Base & Heights of Parallelograms

Lesson # 5

CCSS Standards: Addressing	• 6.EE.A.2.a • 6.EE.A.2.c • 6.G.A.1

Let’s investigate the area of parallelograms some more.

Today's Goals

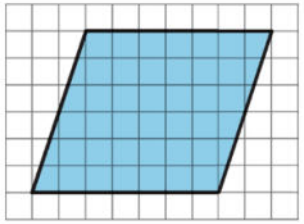
- I know what the terms "base" and "height" refer to in a parallelogram.
- I can write and explain the formula for the area of a parallelogram.
- I can identify pairs of base and height of a parallelogram.

A Parallelogram & Its Rectangles

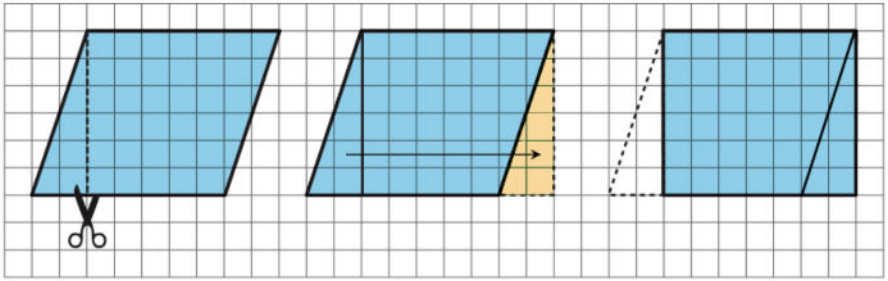
Warm Up 5.1

- Think, Pair, Share

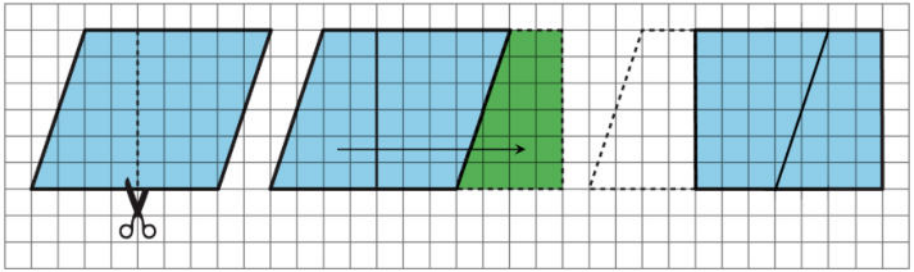
Elena and Tyler were finding the area of this parallelogram:



Here is how Elena did it:



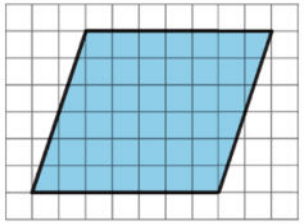
Here is how Tyler did it:



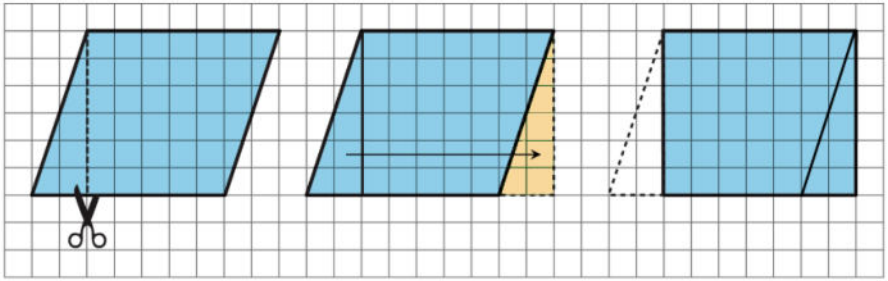
How are the two strategies for finding the area of a parallelogram the same? How they are different?

Think quietly for 2 minutes before we share with a partner.

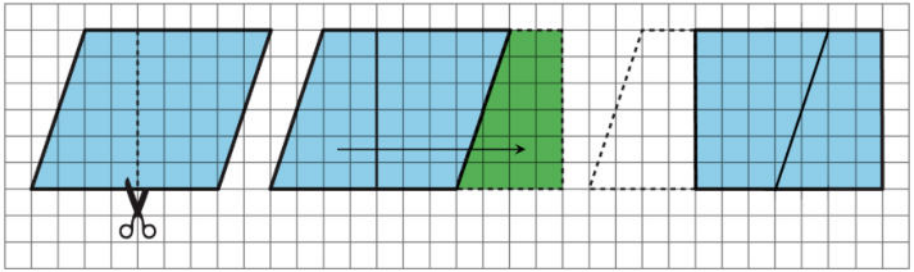
Elena and Tyler were finding the area of this parallelogram:



Here is how Elena did it:



Here is how Tyler did it:



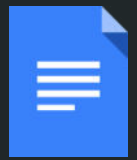
How are the two strategies for finding the area of a parallelogram the same? How they are different?

