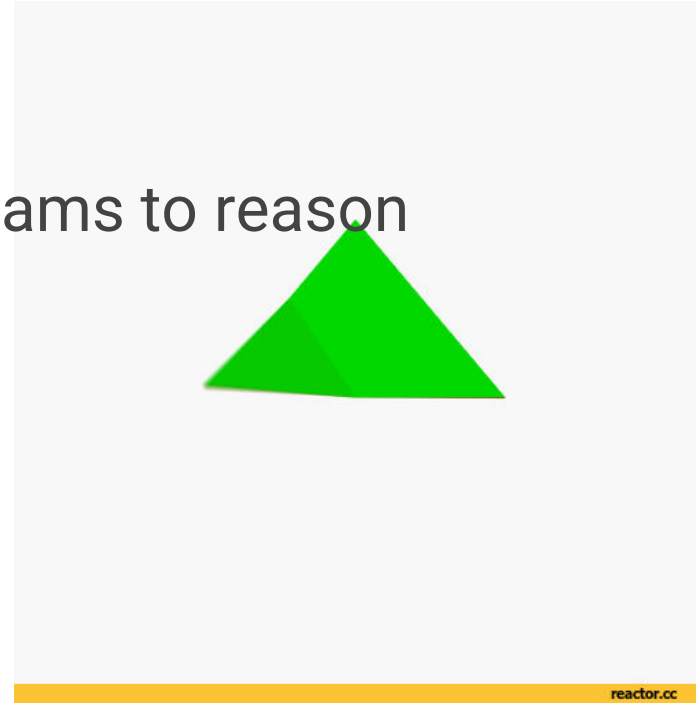
# Area of Triangles

Lesson # 8

Let’s use what we know about parallelograms to find the area of triangles.

# Today’s Goals

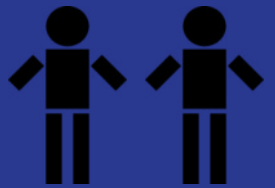
- ❏ I can use what I know about parallelograms to reason about the area of triangles.



