

Science Scale Sleuths

Use matching ratios to model real science systems.

GRADE 5 • TEKS 5.5.C

5.5.C "use scale, proportion, and quantity to describe, compare, or model different systems;"

NAME _____

DATE _____

MATCH THE SCALE

A scale tells how a measurement in a model matches a measurement in the real system. Find the amount for one model unit, then multiply to keep the two quantities in the same proportion.

WORKED EXAMPLE

On a scale model of a trail, 7 cm represents 42 m. A path measures 14 cm on the model. How long is the real path?

1. Divide 42 m by 7 cm to find 6 m for each model centimeter.
2. Multiply 14 cm by 6 m per cm.
3. The real path is 84 m long.

Answer: 84 m

PRACTICE 6 problems

- 1** On a scale drawing of a stream, 3 cm represents 15 m. A bend in the stream measures 8 cm on the drawing. How long is the real bend?

ANSWER _____

- 2** A food-chain model uses 4 hawk counters to represent 20 real hawks. How many real hawks do 6 counters represent?

ANSWER _____

- 3** In an enlarged cell model, 2 mm represents 10 micrometers in a real cell. A cell part measures 9 mm on the model. How long is the real cell part?

ANSWER _____

- 4** In a rainfall model, 5 cups of model water represent 25 L of rainwater. How many liters of rainwater do 6 cups represent?

ANSWER _____

- 5** Aquarium A has 3 fish in 12 L of water. Aquarium B has 5 fish in 20 L of water. Do the aquariums have the same number of fish for each liter of water? Show the matching ratio.

ANSWER _____

- 6** On a scale drawing of a mountain, 8 cm represents 32 m. A cliff measures 11 cm on the drawing. What is the real height of the cliff?

ANSWER _____

APPLY IT Show your work

- 1** Students are building a model wetland for a science display. Every 2 cm in the model represents 5 m in the real wetland. Use the table to find the real length represented by all three sections together.

WETLAND MODEL SECTIONS

Section	Model length
Pond edge	4 cm
Marsh	6 cm
Reed bed	10 cm

ANSWER _____

- 2** A class is planning a pollinator garden with a scale drawing. On the drawing, 3 cm represents 4 m. The garden is 9 cm long and 6 cm wide on the drawing. What is the real perimeter of the garden?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two models show the same wetland. In Model A, 5 cm represents 40 m. In Model B, 8 cm represents 40 m. A stream is 15 cm long in Model A. How many centimeters long should the same stream be in Model B?

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	On a scale drawing of a stream, 3 cm represents 15 m. A bend in the stream measures 8 cm on the drawing. How long is the real bend?	40 m
2	A food-chain model uses 4 hawk counters to represent 20 real hawks. How many real hawks do 6 counters represent?	30 hawks
3	In an enlarged cell model, 2 mm represents 10 micrometers in a real cell. A cell part measures 9 mm on the model. How long is the real cell part?	45 micrometers
4	In a rainfall model, 5 cups of model water represent 25 L of rainwater. How many liters of rainwater do 6 cups represent?	30 L
5	Aquarium A has 3 fish in 12 L of water. Aquarium B has 5 fish in 20 L of water. Do the aquariums have the same number of fish for each liter of water? Show the matching ratio.	Yes. Both have 1 fish for every 4 L of water.
6	On a scale drawing of a mountain, 8 cm represents 32 m. A cliff measures 11 cm on the drawing. What is the real height of the cliff?	44 m

PART 2 • APPLY IT

- 50 m** Add the model lengths: $4 + 6 + 10 = 20$ cm. Since 2 cm represents 5 m, 20 cm represents 50 m.
- 40 m** The real length is 12 m and the real width is 8 m. The perimeter is $12 + 8 + 12 + 8 = 40$ m.

CHALLENGE**24 cm**

Accept equivalent ratio statements, such as 1 fish per 4 L. For the challenge, accept correct work showing that 15 cm in Model A represents 120 m, then 24 cm in Model B.