, only **2½ tons** remained.

$$6\frac{3}{4} - 2\frac{1}{2} = \frac{27}{4} - \frac{5}{2} = \frac{27}{4} - \frac{10}{4} = \frac{17}{4} = 4\frac{1}{4} \text{ tons delivered}$$

➡️ Delivered **4¼ tons** of aid.

## ✅ Summary Table:

| Operation | Scenario | Example | Result |
|---|---|---|---|
| Addition | Combine water | $\frac{3}{4} + \frac{1}{2}$ | $1\frac{1}{4}$ tanks |
| Subtraction | Fuel left | $\frac{5}{6} - \frac{1}{3}$ | $\frac{1}{2}$ tank |
| Multiplication | Food packs | $4 \times \frac{2}{3}$ | $2\frac{2}{3}$ packs |
| Division | Share water | $\frac{3}{4} \div 3$ | $\frac{1}{4}$ tank/person |
| Mixed Addition | Add rice | $2\frac{1}{2} + 3\frac{3}{4}$ | $6\frac{1}{4}$ kg |
| Mixed Multiplication | Water in kits | $1\frac{1}{2} \times 5$ | $7\frac{1}{2}$ liters |
| Mixed Subtraction | Supplies used | $6\frac{3}{4} - 2\frac{1}{2}$ | $4\frac{1}{4}$ tons |

These examples show how fractions and mixed numbers are essential for **precise planning** and **resource management** in disaster situations.