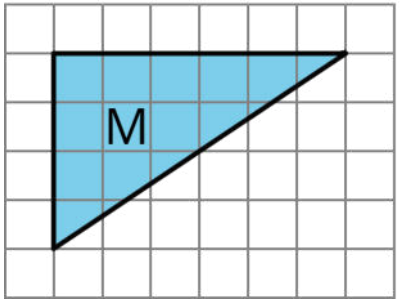
# Composing Parallelograms

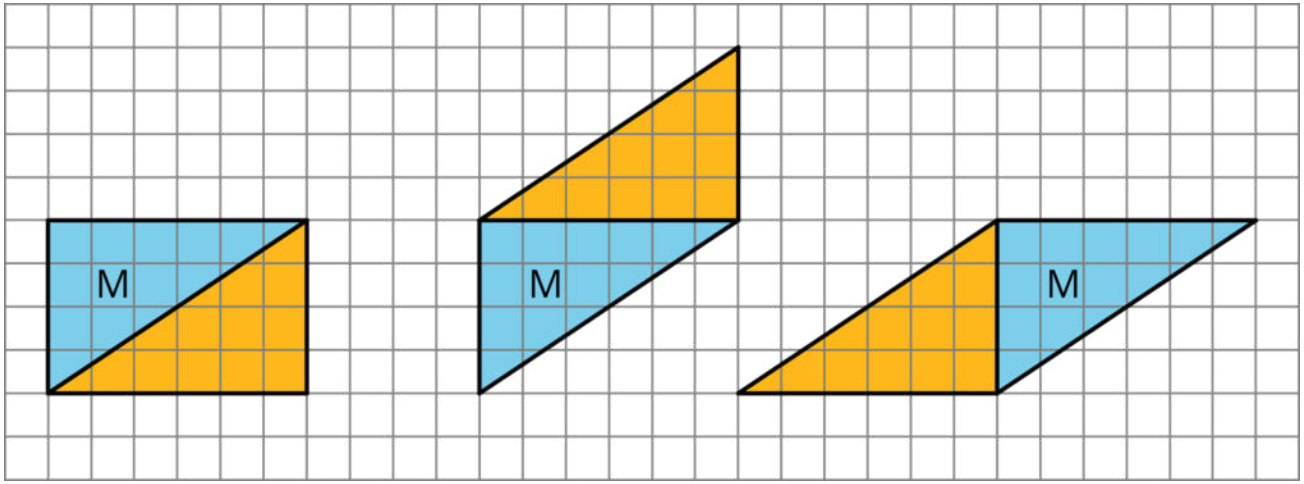
Warm Up 8.1

- Notice & Wonder
- Think Pair Share

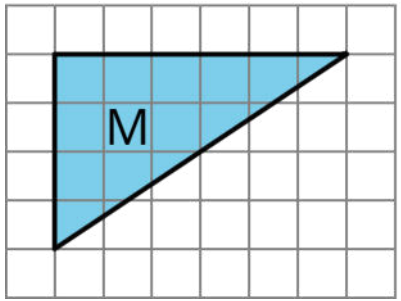


# What Do You Notice? What Do You Wonder?

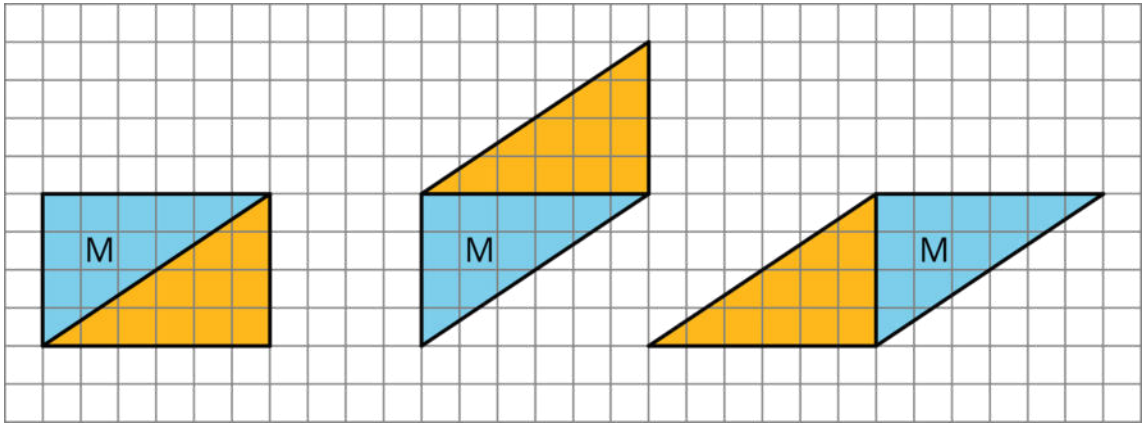


Here is Triangle M.




Han made a copy of Triangle M and composed three different parallelograms using the original M and the copy, as shown here.



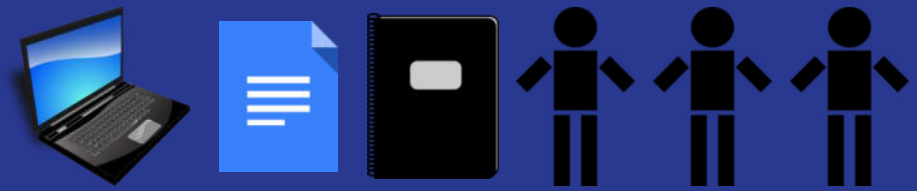

For each parallelogram Han composed, identify a base and a corresponding height, and write the measurements on the drawing.

