

### ESS 110 Intro Geology: Map scale problems (solutions)

1. You measure a 4.5-inch length of stream channel on a 1:50,000 scale topographic map.  
What is the actual length of that stream reach in miles?

**Known information:**

4.5 inches map length

Scale: 1 inch (map length) = 50,000 inches (ground length)

**Conversions:**

12 inches = 1 foot

5,280 feet = 1 mile

**Solution:**

(4.5 in map length) (50,000 in ground length / 1 in map length) (1 ft / 12 in) (1 mi / 5,280 ft) =

3.55 miles

2. A geologic rock unit covers a length of 2 miles across part of the Cumberland Valley.  
How long (in inches) is that length on a 1:24,000 topographic map?

**Known information:**

2 miles ground length

Scale: 1 inch (map length) = 24,000 inches (ground length)

**Conversions:**

12 inches = 1 foot

5,280 feet = 1 mile

**Solution:**

(2 miles ground length) (5280 ft / 1 mi) (12 in. / 1 ft) (1 in. map length / 24,000 in. ground length)

= 5.28 inches