



PEER TO PEER (P2P)

INDEPENDENTLY, READ THIS PAGE AND DO THE WARM-UP WHILE YOU'RE WAITING FOR YOUR PARTNER(S).

INTRODUCTION

SKILL 271

PRACTICE STANDARD: Look for and make use of structure.

SKILL OVERVIEW

This skill is about working with similar figures.

LEARNING GOAL

Your goal is to solve real world and mathematical problems using similar triangles or other similar shapes.

WHY IS THIS LEARNING GOAL IMPORTANT?

This learning goal is important because similar figures are used to make and read maps, and architectural building models.



MATERIALS: Pen/Pencil only

DO NOW: PRACTICE QUESTION

Complete the following ratio table:

Pounds of Apples	Price (\$)
1	
2	3.00
4	6.00
6	
	15.00

VOCAB

What mathematical vocabulary is important for this activity?

Proportional

the relationship between two ratios with a constant rate or ratio.

Ratio

a comparison of two numbers.

Similar Figures

figures that have the same shape but are not necessarily the same size.

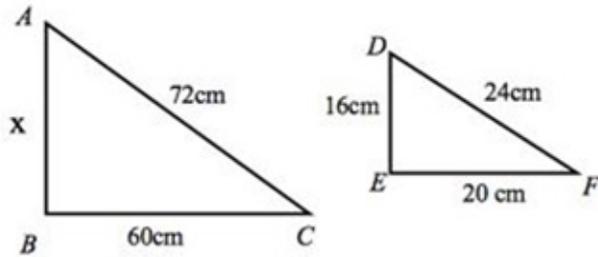
QUICK CHECK: Is everyone ready to go? – turn the page and get started!



Understanding Similar Figures

INDEPENDENTLY, READ THE INFORMATION BELOW OR ONE PERSON CAN READ ALOUD.

INFORMATION



Amaya was asked to determine the missing side of a triangle.

She knows the triangles are similar. She thinks about the problem in 3 different ways:

Make a Table

The highlighted numbers show the sides I know, then I worked backwards to find the side I needed.

DEF	ABC
8	24
10	30
12	36
16	48
20	60
24	72



Create a Proportion

I looked at the corresponding sides in the triangles and set up a proportion.

$$\frac{16 \text{ cm}}{20 \text{ cm}} = \frac{x \text{ cm}}{60 \text{ cm}}$$

Find a Ratio

The ratio, 1/3, shows that the lengths of the sides in the second triangle are one third the length of the sides in the first triangle. Or, I could say that the sides of the first triangle are three times larger than the second. So I can multiply the sides of the smaller triangle by 3 to determine the lengths of the larger triangle.

All of these approaches result in the same value for x, which is 48 inches!



TOGETHER

TALK ABOUT IT:

Why did Amaya write 16 over 20 and x over 60 when checking the sides? Why did she multiply 16 by 3 to determine the length of the missing side?



<5 min



HINT

Even if triangles appear to be the same, they might not be. The corresponding sides must be compared to be sure.

HINT

Be sure to compare corresponding sides. DF corresponds to AC because they are both across from the largest angle.

QUICK CHECK: I have read the information on this page with my group.



Unique Problem

INDEPENDENTLY, READ THE INFORMATION BELOW OR ONE PERSON CAN READ ALOUD.

PREPARE

P2P CHALLENGE GOAL

On the next page you will find many triangles in different shapes and sizes.

Your job is to:

- Find a pair that is similar and justify your answer.
- Find a pair that is NOT similar and explain why.
- Find a triangle similar to triangle A and use it to determine the value of x .



<5 min



INDEPENDENTLY: Fill in the planning chart below

Solving Strategy	First Steps
What is one way you might be able to solve this problem? Explain in words. Don't solve yet!	What makes two triangles similar?
_____	1) _____
_____	_____
_____	2) _____
_____	_____
_____	3) _____
_____	_____

VOCAB

Solving Strategy

A plan or idea that you have to help you figure out a problem

Example:

I will start by trying to locate two triangles that are similar by first comparing the angles and then see if the corresponding sides are in proportion.

