

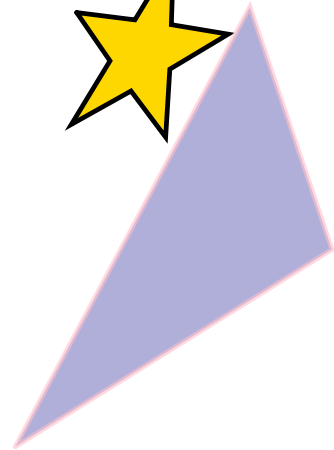
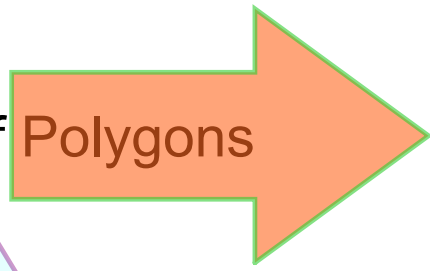
AGENDA - Unit 9 -3

Perimeter and Area of Polygons

- Go over HW 9.2
- Notes 9.3

HW - 9.3

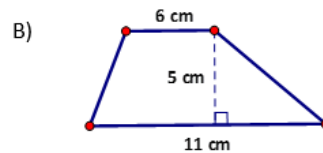
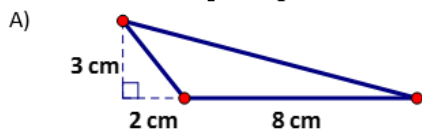
- Quiz - (YES) - Next Class
- Worksheet 9.3
- CR #8 - Due 4/7



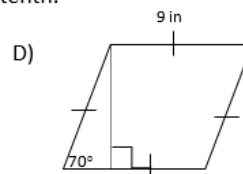
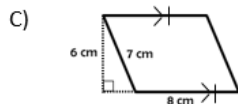
Geometry LAB Worksheet 9-2

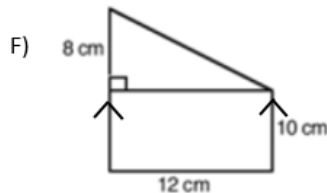
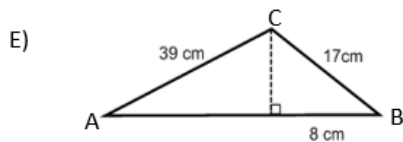
Name: _____ Due: _____ Section: _____

Find the area of the given figures to the nearest tenth:



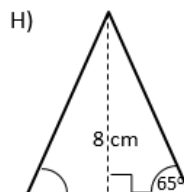
Find the area and perimeter of the given figures to the nearest tenth:





G) Rectangle

$\tan 78^\circ = \frac{x}{2}$
 $2(\tan 78^\circ) = x$
 9.4092
 $A = bh = (2)(9.4092)$



GEOMETRY LAB

Name: _____ Section: _____ Date: _____

9-3 Notes: Perimeter and Area Formulas of Circles and Composite Figures (& Backsolving)

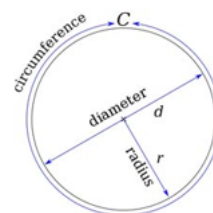
Circle Formulas - use CARD and box in the given information.

C (circumference) = $2\pi r$ LINEAR UNITS

A (area) = πr^2 SQ UNITS

R (radius) = r

D (diameter) = $2r$



Example: Using the Diameter

The diameter of a circle is 8. Find the circumference and area of the circle in terms of π .

$C = 2\pi r = 2\pi 4 = 8\pi = \text{CIRCUMFERENCE}$

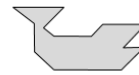
$A = \pi r^2 = \pi 4^2 = 16\pi = \text{AREA}$

$r = 4$

$D = 8$

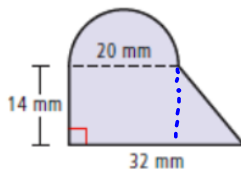
Composite Area & Perimeter of Planar Figures

- Definition: a composite figure is a figure made up of simple shapes or parts of simple shapes (triangles, rectangles, parallelograms, trapezoids, circles, polygons).
- Technique:
 1. Break up the composite figure into simple planar figures
 2. Solve for any missing dimensions
 3. **Write an equation that represents the total area desired*****
 4. Compute the simple planar figure areas
 5. Substitute the areas into the equation
 6. ~~Round the answer~~



Example 1: Finding Area by Addition

Find the area of the figure. Leave your answer in terms of π .



