

End of Module 5 Assessment Study Guide (Lessons 1 – 28)

Item 1: Hierarchy of Quadrilaterals based on Properties.

The lessons in this topic presented each of the quadrilaterals shown to the right. **Knowing the hierarchy is important** because the shapes are classified based on their properties. Properties are features that must be true and the further you look down the hierarchy the shapes become more specific. **A shape can always be classified by its properties AND by the properties of the shape ABOVE it.** For example, look at the square at the bottom of the hierarchy – a square may also be classified most specifically as a square, but it may also be classified as a rectangle, a rhombus, a kite, a parallelogram, a trapezoid and a quadrilateral! On the other hand, a trapezoid can only be classified as a trapezoid or as a quadrilateral.

You should know the properties of each quadrilateral in the hierarchy:

Quadrilaterals: 4-sided polygons with interior angles that sum to 360 degrees.

Trapezoids: have at least 1 pair of parallel sides. Have at least 2 pairs of supplementary angles.

Parallelograms: Opposite sides are parallel. Opposite sides have the same length.

Opposite angles have the same measure. Diagonals intersect at midpoint.

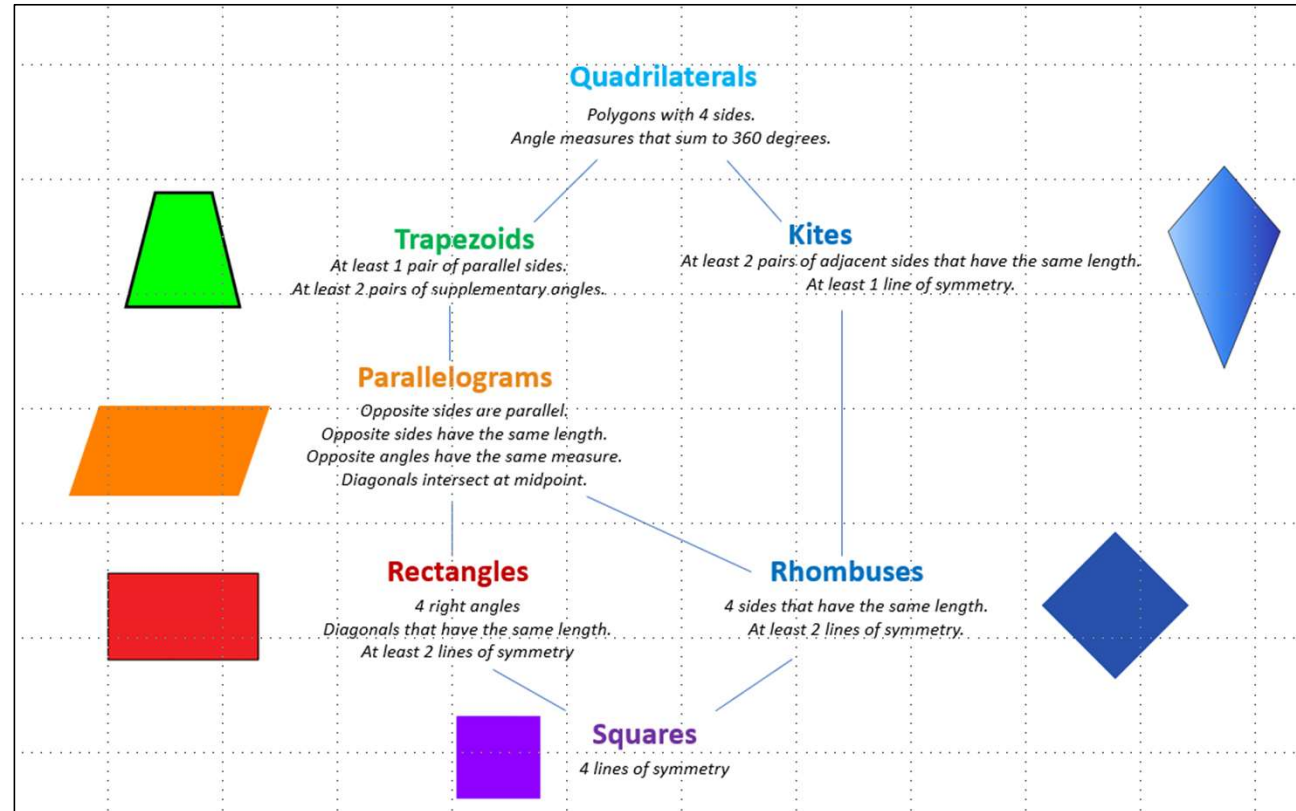
Rectangles: 4 right angles. Diagonals that have the same length. At least 2 lines of symmetry.

