Learning Targets for Today:

From what I already know, I will be able to:

- Evaluate the area of a rectangle and a parallelogram using the appropriate formulas.

From what I observe today, I will be able to:

- Describe a trapezoid.
- Figure out the formula to find the area of a trapezoid.
- Evaluate the area of a trapezoid if given the bases and the height of the figure.

1. Review Area-

- flat surface, two dimensional in quality, planar, relating to, or lying in a plane
- planar vs. linear vs. cubic (think Rubic's cube)
- show graph paper, length and width measured in square units
- inches squared, feet square. Area is always squared.

2. **Show shape -** Green Rectangle. Area is obtained by multiplying length times with width
3. **Show shape-** Orange Parallelogram. How is area obtained?
   - l xw? No
   - Show how we can figure out something we do not know from something we do know.
   - Show how we cut the right triangle off the parallelogram, move it over, and we form

(compose) a rectangle taking up the same area. Thus, the area of a parallelogram is base x height.

- Height is a very specific line-- the perpendicular distance between the bases-- must form a right angle. Another name is Altitude (airplane story).

4. **Handout-** parallelogram practice. Teacher walks around, check for understanding

.

5. **Story-time--**

Once upon a time in a shtetl in Poland was a very nice couple, Mr. & Mrs. Parallelogramstein - show 2 parallelograms. They had many children-- show little parallelograms. They then had another child- oh my! They didn't know until then, they both had recessive trait for a different shape. Their baby came out like this-- (take out a baby trapezoid)
What is difference? Ask leading questions- Still a quadrilateral? Parallelogram has two pairs of ?? sides. Does this shape? So we have a 4 sided, closed shape, with sides that are straight lines, but only one pair of parallel sides-- Hmmm.

Each base of a trapezoid must be perpendicular to the height. In the diagram above, both bases are sides of the trapezoid. However, since the lateral sides are not perpendicular to either of the bases, a dotted line is drawn to represent the height.

Mr. and Mrs. Parallelogramstein could have been very embarrassed but they were very religious and believed everything happens for a reason, only happens if Hashem wants it to happen, and every neshama is b'ztelem elokim. Gm zu l'tova! They named their baby- Yitzchak Trape

So little Yitzchak trape grew (each student takes out paper figures-- had an upsherin, wore, tzitzes, got bar mitzvahed (tefillin or a hat)). The only problem was when Yitzchak Trape went to the doctor for his well visit. The nurses always took the base and height of all patients to find their area. And would put the area on a chart as the little parallelograms grew to measure them against the population. But the nurses never knew how to find the area of poor little Yitzy Trape.

Then it was time for the chuppah. Oy vey! How could they find a shiddoch. They didn't think any one from the shtetl would want to go out with Yitzchak because he looked so different. But they had emuna peshuta- simple faith that Hashem created Yitzy's beshert even before his neshama came down from shomayim. And that every person is only half until he finds his beshert, his wife, and then together they are whole. This is a Jewish idea. Uh-oh!You're half!!!! Oh no!

Now the Rav of the shtetl was a great and kind man. He took a personal achrius- responsibility to find a shiddoch for Yitzchak trape. He sent word to towns all over Europe,

South Africa, before 1948 Palestine, North Africa asking if there was a shiddoch. Finally, he heard from a Rav in France, that he had heard that in the Gateshead community in England, there was a family Parallelogramberg that almost 20 years ago (Shhh!) had a daughter that did not look like the rest of the kehilla.

And so, after the family's were investigated, the shiddoch was redt, the Parallelogramsteins made the long journey by wagon to England, where Yitzchak Trape met the daughter, Rivka Zoid.

First date- similar, even more than similar, they were like two peas in a pod, absolutely the same, congruent in their thinking.
Show congruent- same shape and size, same length sides, same angles.
Not sure- parents said go out again. Give it a chance.
Second date- He flipped over her. (liked her a lot) When he flipped he flipped a full 180*. He rotated. Say rotated.
But still not sure if they should get engaged. After all, were they really each other's beshert, two halves of a whole??

They went out a 3rd time, talked and talked, SOMETIMES IN HEBREW, SOMETIMES IN YIDDISH, and WHEN THEY TRANSLATED THEY found they were aligned in all their ideas, until,

Oh my goodness. They realized that when they were together, they formed (composed) something remarkably different than what they were alone- And together they looked like everyone else in the shtetls- they looked like their parents, their friends, like all the people in parallelogramville. 2 HALVES OF A WHOLE- BESHERT!!!!
The base of the new shape was a combination of one base from each of them- base 1 + base 2. And the height was just like their parents- the perpendicular distance between the parallel bases.

So the children went home, and shared their intentions for marriage with their respective parents, and a l'chaim and mazel tov were had with the entire communities announcing the engagement of Yitzchak Trape to Rivka Zoid, who would be known as Yitcak and Rivka Trapezoid.

Now, one of the first things Yitchak and Rivka Trapezoid did, after sheva brachot, was make their way to their pediatrician's office to share with them a great discovery. They told the nurses, that they had figured out how to measure the area of each of them, that is of each trapezoid, because each is 1/2 of a whole parallelogram.

Parallelogram is base x height, each occupies 1/2. The trickiest thing is realizing how to figure out the measurement of the base of the new parallelogram. Base 1 + base 2.

They lived happily ever after. Btw, and their first baby looked like this--parallelogram- both had recessive traits for this shape.

Exercises

- Use their own shapes- trapezoids.
- HOLD IN AIR-
- SHOW ME CONGRUENT.
- ROTATE 1 - 180*,
- TRANSLATE, SHOW // OGRAM,
- SHOW THAT BASE OF PARALLEOGRAM IS THE SUM OF TWO BASES
- SHOW THAT EACH TRAP OCCUPIES 1/2 TOTAL AREA OF PARALLELOGRM

AREA OF // = base x height = (BASE 1 + BASE 2) X HEIGHT

Area of TRAP= 1/2 (BASE 1 + BASE 2) x Height

- Video
- Practice sheet, do two to make sure they have it. Pencils down.
- Exit ticket-
- Trapezoid wkst is HW