$$A_{\text{FIGURE}} = \frac{1}{2} A_{\text{C}} + A_{\text{TRAP}}$$

$$A_{\text{C}}:$$

$$C = \pi d = \pi(20) = 20\pi$$

$$R = 10$$

$$D = 20$$

$$A = \pi r^2 = \pi(10)^2 = 100\pi$$

$$A_{\text{TRAP}} = \frac{(b_1 + b_2)h}{2}$$

$$= \frac{(32 + 20)(14)}{2}$$

$$= \frac{(52)(14)}{2}$$

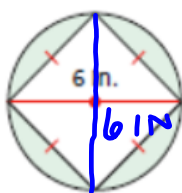
$$= 364 \text{ mm}^2$$

$$A_{\text{FIGURE}} = \frac{1}{2} (100\pi) + 364 \text{ mm}^2$$

$$= 50\pi + 364 \text{ mm}^2$$

Example 2: Finding Area by Subtraction

Find the area of the shaded region. Round to the nearest hundredth.



\approx DIAG + 4 \cong SIDES \rightarrow SQ
RHOM RECT

$$A_{\text{SHADED}} = A_{\text{C}} - A_{\text{SQUARE}}$$

$$A_{\text{C}}:$$

$$C = \pi d = \pi(6) = 6\pi$$

$$R = 3$$

$$D = 6$$

$$A = \pi r^2 = \pi(3)^2 = 9\pi$$

$$A = \frac{d_1 d_2}{2}$$

$$= \frac{(6)(6)}{2}$$

$$= 18$$

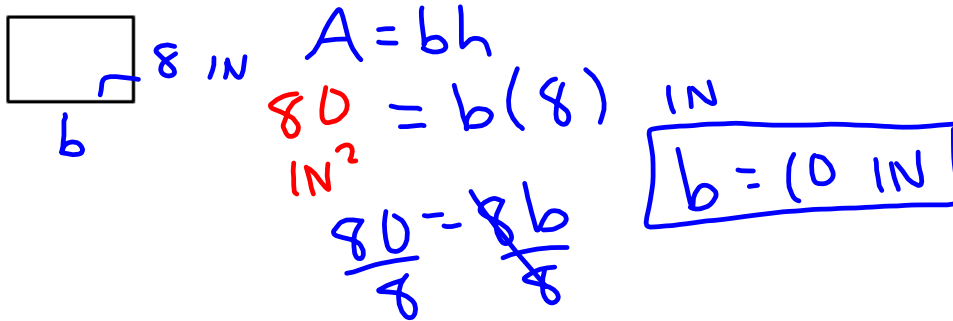
$$A_{\text{SHADED}} = 9\pi - 18$$

$$= 10.2743$$

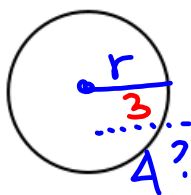
$$= 10.27 \text{ in}^2$$

Backsolving for Missing Dimensions in a Polygon or Circle

A) The area of a rectangle is 80 in^2 . If the height is 8 in, determine the length of the base.



D) A circular area rug covers 9π square meters. Will it fit in a space that is 4 meters wide?

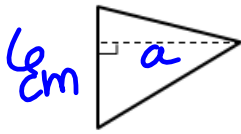


$A = 9\pi = \pi r^2$
 $r = 3$
 D

$9\pi = \pi r^2$
 $\oplus \sqrt{9} = \sqrt{r^2}$
 $3 = r$

YES
 $r = 3 \text{ m} < 4 \text{ m}$

B) A triangle has an area of 24 cm^2 . If the base is 6 cm, determine the length of the altitude.



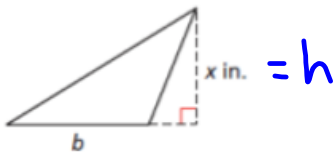
$$A = \frac{bh}{2}$$

$$24 \text{ cm}^2 = \frac{(6)a}{2}$$

$$24 = 3a$$

$$\boxed{8 \text{ cm} = a}$$

C) Find the base of the triangle in which $A = x^2 \text{ in}^2$.



$$A = \frac{bh}{2}$$

$$x^2 = \frac{bx}{2}$$

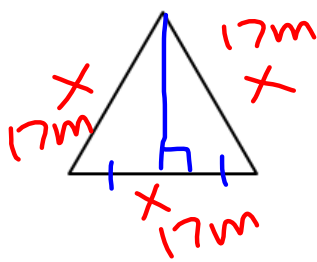
$$\frac{2x^2}{x} = \frac{bx}{x}$$

$$\boxed{2x = b}$$

$$x \neq 0$$

$$\frac{x \cdot x}{x}$$

E) An equilateral triangle has a perimeter of 51 m. Find the length of the altitude, to the nearest tenth.



