Good morning:

Write each statement. Then rate each as true or false and explain your thinking.

1. Squares are never rectangles.

   false; never → always

2. A rectangle cannot be a rhombus.

   false; Square

3. A rhombus can be a square.

   true;

4. A square is always a rectangle.

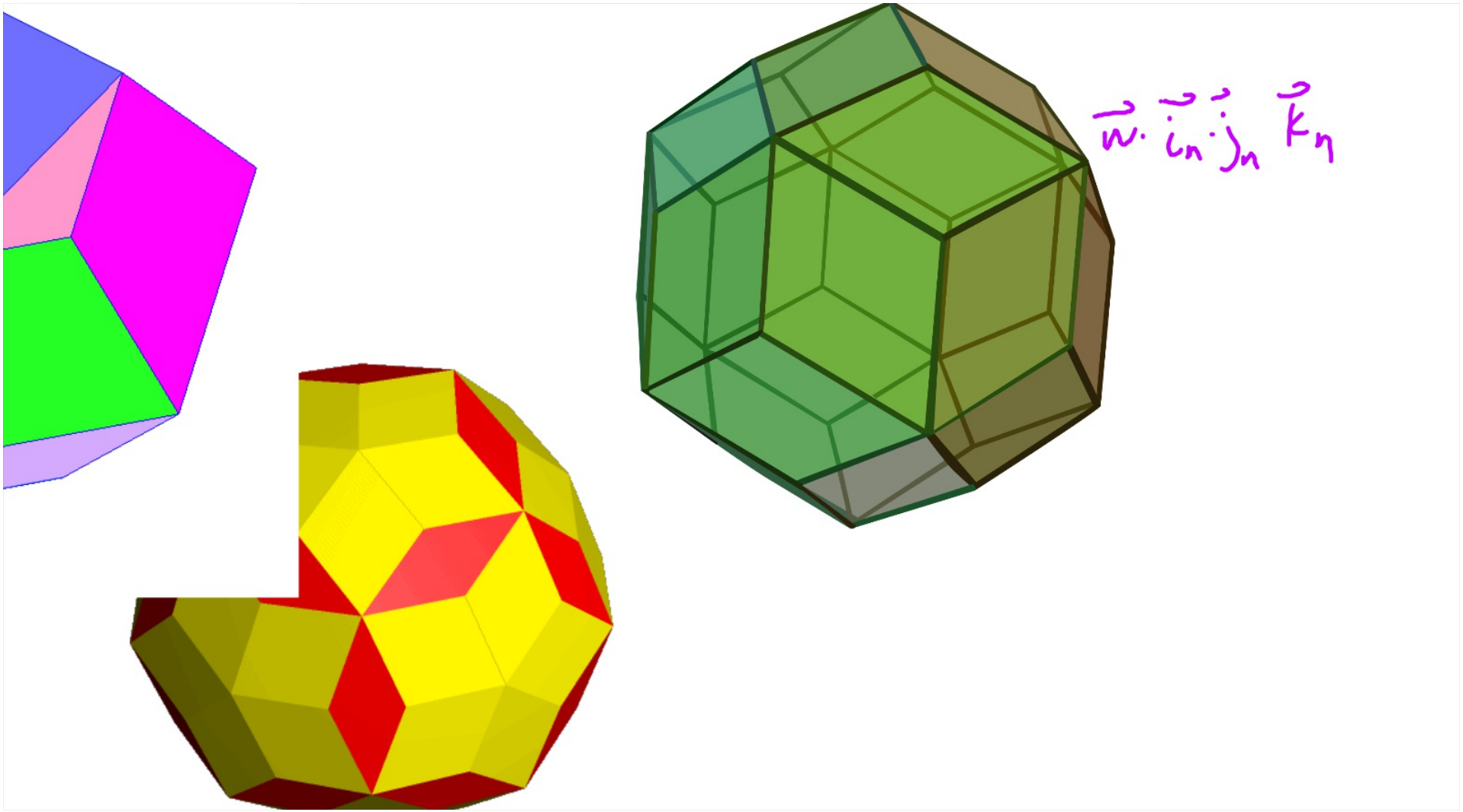
   true

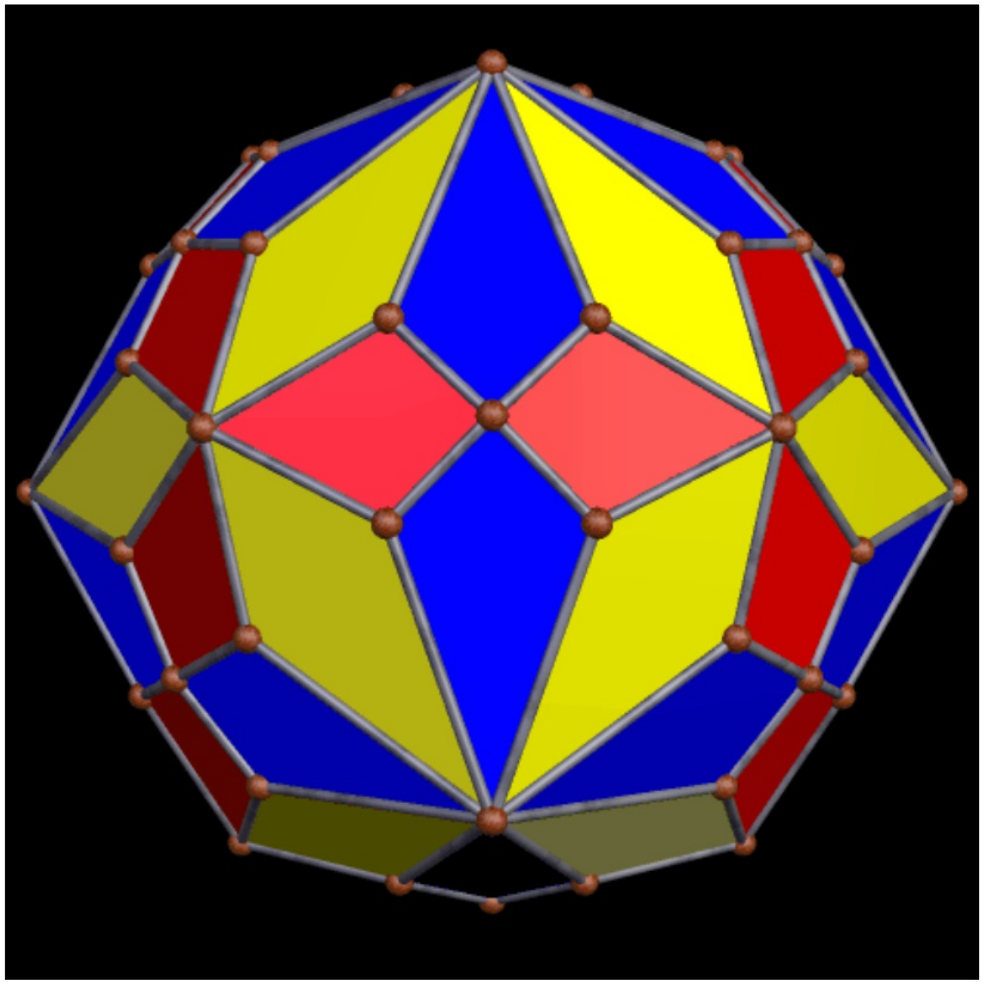
Assessments are being passed back

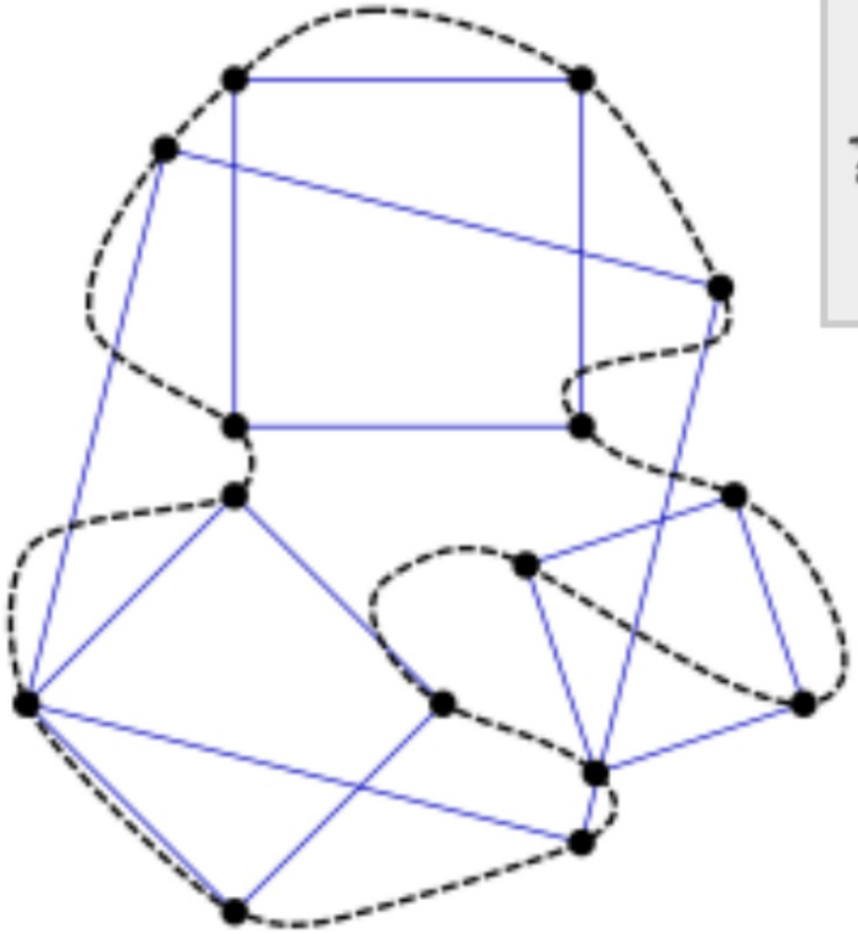
Look over them with your table partners
Ask and answer questions
Make corrections if needed (use color)

What questions do you still have about the material on the assessment?

Tell your table, then each table
will share a question (have several ready to share).


$\vec{w}, \vec{i}_n, \vec{j}_n, \vec{k}_n$





Unsolved problem in mathematics:

? *Does every Jordan curve have an inscribed square?*

(more unsolved problems in mathematics)

