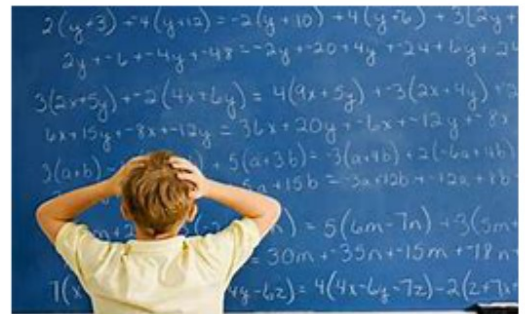


Do something to
make a persons
day bright !

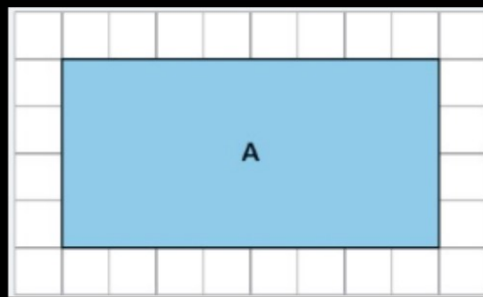
Today you will need

- Pencil
- Notebook
- Homework
- Note Sheet (I will pas out)



Warm-Up

In your graph paper, answer the following questions:



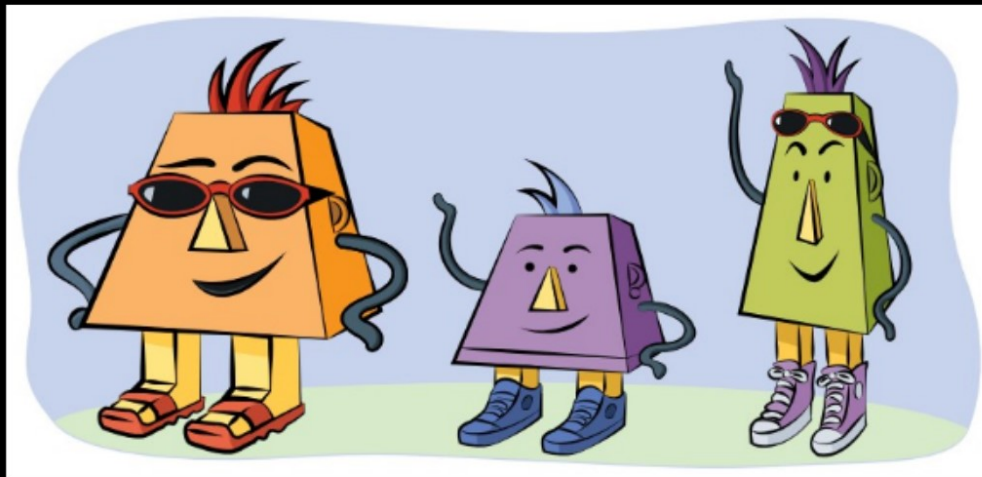
Draw a rectangle similar to Rectangle A, where the perimeter of the new rectangle is three times the perimeter of Rectangle A. Label the length and width.

2.3 Mouthing Off and Nosing Around

Scale Factors

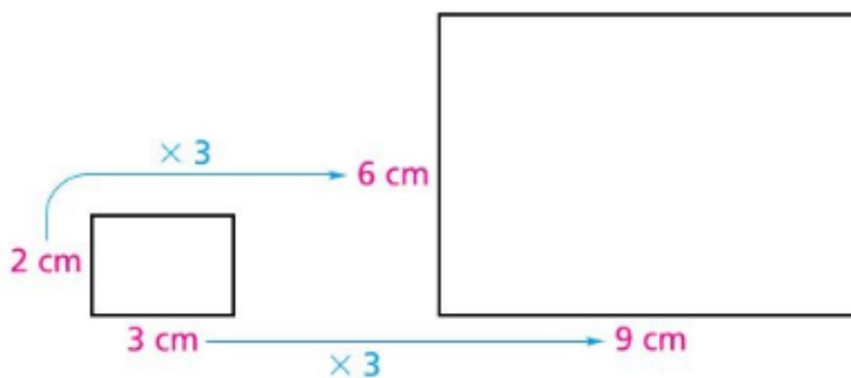
Your experiments suggest that for two figures to be **similar**, there must be the following correspondence between the figures.