$$P = 3x$$

$$51 = 3x$$

$$\frac{51}{3} = x$$

$$17 = x$$



$$y^2 + 8.5^2 = 17^2$$

$$y^2 + 72.25 = 289$$

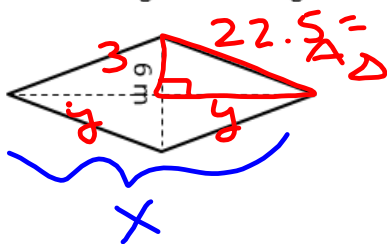
$$y^2 = 216.75$$

$$y = \sqrt{216.75}$$

$$= 14.7224...$$

ALTITUDE = 14.7 m

F) Find the length of the diagonal of a rhombus whose area is 90 m² and has a diagonal of 6 m.



$$A_{\Delta} = 22.5$$

$$22.5 = \frac{bh}{2}$$

$$22.5 = \frac{y(3)}{2}$$

$$45 = 3y$$

$$15 = y$$

$$2(y) = x$$

$$30 = x$$

$$A = \frac{d_1 d_2}{2}$$

$$90 \text{ m}^2 = \frac{(6)(x)}{2}$$

$$90 = 3x$$

$$30 = x$$

d₂ = 30m

G) A rectangle has a perimeter of 48 feet. Which will have the greater area:

1) the length and width are equal or 2) the length is 2 feet longer than the width.

Handwritten work:

Case 1: Equal length and width

Diagram: A square with side length x .

$A = bh$
 $A = x^2$
 $A = (12)(12)$
 $= 144$

$P = 4x$
 $48 = 4x$
 $12 = x$

Case 2: Length is 2 feet longer than width

Diagram: A rectangle with width w and length $w+2$.

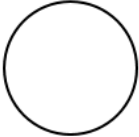
$A = bh$
 $A = 13(11)$
 $= 143$

$P = w + (w+2) + (w) + (w+2)$
 $48 = 4w + 4$
 $44 = 4w$
 $11 = w$
 $w + 2 = 13$

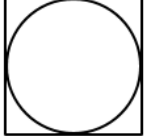
Conclusion: A checkmark and the words "GREATER AREA" are written in red above the first case, indicating it has the greater area.

Geometry LAB Worksheet 9-3 Name: _____ Due: _____ Section: _____

1. Find the area and circumference for a circle with a radius of 3. Leave answers in terms of π .

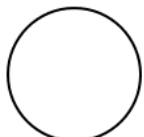


2. The circle is inscribed in the square. The area of the square is 100 ft^2 . Determine the area of the circle in terms of π .

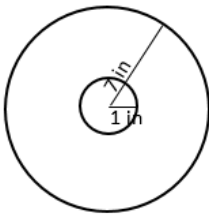


Round to the nearest tenth for problems 3-8.

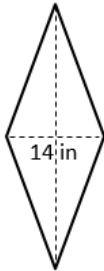
3. A circular table has an area of 20 ft^2 . Determine the radius of the table.



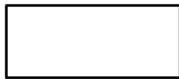
4. Given two circles with the same center and radii of 1 in and 7 in, determine the difference in the areas.



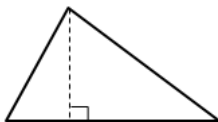
5. Given the area of rhombus is 336 in^2 and one diagonal is 14 inches. Determine the length of the other diagonal.



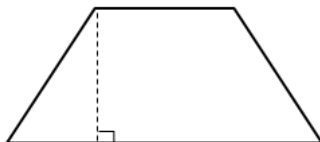
6. Given the perimeter of a rectangle is 72 and the base is 3 times the height, determine the area of the rectangle.



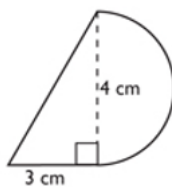
7. Given the area of a triangle is 50 cm^2 and the base is 4 times the height, determine the height of the triangle.



8. Given an isosceles trapezoid with a perimeter of 40 mm and bases with lengths of 11 mm and 19 mm, determine the area of the trapezoid.



9. Determine the area of the composite in terms of π .



10. Find the shaded area rounded to the nearest hundredth.