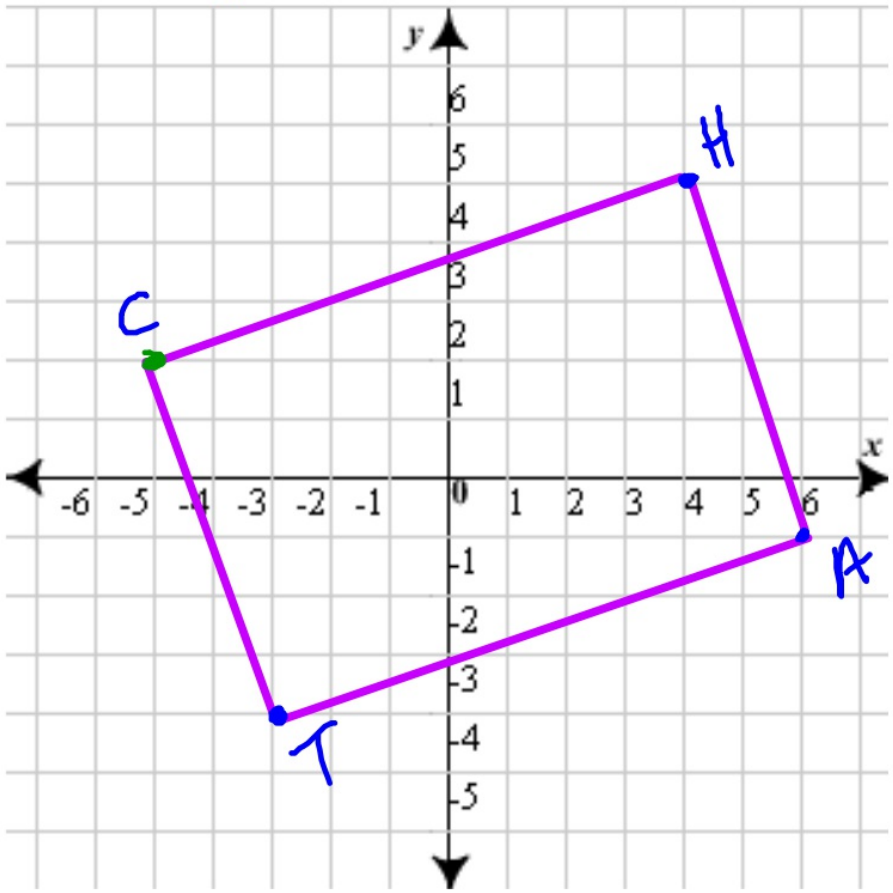
Jordan curve: plane simple closed curve

proven for rectangles!
not yet for squares...

Cartesian Quadrilateral

The following 3 points are vertices of a rectangle.
