Examples:
1. Find the area of parallelogram PQRS.

$A = bh$

$A = 6 \cdot 8$

$A = 48 \text{ units}^2$

2. The base of a triangle is twice its height. The area of the triangle is 36 square inches. Find the base and the height.

$b = 2h$
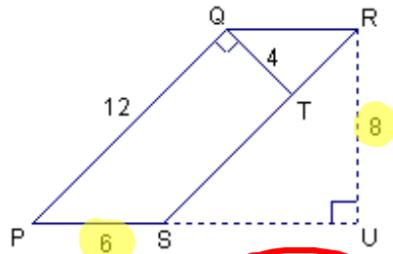
$A = \frac{1}{2} bh$

$36 = \frac{1}{2}(2h)h$

$36 = h^2$

$\sqrt{36} = h$

$6 = h$

sub in to find

$b = 2(6)$

$b = 12$

$h = 6$

3. Find the area of the rhombus.

Q

9 mm

P   12 mm   R

S

$d_1 = 18$

$d_2 = 24$

Careful!
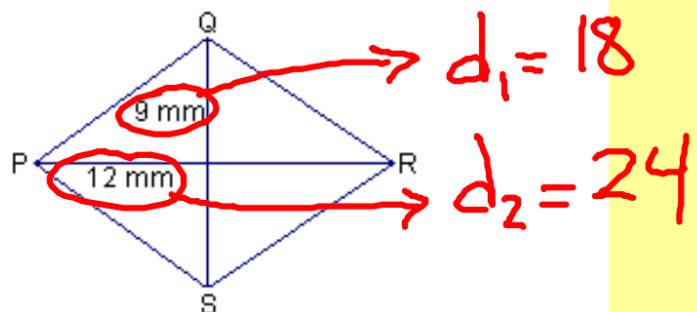
$$A = \frac{1}{2} d_1 d_2$$

$$A = \frac{1}{2}(18)(24)$$

$$A = 216 \ mm^2$$

Similar Polygons

Ratio of corresponding sides (perimeter) is a:b

Ratio of area is $a^2:b^2$

Polygon I ~ Polygon II
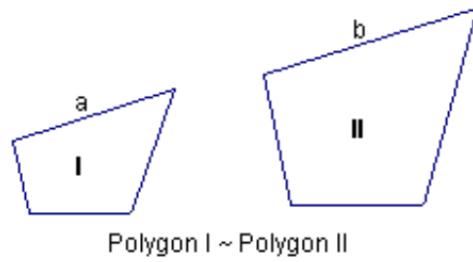
**4.** In the diagram, $\triangle ABC \sim \triangle DEF$. Find the indicated ratio.

a. ratio (ABC to DEF) of the perimeters

$8 \text{ to } 12, \quad 8:12, \quad \text{or} \quad \dfrac{8}{12}$

b. ratio (ABC to DEF) of the areas

$8^2 : 12^2$

$64 : 144$
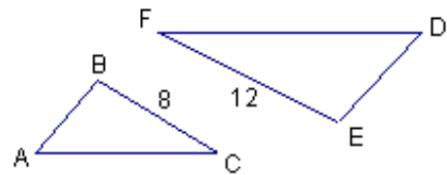
Circumference of a Circle -   C = 2π r or C = π d

5. Find the indicated measure.
a. circumference of a circle with radius 9 inches   **b.** radius of a circle with circumference 26 meters

(a) $C = 2\pi r$

$C = 2\pi(9)$

$C = 18\pi$

$C \approx 56.549$

(b) $C = 2\pi r$

$26 = 2\pi r$

$\dfrac{26}{2\pi} = r$

$\dfrac{13}{\pi} = r$

$4.138 = r$

```
26/(2π)
              4.138
■
```

arc length –

length or arc AB = $\dfrac{m\widehat{AB}}{360°} \cdot 2\pi r$
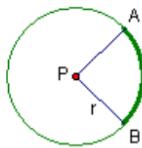
Find the length of each arc.

6. $\widehat{AB}$

8 cm

P, 60°, A, B

7. $\widehat{EF}$

11 cm

Q, 60°, E, F

8. $\widehat{GH}$

11 cm

G, 120°, R, H

$m\widehat{AB} = 60$

$r = 8$
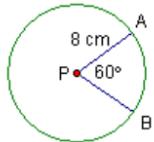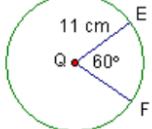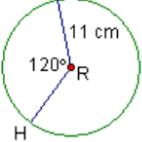
Arc length $= \dfrac{60}{360} \cdot 2\pi(8)$

$= \dfrac{1}{6} \cdot 16\pi$

$= \dfrac{8\pi}{3} \approx$

$\dfrac{60}{360} \cdot 2\pi(11)$

$\dfrac{1}{6} \cdot 22\pi$

$\widehat{EF} = \dfrac{22\pi}{6}$

$\widehat{EF} = \dfrac{11\pi}{3}$

$\dfrac{120}{360} \cdot 2\pi(11)$

$\dfrac{1}{3} \cdot 22\pi$

$\widehat{GH} = \dfrac{22\pi}{3}$

Area of a Circle - $A = \pi r^2$

9. Find the indicated measure.
a. area of a circle whose radius is 2.5 cm   **b.** diameter of a circle whose area is 113.1 cm²

$A = \pi r^2$

$A = \pi (2.5)^2$

$A = 6.25 \pi$

$A \approx 19.635 \, cm^2$

$A = \pi r^2$

$113.1 = \pi r^2$

$\dfrac{113.1}{\pi} = r^2$

$\sqrt{\dfrac{113.1}{\pi}} = r$

$6.00 \approx r$

$12 = d$

```
2.5²*π
              19.635
√(113.1/π)
               6.000
■
```

sector —

area of sector APB = $\dfrac{m\overset{\frown}{AB}}{360°} \pi r^2$

Area of Circle
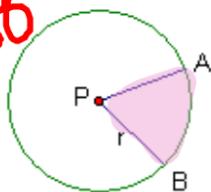
10. Find the area of each sector
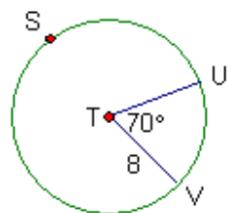
11. Find the area of circle V.

$A = \dfrac{70}{360} \cdot \pi(8)^2$

$A = \dfrac{7}{36}\pi(64)$

$A \approx 39.095 u^2$
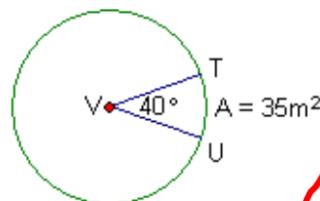
$35 = \dfrac{40}{360} \cdot \pi r^2$

$35 = \dfrac{1}{9}\pi r^2$

$315 = \pi r^2$

$\dfrac{315}{\pi} = r^2$

$A = \pi r^2$

$A = \pi\left(\dfrac{315}{\pi}\right)$

$A = 315 m^2$

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