- The side lengths of one figure are multiplied by the same number to get the corresponding side lengths in the second figure.
- Corresponding angles are the same size.

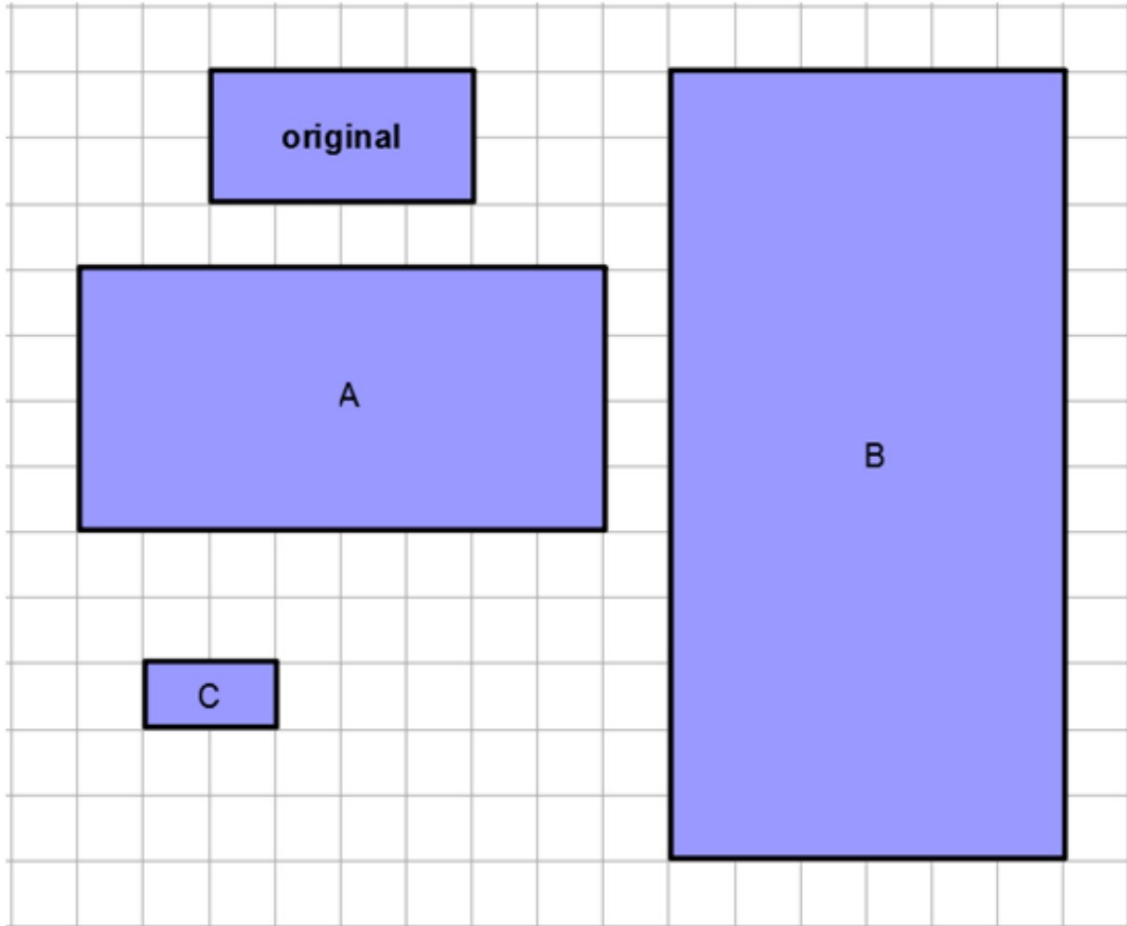


The **scale factor** is the number that the side lengths of one figure can be multiplied by to give the corresponding side lengths of the other figure.

The rectangles below are similar. The scale factor from the smaller rectangle to the larger rectangle is 3.