Find the 4th vertex's coordinates.

(4,5)
(-3,-4)
(6,-1)



How to find the area of a coordinate plane figure

① Draw the circumscribed rectangle

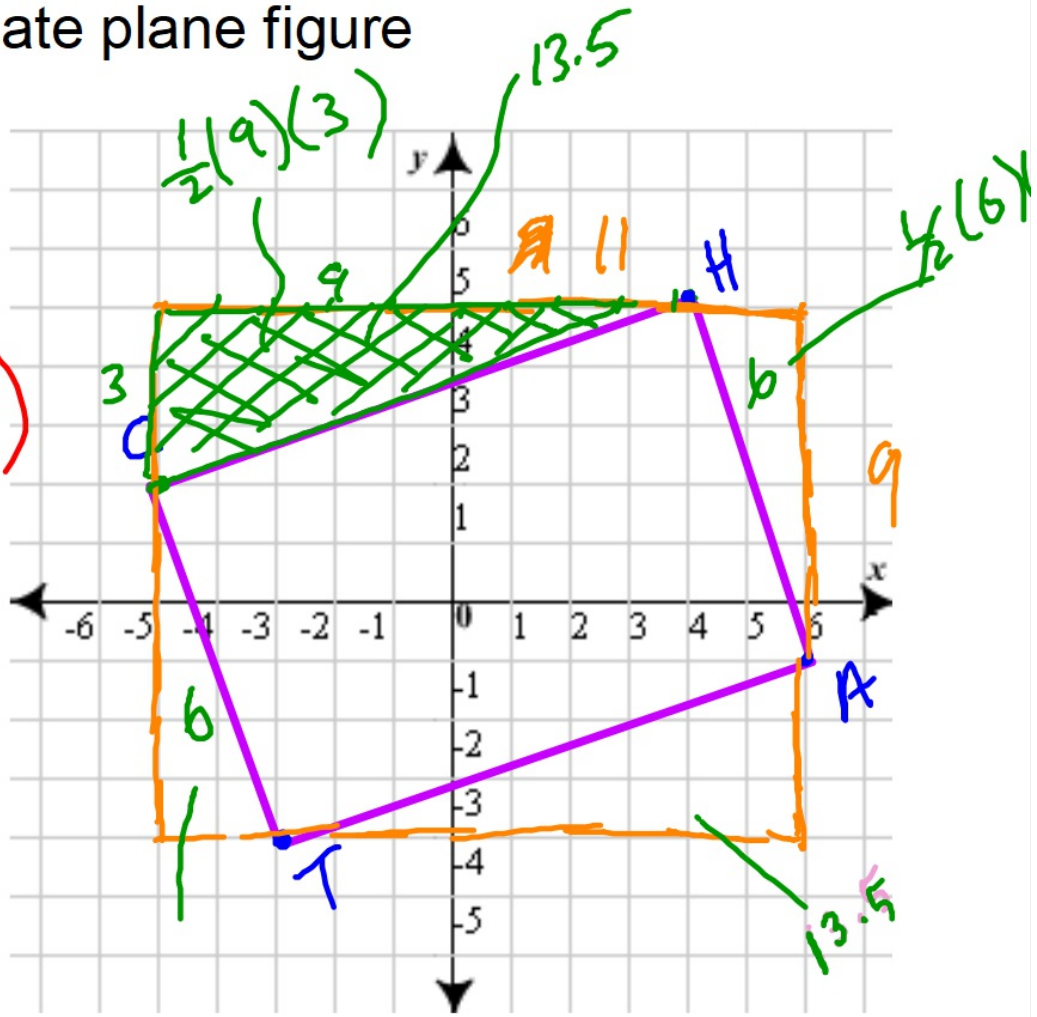
② Find area of it. (99)

③ Find areas of neg. space.