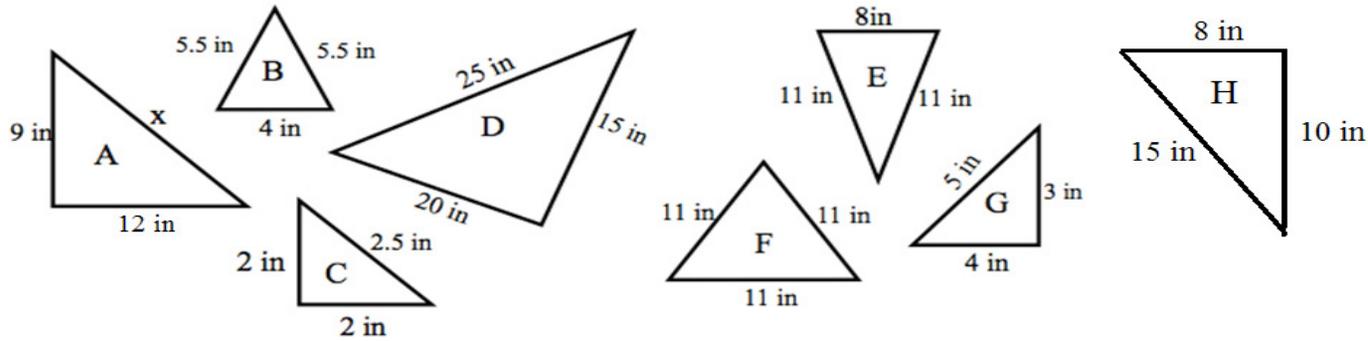
QUICK CHECK: I've planned out how I'll solve this problem.



Independent Solving

INDEPENDENTLY, SOLVE OR ANSWER THE QUESTIONS.

SOLVE



Similar Triangles

NOT Similar Triangles

_____ and _____

_____ and _____

Proof:

Proof:

Find the value of x. Show your thinking:



10 min



REMEMBER

The ratio must be the same for ALL pairs of corresponding sides in order for shapes to be similar!



HINT

similar shapes may have a different orientation!

HINT

Just because a triangle may look like another, you can't assume that they are similar. Check the ratios too!

QUICK CHECK: I have successfully found pairs of similar and non-similar triangles.



TOGETHER

Talk About Your Learning

TOGETHER, TALK ABOUT EACH QUESTION. WRITE DOWN THE BEST ANSWER BASED ON YOUR DISCUSSION.

SHARE

TALK ABOUT IT:

Amaya claims that there are three sets of similar triangles on the previous page. Do you agree? Why or why not?

TALK ABOUT IT:

Are there any triangles that look similar on page 4, but weren't? How do you know?

TALK ABOUT IT:

Math Practice Standard: Look for and make use of structure.

Your friend states that two triangles (GHI and RST) have a scale factor of $\frac{3}{4}$. What does this tell you about the triangles? Give an example of their side lengths.



10 min

SKILL CHECK

After your discussions, how well do you NOW understand similar figures?

1 = low
5 = high

- QUICK CHECK: We discussed each question.
- We wrote our best answers for each question.



Peer Review

INDEPENDENTLY, COMPLETE THE PEER REVIEW

REFLECT

Write your partner's name: _____

(IF YOU WORKED WITH 2 CLASSMATES, CHOOSE ONE.)



5 min

What is one thing you taught to your partner? Explain.

What is one thing you learned from your partner today? Explain.

RATE YOUR CLASSMATE FOR TODAY'S TASK:

	Low			High
Math work and thinking	1	2	3	4
Working together with you	1	2	3	4
Working independently by him/herself	1	2	3	4

Comments:

QUICK CHECK: I completed my peer review.



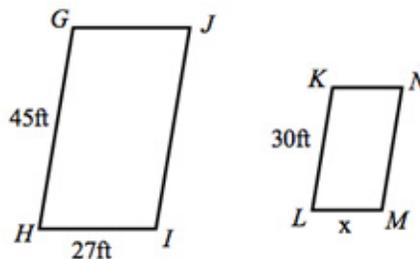
Ending Problem

INDEPENDENTLY, SOLVE THE PROBLEM

ENDING PROBLEM

The following parallelograms are similar figures. Find the missing side, x , of the smaller parallelogram.

- a) 15 feet
- b) 18 feet
- c) 30 feet
- d) 40.5 feet



Choose an incorrect choice for LM and draw a third parallelogram that is similar to parallelogram KLMN.



<5 min



HINT

This question is similar to the types of questions you'll see on your skill assessment.

QUICK CHECK: I've cleaned up my working space and put all materials away.