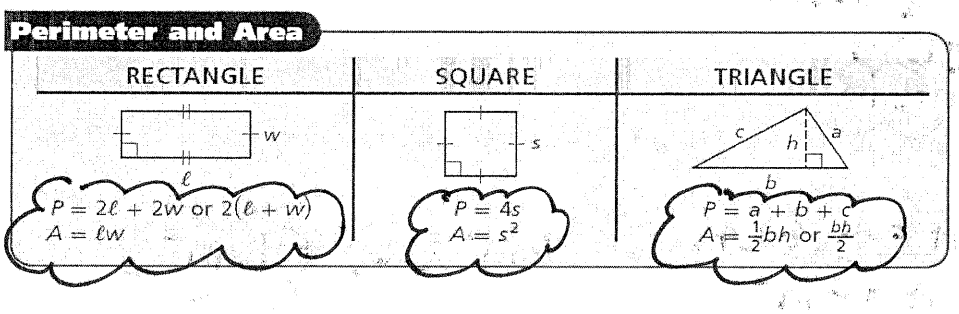
Honors Geometry
Notes - Section 1.5 Using Formulas in Geometry

Name KEY
Date _____ Period _____

Key terms:

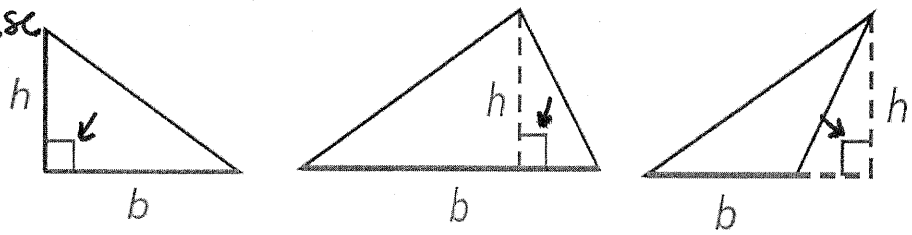
1. ***Perimeter*** (P) of a plane figure is the sum of the side lengths of the figure. (outside)

2. ***Area*** (A) of a plane figure is the number of non-overlapping square units of a given size that exactly cover the figure. (inside) 1×1



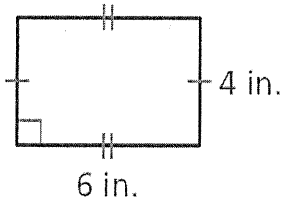
- The **base** ***(b)*** can be any side of a triangle. The **height** ***(h)*** is a segment from a vertex that forms a right angle with a line containing the base. The height may be a side of the triangle or in the interior or the exterior of the triangle.

height & base meet at a 90° angle!



- Perimeter is expressed in linear units, such as inches (in.) or meters (m). Area is expressed in square units, such as square centimeters (cm^2).

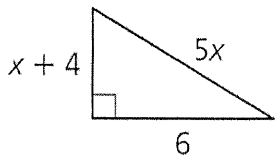
Example 1: Find the perimeter and area of the figure below.



$P = 2(6) + 2(4)$
$P = 12 + 8$
$P = 20$ in

$A = (4)(6)$
$A = 24\ in^2$

Example 2: Find the perimeter and area of the figure below.



$P = (x+4) + 5x + 6$
$P = (6x + 10)$ units

Example 3: Find the area of a rectangle with perimeter $P = 28\ cm$ and $l = 4\ cm$.

$P = 2l + 2w$
$28 = 2(4) + 2w$
$28 = 8 + 2w$
$20 = 2w$
$w = 10\ cm$

$A = (4)(10)$
$A = 40\ cm^2$

Example 4: Find the perimeter of a square with area A = 144 square feet.

$A = s^2$
$144 = s^2$
$s = 12\ ft$

$P = 4(12)$
$P = 48\ ft$

Example 5: What is the height of a triangle with area, $A = 45\ square\ inches$ and $b = 15\ in$?

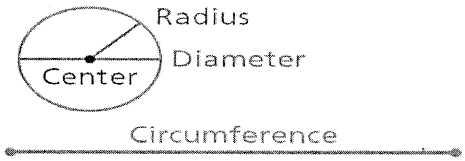
$45 = \frac{1}{2}(15)h$
$90 = 15h$
$h = 6\ in$

Example 6: The Queens Quilt block includes 12 blue triangles. The base and height of each triangle are about 4 in. Find the approximate amount of fabric used to make the 12 triangles.

$A = \frac{1}{2}(4)(4)$
$A = 8\ in^2$

$(8\ in^2)(12) = 96\ in^2$

- In a circle a **diameter** is a segment that passes through the center of the circle and whose endpoints are on a circle. A **radius** of a circle is a segment whose endpoints are the center of the circle and a point on the circle. The **circumference** of a circle is the distance around the circle.



Calculator Key!

Circumference and Area of a Circle

The circumference C of a circle is given by the formula $C = \pi d$ or $C = 2\pi r$.
The area A of a circle is given by the formula $A = \pi r^2$.

Example 7: Find the circumference and area of a circle with radius 8 cm. Use the π key on your calculator. Then round the answer to the nearest tenth.

$C = 2\pi(8)$
$C = 16\pi \approx 50.3\ cm$

$A = \pi(8)^2$
$A = 64\pi \approx 201.1\ cm^2$

Example 8: Find the diameter of a circle with circumference, $C = 10\pi\ cm$.

$C = \pi d$
$10\pi = \pi d$
$d = 10\ cm$

Example 9: Find the circumference of a circle with area, $A = 121\pi\ cm^2$.

$A = \pi r^2$
$121\pi = \pi r^2$
$r = 11$

$C = 2\pi(11)$
$C = 22\pi \approx 69.1\ cm$