Scale Factor

Use What You've Learned
Answers and Explanations

1. A legend on a map of Cosine Park shows that 1 inch on the map equals 6 miles. Brandy wants to ride her bicycle from Sine Point to Tangent Point, a distance of 18 miles. How many inches is that route on the map?

   The map shows that 1 inch represents 6 miles. A distance of 18 miles would be 3 inches on the map (18 miles ÷ 6 miles per inch = 3 inches).

   If Brandy wants to ride her bicycle on a trail that is 4 inches on the map, how many miles will she have to ride?

   Brandy will ride 24 miles (4 inches x 6 miles per inch = 24 miles).

Cosine Park	Map Distance (inches)	Actual Distance (miles)
SCALE	1	6
Sine Point to Tangent Point	3 ÷ 6	18
Bicycle Trail	4 x 6	24

2. The house plans for Wendell's house indicate that ¼ inch on the plans equals 1 foot. If the east wall is 5 inches long on the plans, how long will the east wall in the house be?

   Since $\frac{1}{4}$ inch on the plans equals 1 foot, 1 inch on the plans equals 4 feet. The east wall will be 20 feet long (5 inches x 4 feet per inch = 20 feet).

Wendell's House	Architect's Plan (inches)	Actual Size (feet)
SCALE	$\frac{1}{4}$	1
Scale	x 4 → 1	4 ← x 4
East Wall	5 x 4	20

   If the north wall will be 14 feet long in the house, how long should the north wall be on the plans?

Since each foot is $\frac{1}{4}$ inch on the plans, the architect should draw the north wall to be $3\frac{1}{2}$ inches long (14 feet x $\frac{1}{4}$ inch per foot = $3\frac{1}{2}$ inches).

Wendell's House	Architect's Plan (inches)	Actual Size (feet)
SCALE	$\frac{1}{4}$	1
North Wall	$3\frac{1}{2}$ x $\frac{1}{4}$	14

3. Vern decided to build a playhouse for his granddaughter. The playhouse was designed to look just like his house but it has a scale of 1:5. Vern wants to make a bed for the playhouse that will resemble the bed in his guest room. If the real bed's dimensions are 60 inches by 80 inches, how wide must Vern make the playhouse bed?

Since the playhouse bed will be $\frac{1}{5}$ the size of the real bed, the width must be 12 inches (60 inches ÷ 5 = 12 inches).

How long must Vern make the playhouse bed?

The length of the playhouse bed will be 16 inches (80 inches ÷ 5 = 16 inches).

	Playhouse (inches)	Real House (inches)
SCALE	1	5
Bed width	12 ÷ 5	60
Bed length	16 ÷ 5	80