The two measurements that we see here have special names.

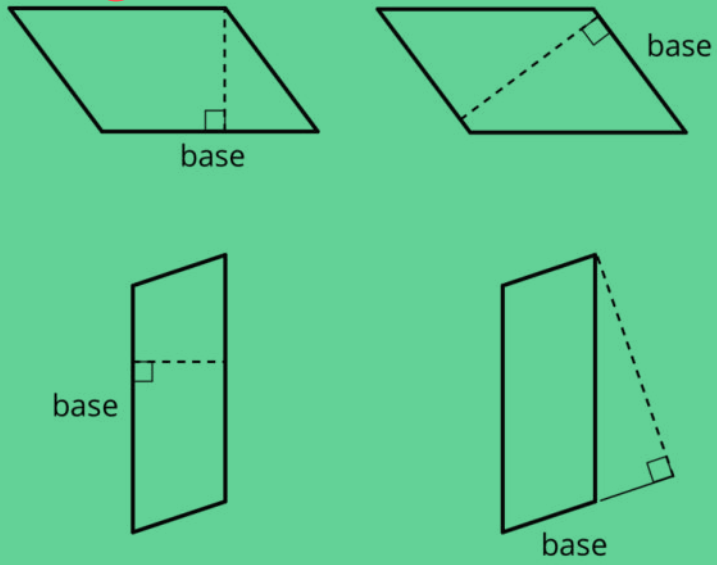
- The length of one side of the parallelogram—which is also the length of one side of the rectangle—is called a *base*.
- The length of the vertical cut segment—which is also the length of the vertical side of the rectangle—is called a *height* that corresponds to that base.

The Right Height?

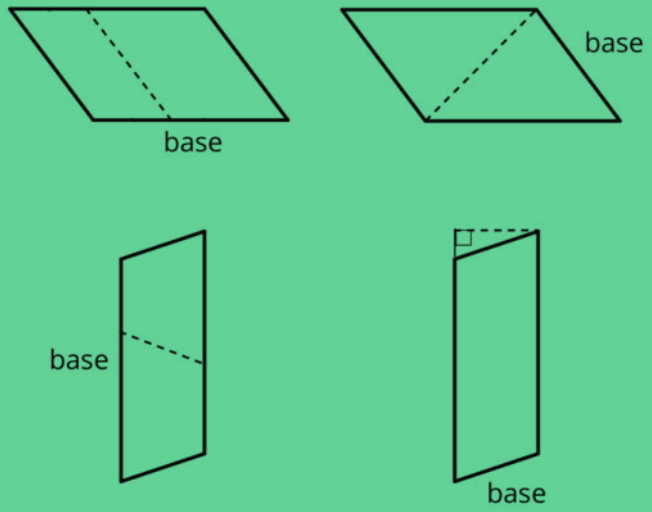
Activity 5.3



Examples of Bases & Heights !



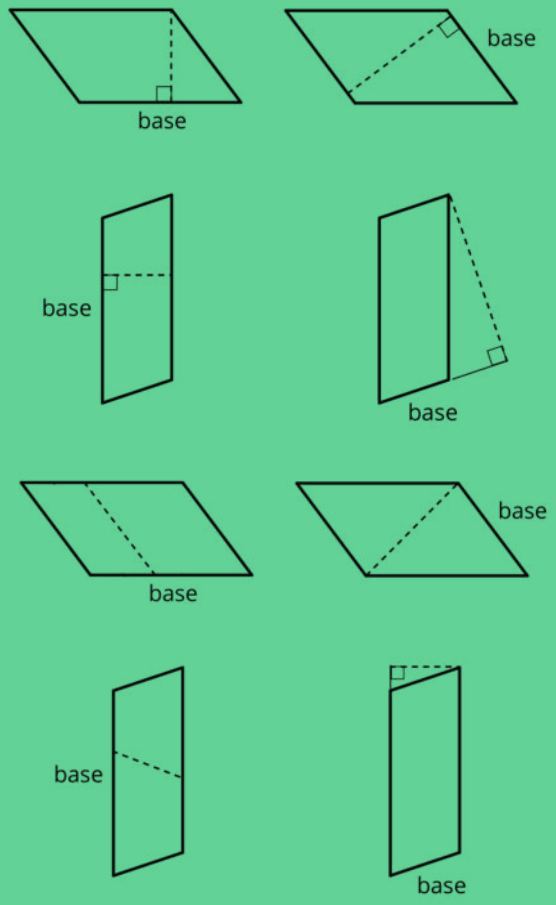
Non- Examples of Bases & Heights !



