LESSON MAKER PRO

Scale It Up

Identify dilations in drawings and designs.

GRADE 7 · 7.MG.4.c

7.MG.4.c "Identify and describe dilations in context including, but not limited to, scale drawings and graphic design."

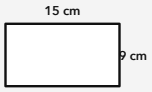
NAME _____ DATE _____

DILATION RULE

A dilation multiplies every length by the scale factor. A scale factor greater than 1 enlarges a figure, and a scale factor between 0 and 1 reduces it.

WORKED EXAMPLE

The rectangle shown is dilated by a scale factor of 2/3. What are the image dimensions?



1. Multiply 9 by 2/3: 9 x 2/3 = 6.
2. Multiply 15 by 2/3: 15 x 2/3 = 10.

Answer: 6 cm by 10 cm

PRACTICE 4 problems

1 A sketch has a side length of 5 cm. It is dilated by a scale factor of 4. What is the image side length?

ANSWER _____

2 An original logo is 7 cm wide. Its image is 28 cm wide. What is the scale factor?

ANSWER _____

3 A design side is 25 mm long. It is dilated by a scale factor of 1/5. What is the image side length?

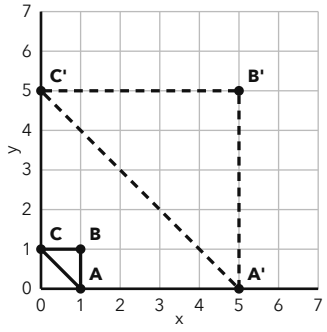
ANSWER _____

4 An original font height is 16 pt. Its image height is 4 pt. Is this an enlargement or a reduction? What is the scale factor?

ANSWER _____

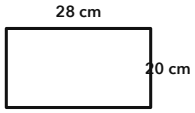
APPLY IT Show your work

1 A coding club uses the solid triangle as an app icon. The dashed triangle is the resized icon. What is the scale factor, and what are the coordinates of B'?



ANSWER _____

2 A game club prints the rectangular logo shown on a banner at a scale factor of 1/4. What are the new dimensions?



ANSWER _____

CHALLENGE One step up

A 21 cm design is dilated by 4/5, then the result is dilated by 5/4. What is the final length? Explain why.

WORK SPACE AND ANSWER

ANSWER KEY

Scale It Up

GRADE 7 · 7.MG.4.c

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A sketch has a side length of 5 cm. It is dilated by a scale factor of 4. What is the image side length?	**20 cm**
2	An original logo is 7 cm wide. Its image is 28 cm wide. What is the scale factor?	**4**
3	A design side is 25 mm long. It is dilated by a scale factor of 1/5. What is the image side length?	**5 mm**
4	An original font height is 16 pt. Its image height is 4 pt. Is this an enlargement or a reduction? What is the scale factor?	**reduction; 1/4**

PART 2 · APPLY IT

1. **Scale factor 5; B' = (5, 5)** Compare corresponding lengths or coordinates. Each coordinate is multiplied by 5 from the origin.
2. **5 cm by 7 cm** Multiply each original side length by 1/4. 20 x 1/4 = 5 and 28 x 1/4 = 7.

CHALLENGE

21 cm; the scale factors 4/5 and 5/4 are reciprocals, so their product is 1.

Accept equivalent fraction forms for scale factors. For the challenge, accept an explanation that the second dilation undoes the first because the scale factors multiply to 1.