Kites: At least 2 pairs of adjacent sides that have the same length. At least 1 line of symmetry.

Rhombuses: 4 sides that have the same length. At least 2 lines of symmetry.

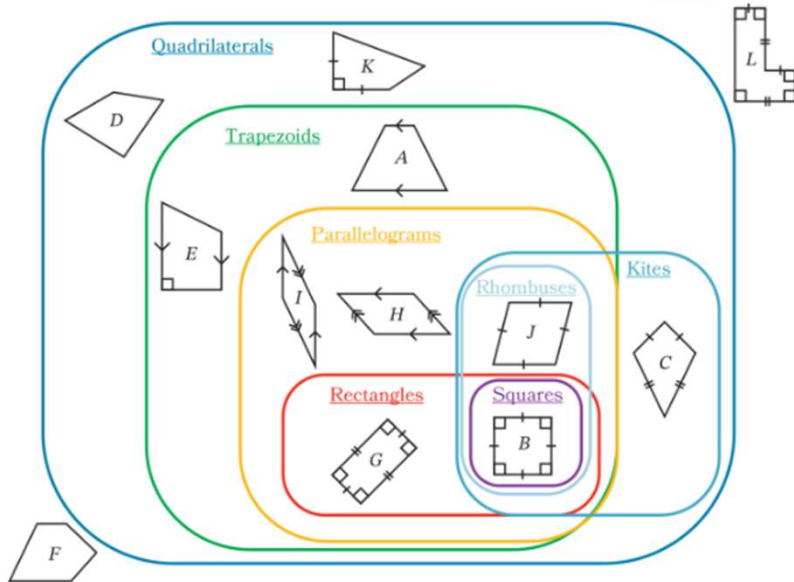
Square: 4 lines of symmetry. And all the properties of everything above it!

REVIEW THIS HIERARCHY!



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Item 1: Describe relationships between quadrilaterals.



REVIEW THIS VENN DIAGRAM!

Polygon	A	B	C	D	E	F	G	H	I	J	K	L
Quadrilateral	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗
Trapezoid	✓	✓			✓		✓	✓	✓	✓		
Parallelogram		✓					✓	✓	✓	✓		
Rectangle		✓					✓					
Rhombus		✓									✓	
Square		✓										
Kite		✓	✓									

You will be allowed to reference the Venn Diagram above for this question. It will be a series of statements based on the relationships of properties. Here are some examples of statements that describe relationships:

- All rectangles are trapezoids.
- Some rhombuses are rectangles.
- Some kites are trapezoids.
- All rectangles are parallelograms.
- Some kites are parallelograms.
- All squares are trapezoids.

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There will be **9 questions** on this assessment. Be able to solve each of the problem-types below. This assessment covers all of Module 5 material. Using prior study guides is also a recommended way to prepare for this assessment.

Item 2: Multiply Mixed Numbers

8 feet

Area: $L \times W$
 $12 \frac{3}{4} \times 8$
102 feet²

12 $\frac{3}{4}$ feet

8 feet

Area: $L \times W$
 $10 \frac{1}{2} \times 8$
84 feet²

10 $\frac{1}{2}$ feet

$$12 \frac{3}{4} \times 8$$

$$12 \frac{3}{4} \text{ becomes } 51/4$$

$$51/4 \times 8$$

$$408/4$$

$$102$$

$$10 \frac{1}{2} \times 8$$

$$10 \frac{1}{2} \text{ becomes } 21/2$$

$$21/2 \times 8$$

$$168/2$$

$$84$$

Item 3: Volume of Right Rectangular Prisms

$$V = L \times W \times H$$

$$V = 14 \times 6 \times 3$$

$$V = 84 \times 3$$

$$V = 252$$

We could have used any of these expressions to solve for this prism's volume:

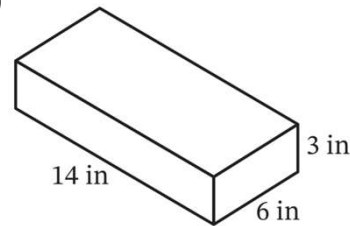
$$V = 14 \times 6 \times 3$$

$$V = (14 \times 6) \times 3$$

$$V = 14 \times (6 \times 3)$$

$$V = 6 \times 3 \times 14$$

$$V = 6 \times 14 \times 3$$



Item 4: Area = Length x Width

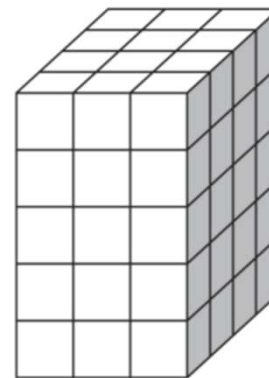
$A = L \times W$
 $A = 5 \frac{1}{2} \times 8$
 $A = 88/2$
 $A = 44 \text{ square feet}$