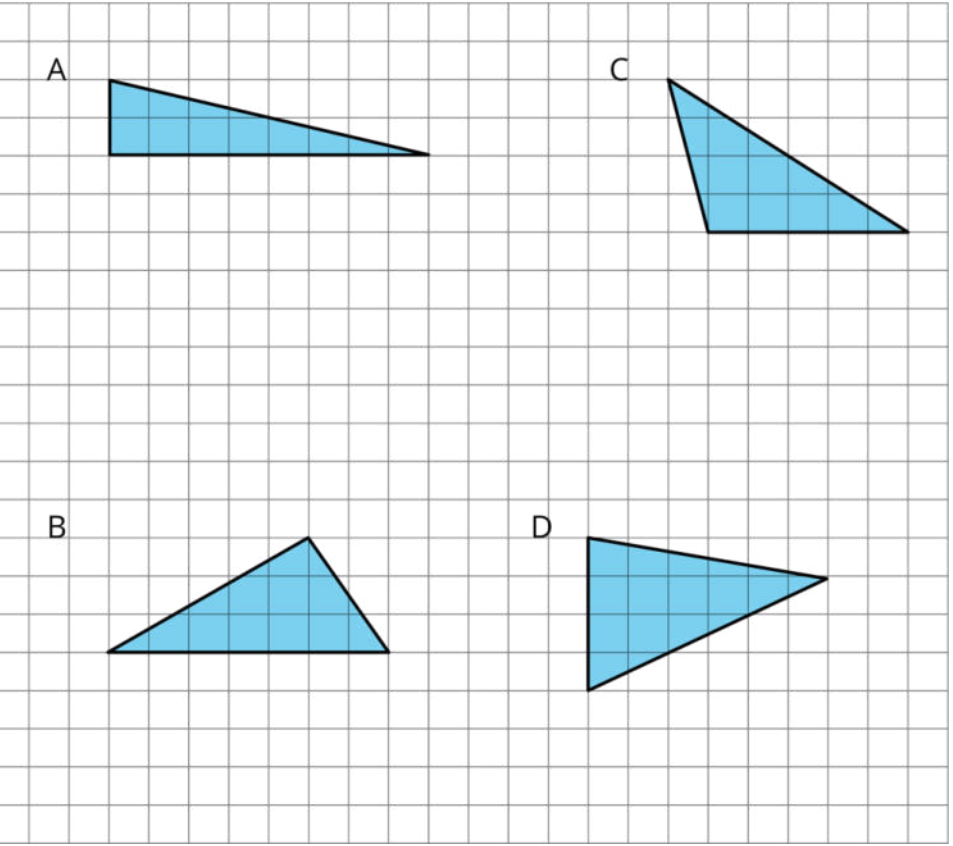
Find the area of each parallelogram Han composed. Show your reasoning.