What Do You Notice?

What Do You Wonder?

Examples!



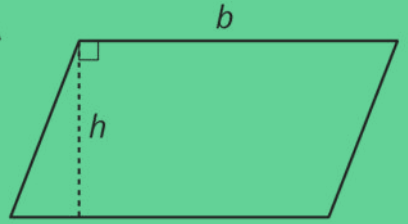
Non- Examples!

Select all statements that are true about bases and heights in a parallelogram.

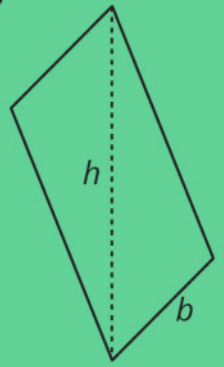
a. Only a horizontal side of a parallelogram can be a base.
b. Any side of a parallelogram can be a base.
c. A height can be drawn at any angle to the side chosen as the base.
d. A base and its corresponding height must be perpendicular to each other.
e. A height can only be drawn inside a parallelogram.
f. A height can be drawn outside of the parallelogram, as long as it is drawn at a 90-degree angle to the base.
g. A base cannot be extended to meet a height.

Are these labeled correctly?

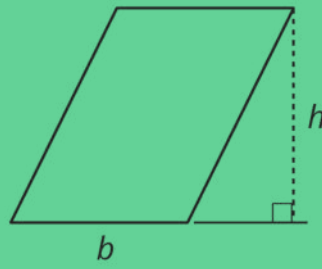
A



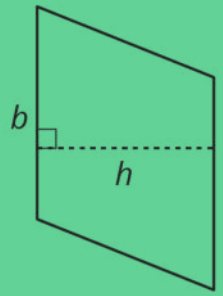
B



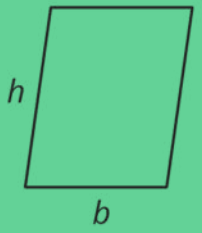
C



D



E

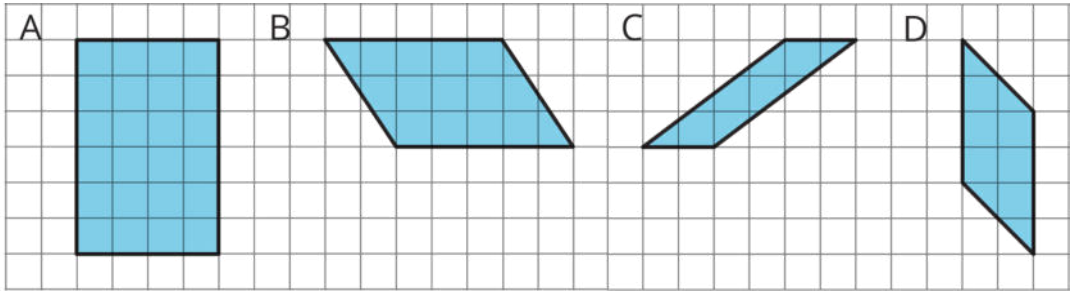


Finding the Formula For Area of Parallelograms

Activity 5.3

- Think Pair Share
- MLR 7: Compare & Connect

Finding the Formula for Area of A Parallelogram



parallelogram	base (units)	height (units)	area (sq units)
A			
B			
C			
D			
any parallelogram	b	h	

For each parallelogram:

- **Identify a base and a corresponding height, and record their lengths in the table that follows.**
- **Find the area and record it in the right-most column.**
- **In the last row, write an expression using b and h for the area of any parallelogram.**

base/height of a parallelogram

Any of the four sides of a parallelogram can be chosen as a base. The term *base* can also refer to the length of this side. Once we have chosen a base, then a perpendicular segment from a point on the base of a parallelogram to the opposite side will always have the same length. We call that value the height.

Lesson Synthesis

- How do you decide the base of a parallelogram?

- Once we have chosen a base can we identify a height that corresponds to it?

- In how many ways can we identify a base and a height for a given parallelogram?

- What is the relationship between the base and height of a parallelogram and its area?

Today's Goals

- I know what the terms "base" and "height" refer to in a parallelogram.
- I can write and explain the formula for the area of a parallelogram.
- I can identify pairs of base and height of a parallelogram.

Parallelograms S & T

Cool Down 5. 4