TOTAL SQUARE FEET

$A = 44 + 50 = 94 \text{ square feet}$

$A = L \times W$
 $A = 6 \frac{1}{4} \times 8$
 $A = 25/4 \times 8$
 $A = 50 \text{ square feet}$

Item 5: Volume = Length x Width x Height



$$V = B \times H$$

$$\text{Base} = L \times W$$

$$\text{Base} = 3 \times 4$$

$$V = 12 \times 5$$

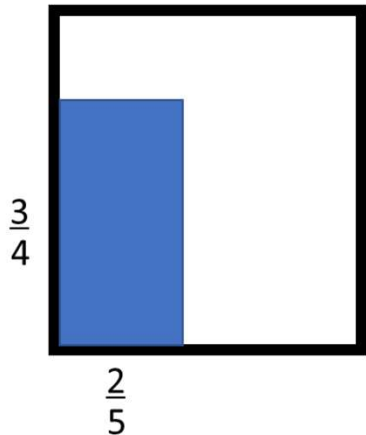
$$V = 60 \text{ cubic units}$$

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Item 6: Tiling Area

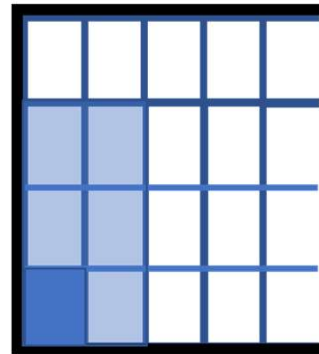
Throughout Topic B we learned that when we measure for area, **we fill up the space inside the shape with smaller squares**, called tiles. The idea is to find out how many square tiles cover the shape without gaps or overlaps.



The blue rectangle has a length of $\frac{3}{4}$ feet and a width of $\frac{2}{5}$ feet.

The **TOTAL AREA** of the blue rectangle is simply Length x Width, or $\frac{3}{4} \times \frac{2}{5} = \frac{6}{20}$ feet square.

ONE UNIT SQUARE would be $\frac{4}{4} \times \frac{5}{5} = \frac{20}{20}$ square feet.



Area of **1 rectangle** tile:

$\frac{1}{20}$ square unit

$$\frac{1}{4} \times \frac{1}{5} = \frac{1}{20}$$

Items 7: Multiply Mixed Numbers (Area = L x W)

$$\begin{array}{r}
 6 \frac{4}{5} \quad \times \quad 2 \frac{1}{3} \\
 (6 \times 2) \quad + \quad (6 \times \frac{1}{3}) \quad + \quad (\frac{4}{5} \times 2) \quad + \quad (\frac{4}{5} \times \frac{1}{3}) \\
 \mathbf{12} \quad + \quad \mathbf{6/3} \quad + \quad \mathbf{8/5} \quad + \quad \mathbf{4/15} \\
 12 \quad + \quad 2 \quad + \quad 24/15 \quad + \quad 4/15 \\
 \quad \quad 14 \quad + \quad \quad \quad 28/15 \\
 \quad \quad 14 \quad + \quad \quad \quad \mathbf{1 \frac{13}{15}} \\
 \quad \quad \quad \mathbf{15 \frac{13}{15}}
 \end{array}$$

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Item 8: Area of Composite Figures

Figure	Expression
	$(8\frac{1}{2} \times 3) + (5 \times 4\frac{1}{2})$
	$8 \times 8\frac{1}{2} - (5 \times 4)$
	$(4\frac{1}{2} \times 8) + (4 \times 3)$

Item 9: Find the Missing Dimension

The volume is 100 cubic feet.
 Its length measures 4 feet.
 Its width measures 5 feet.
 What is the height of the prism?

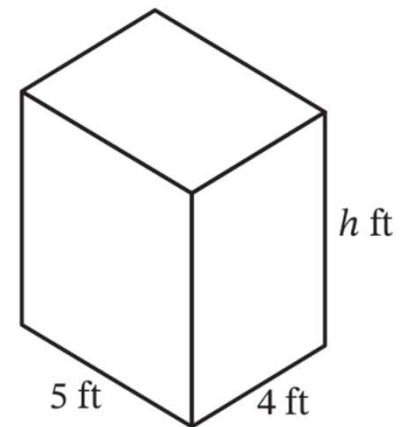
$$V = L \times W \times H$$

$$100 = 4 \times 5 \times H$$

$$100 = 20 \times H$$

$$100 / 20 = H$$

$$5 \text{ feet} = H$$



The volume is 100 cubic feet.