# More Triangles

Activity 8.2

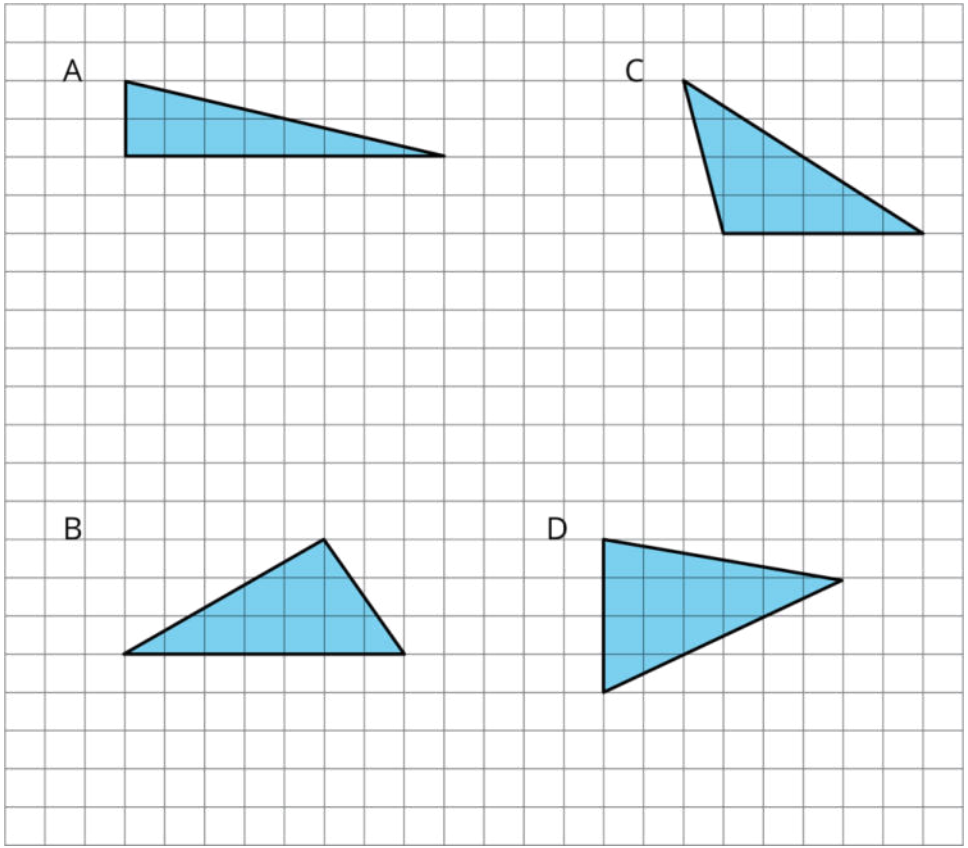
- Anticipate, Monitor, Select, Sequence, Connect






**Find the areas of at least two triangles. Explain or show your reasoning.**

# Let’s Share Our Work

# Decomposing a Parallelogram

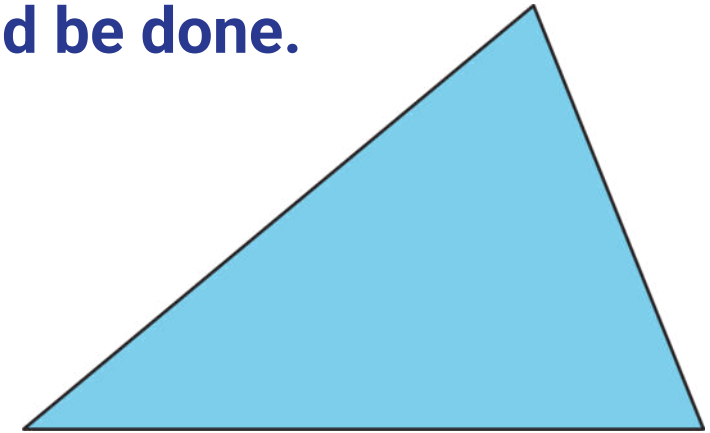
Optional Activity 8.3

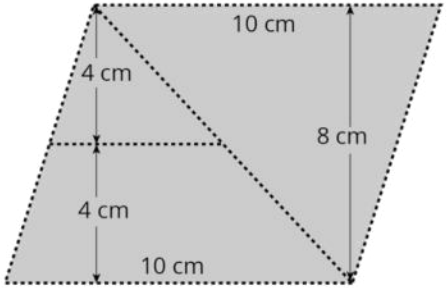
# Decomposing a Parallelogram

1. **Your teacher will give you two copies of a parallelogram. Glue or tape *one* copy of your parallelogram here and find its area. Show your reasoning.**
2. **Decompose the second copy of your parallelogram by cutting along the dotted lines. Take *only* the small triangle and the trapezoid, and rearrange these two pieces into a different parallelogram. Glue or tape the newly composed parallelogram on your paper.**
3. **Find the area of the new parallelogram you composed. Show your reasoning.**
4. **What do you notice about the relationship between the area of this new parallelogram and the original one?**
5. **How do you think the area of the large triangle compares to that of the new parallelogram: Is it larger, the same, or smaller? Why is that?**
6. **Glue or tape the remaining large triangle below. Use any part of the work above to help you find its area. Show your reasoning.**

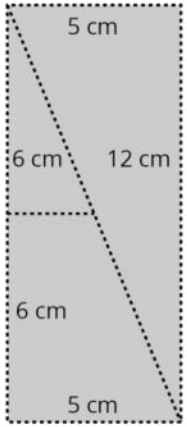
# Are you ready for more?

