

Activity 30 – Key Concepts

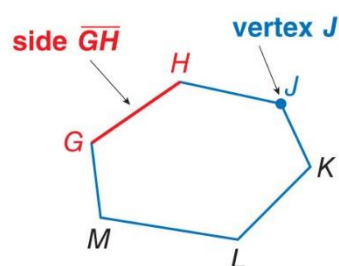
KeyConcept Polygons

A **polygon** is a closed figure formed by a finite number of coplanar segments called *sides* such that

- the sides that have a common endpoint are noncollinear, and
- each side intersects exactly two other sides, but only at their endpoints.

The vertex of each angle is a **vertex of the polygon**.

A polygon is named by the letters of its vertices, written in order of consecutive vertices.



pentagon GHJKLM

KeyConcept Perimeter, Circumference, and Area

Triangle	Square	Rectangle	Circle
$P = b + c + d$	$P = s + s + s + s$ $= 4s$	$P = l + w + l + w$ $= 2l + 2w$	$C = 2\pi r$ or $C = \pi d$
$A = \frac{1}{2}bh$	$A = s^2$	$A = lw$	$A = \pi r^2$
P = perimeter of polygon b = base, h = height	A = area of figure l = length, w = width		C = circumference r = radius, d = diameter

Postulate 11.1 Area Addition Postulate

The area of a region is the sum of the areas of its nonoverlapping parts.

Postulate 11.2 Area Congruence Postulate

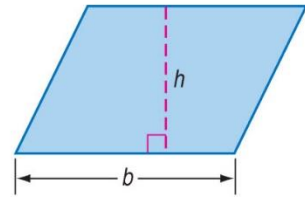
If two figures are congruent, then they have the same area.

Activity 30 – Key Concepts

KeyConcept Area of a Parallelogram

Words The area A of a parallelogram is the product of a base b and its corresponding height h .

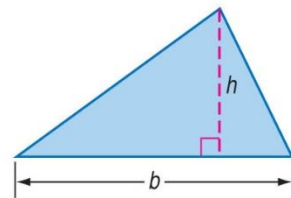
Symbols $A = bh$



KeyConcept Area of a Triangle

Words The area A of a triangle is one half the product of a base b and its corresponding height h .

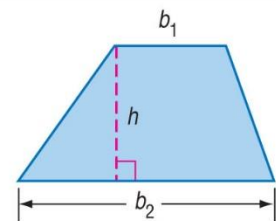
Symbols $A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$



KeyConcept Area of a Trapezoid

Words The area A of a trapezoid is one half the product of the height h and the sum of its bases, b_1 and b_2 .

Symbols $A = \frac{1}{2}h(b_1 + b_2)$

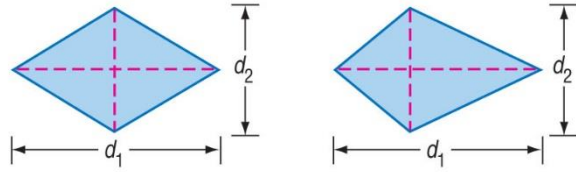


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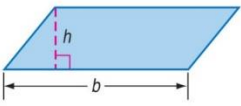
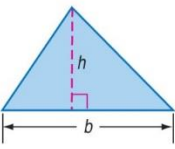
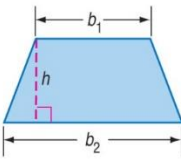
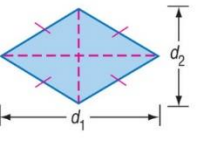
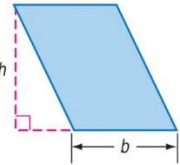
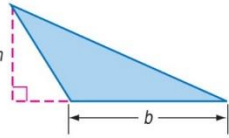
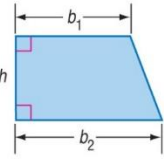
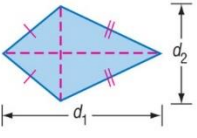
KeyConcept Area of a Rhombus or Kite

Words The area A of a rhombus or kite is one half the product of the lengths of its diagonals, d_1 and d_2 .

Symbols $A = \frac{1}{2}d_1d_2$



ConceptSummary Areas of Polygons

Parallelogram	Triangles	Trapezoids	Rhombi and Kites
			
 $A = bh$	 $A = \frac{1}{2}bh$	 $A = \frac{1}{2}h(b_1 + b_2)$	 $A = \frac{1}{2}d_1d_2$

Theorem 11.1 Areas of Similar Polygons

Words If two polygons are similar, then their areas are proportional to the square of the scale factor between them.

Example If $ABCD \sim FGHI$, then

$$\frac{\text{area of } FGHI}{\text{area of } ABCD} = \left(\frac{FG}{AB}\right)^2$$