④ Subtract

$99 - 13.5 - 13.5 - 6 - 6$

$= 60\ u^2$



Proving a Coordinate Quadrilateral is a....

Parallelogram:

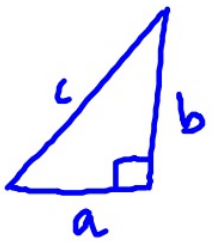
Show that the diagonals' midpoints are the same

$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

Rectangle:

Show that diagonals have the same length & same midpoint

$$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2} \quad \text{or.} \quad a^2+b^2=c^2$$



Rhombus: $= \sqrt{(\Delta x)^2+(\Delta y)^2}$

Show that diagonals have perpendicular slopes & same midpoint

$$m = \frac{\Delta y}{\Delta x} = \frac{y_2-y_1}{x_2-x_1} \qquad \text{opp. reciprocals} \quad \frac{a}{b} \perp -\frac{b}{a}$$

Square:

Show that the diagonals have the same midpoint, length, and perpendicular slope

(all of the above)

Model Problem

Find the most specific name for the shape formed by

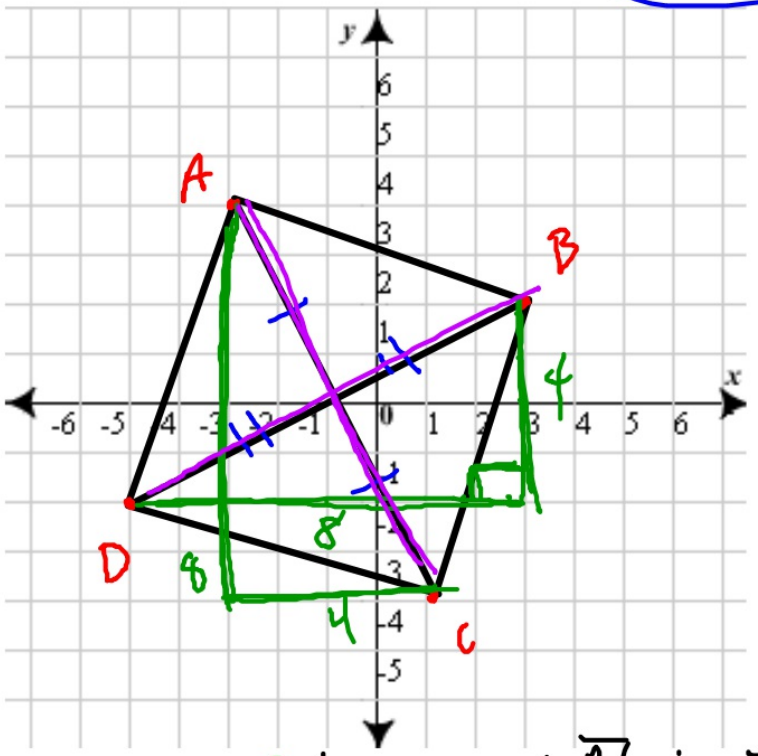
Square

A(-3,4)

B(3,2)

C(1,-4)

D(-5,-2)



$\overline{AC}: \left(\frac{-3+1}{2}, \frac{4+4}{2}\right)$

$(-1, 0) \Rightarrow$ P.g.

$\overline{BD}: (-1, 0)$

Midpoint $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

Length of $\overline{AC}$ & $\overline{BD}$

$\overline{BD}: 8^2+4^2=c^2$

$64+16=c^2$

$80=c^2$

$\sqrt{80}=c$

$\overline{AC} = 8^2+4^2=c^2$

$\Rightarrow$ rectangle

Slope of $\overline{AC}$: $\frac{-8}{4} = \frac{-2}{1}$

of $\overline{BD}$: $\frac{-4}{-8} = \frac{1}{2}$

$\perp$

$\Rightarrow$ rhombus

HW
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