**Can you decompose this triangle and rearrange its parts to form a rectangle? Describe how it could be done.**

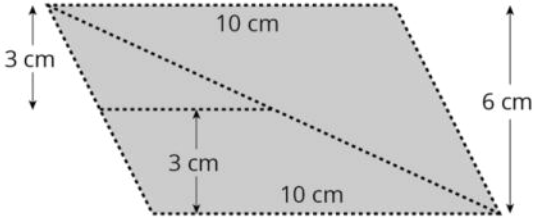




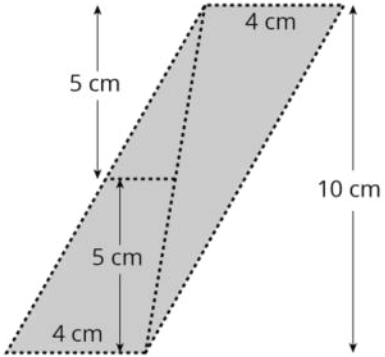

A




B




C




D

**How many possible parallelograms can be created from each set of trapezoid and triangle?**

**Do they all yield the same area? Why or why not?**

**How does the area of the new parallelogram relate to the area of the original parallelogram?**

**Can the area of the large triangle be determined? How?**

# Lesson Synthesis

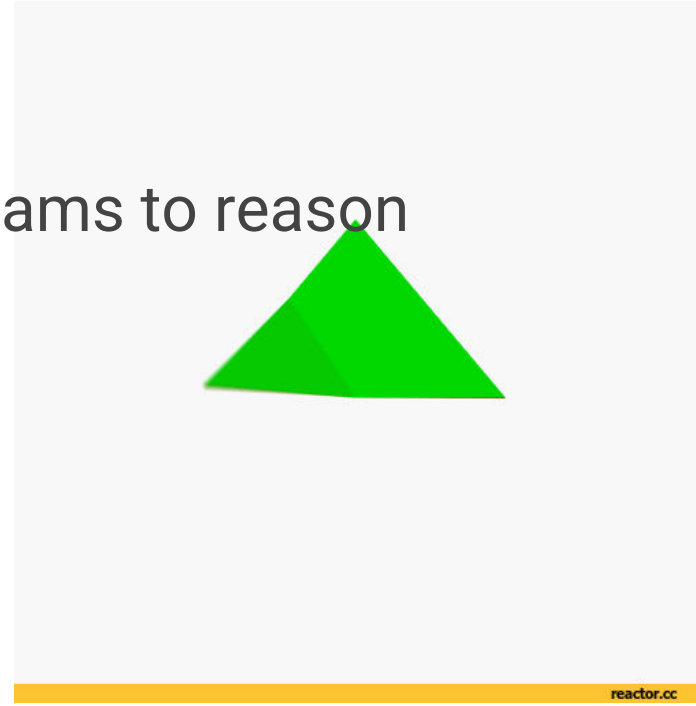
What can we say about the area of a triangle and that of a parallelogram with the same height?

In the 2nd Activity, we cut along a line that goes through the midpoints of two sides and rearranged the pieces into a parallelogram. What did we notice about the area and the height of the resulting parallelogram?

# How might we start finding the area of any triangle, in general?

# Today’s Goals

- ❏ I can use what I know about parallelograms to reason about the area of triangles.



# An Area of 14

Cool Down 8.4