UNIT: FIRST AID

ACT-Based Math: Calculating Wound Area

### Here are ACT-aligned math activities for First Aid Kits that help students apply real-world skills in measurement, dosage calculations, and data interpretation relevant to emergency care.

### Objective:

Students will measure wound dimensions and calculate the affected area.

MATERIALS NEEDED:

* Ruler
* Graph paper
* Wound measurement scenarios worksheet

STUDENT DIRECTIONS:

**Goals:**  
You will use math skills to calculate the surface area of wounds based on real-world scenarios. This helps emergency responders decide how serious an injury is and what kind of care is needed.

**Step 1: Review Area Formulas**

Before starting, review basic formulas for calculating the area of rectangles:

* **Area = Length × Width**

You’ll apply this formula to each wound described in the scenarios.

**Step 2: Gather Your Materials**

Make sure you have:

* A **ruler** to measure if images are provided
* **Graph paper** to sketch or visualize wound areas
* The **Wound Measurement Scenarios Worksheet** with sample cases

**Step 3: Solve the Scenarios**

For each wound scenario on your worksheet:

1. **Read the scenario carefully.** Identify the **length and width** of the wound.
2. **Calculate the wound area** using the formula:  
   Area = Length × Width  
   Example: A wound that is 4 cm by 3 cm would be:  
   4 × 3 = 12 cm²
3. **Round your answer** to the **nearest tenth** if the numbers include decimals.
4. **Compare the result** to the severity threshold provided in the scenario.  
   Ask yourself:
   * Is the wound mild, moderate, or severe?
   * Does it require stitches or medical attention?

**Wound Measurement Scenarios Worksheet**

**Instructions:**

## Read each wound scenario carefully.

## Use the given dimensions to calculate the wound area.

## Round your answers to the nearest tenth if necessary.

## Compare wound sizes and determine severity levels.

**Scenario 1: Scrape from a Fall**

A patient has a scraped knee from falling off a bike. The wound is roughly **5 cm long and 3 cm wide**.

* **Calculate the area of the wound.**
* If a wound larger than **12 cm²** is considered a "moderate injury," does this wound fall into that category?

**Scenario 2: Deep Cut from a Sharp Object**

A cook accidentally cuts their hand while chopping vegetables. The wound is **2.5 cm long and 1 cm wide**.

* **Calculate the wound area.**
* If deep cuts larger than **5 cm²** require stitches, does this wound meet that requirement?

**Scenario 3: Minor Burn from Hot Water**

A patient spills hot water on their arm, causing a burn area of approximately **4 cm by 4 cm**.

* **Calculate the affected skin surface.**
* Burns larger than **16 cm²** are classified as "significant." Does this burn fit that category?

**Scenario 4: Large Abrasion from a Car Accident**

A motorcyclist falls and scrapes a large portion of their forearm. The abrasion is **10 cm long and 6 cm wide**.

* **Calculate the total surface area of the wound.**
* If abrasions over **40 cm²** require professional medical attention, what should be done in this case?

ACT-Style Question:

* A hiker falls and sustains two separate scrapes: one measuring **6 cm × 3 cm** and the other measuring **4 cm × 5 cm**.
  + **What is the combined area of both wounds?**
  + If wounds covering more than **30 cm²** are considered "severe injuries," does this patient require immediate medical attention?
  + A wound measures **4 cm by 3 cm**. What is the total wound area?

1. 7 cm²
2. 12 cm²
3. 15 cm²
4. 18 cm²

## **⚡ Why These Activities and Questions Matter**

## By using the ACT Math First Aid Kit, students:

## ✅ Review essential ACT topics like algebra, geometry, trigonometry, and data analysis. ✅ Practice solving equations, interpreting functions, and analyzing graphs—just like on the test. ✅ Learn time-saving strategies for word problems, coordinate geometry, and number operations.

## These activities directly support ACT Math success—helping students master key concepts, reduce careless mistakes, and boost confidence for college and STEM pathways.