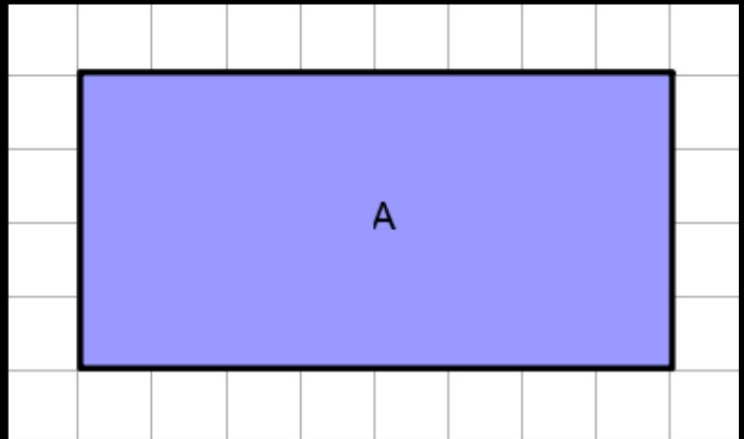
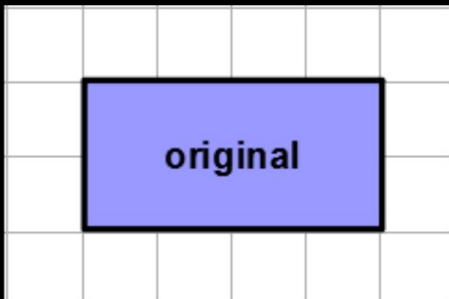


The rectangles A, B, and C are all similar to the original rectangle pictured below.



A. Complete the table below for the different rectangles. Show your calculations for perimeter and area.

Rectangle	Scale Factor	Length of Short Side (units)	Perimeter (units)	Area (units ²)
original				
A				
B				
C				



Class Work Answers:

A.

Rectangle	Scale Factor	Length of Short Side (units)	Perimeter (units)	Area (units ²)
original	1	2	$P = 2(2 + 4) = 12$	$A = 2 \bullet 4 = 8$
A	2	4	$P = 2(4 + 8) = 24$	$A = 4 \bullet 8 = 32$
B	3	6	$P = 2(6 + 12) = 36$	$A = 6 \bullet 12 = 72$
C	0.5	1	$P = 2(1 + 2) = 6$	$A = 1 \bullet 2 = 2$

Everything will be compared to the ORIGINAL: original perimeter: 12 units original area: 8 units²

B. Rectangle A

Scale Factor? 2

By what factor did the perimeter increase? _____

24 units

By what factor did the area increase? _____

32 units²

How is the *perimeter factor* related to the scale factor?

How is the *area factor* related to the scale factor?

C. Rectangle B

Scale Factor? 3

By what factor did the perimeter increase? _____

36 units

By what factor did the area increase? _____

72 units²

How is the *perimeter factor* related to the scale factor?

How is the *area factor* related to the scale factor?

D. Rectangle C

Scale Factor? 0.5 or 1/2

By what factor did the perimeter increase? _____

6 units

By what factor did the area increase? _____

2 units²

How is the *perimeter factor* related to the scale factor?

How is the *area factor* related to the scale factor?

Class Work Answers:

B. Rectangle A

Scale Factor? 2

By what factor did the perimeter increase? 2

By what factor did the area increase? 4

How is the *perimeter factor* related to the scale factor?

$$2 = 2 \text{ (the same).}$$

How is the *area factor* related to the scale factor?

$$2^2 = 4$$

C. Rectangle B

Scale Factor? 3

By what factor did the perimeter increase? 3

By what factor did the area increase? 9

How is the *perimeter factor* related to the scale factor?

$$3 = 3 \text{ (the same).}$$

How is the *area factor* related to the scale factor?

$$3^2 = 9$$

D. Rectangle C

Scale Factor? 0.5 or 1/2

By what factor did the perimeter increase? 0.5 or 1/2

By what factor did the area increase? 0.25 or 1/4

How is the *perimeter factor* related to the scale factor?

$$0.5 = 0.5 \text{ (the same).}$$

How is the *area factor* related to the scale factor?

$$0.5^2 = 0.25$$

$$(1/2)^2 = (1/4)$$

E. Summary

- a. How is the change in perimeter from the original to a *similar figure* related to the scale factor?

- b. How is the change in area from the original to a *similar figure* related to the scale factor?

Class Work Answers:

E. Summary

a. How is the change in perimeter from the original to a *similar figure* related to the scale factor?

$$\text{original perimeter} \bullet \text{scale factor} = \text{new perimeter}$$

b. How is the change in area from the original to a *similar figure* related to the scale factor?

$$\text{original area} \bullet \text{scale factor}^2 = \text{new area}$$