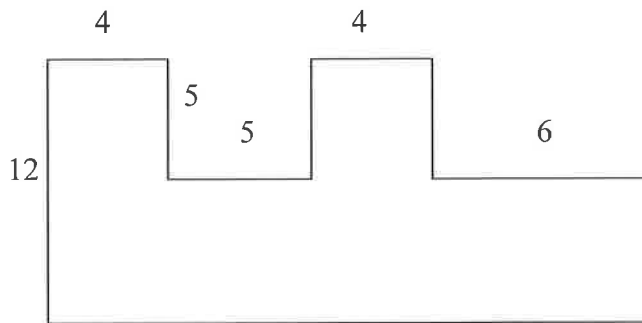


Concepts:

1. What happens to the circumference of a circle whose radius is doubled?
2. What happens to the area of a circle whose radius is doubled?
3. Why can't we bisect a line?
4. What is the difference between perimeter and area?
5. Find the perimeter and area of the figure.



Perimeter: _____ Area: _____

6. Determine if the side lengths given could be a triangle, if so, tell if the triangle is acute, obtuse or right.

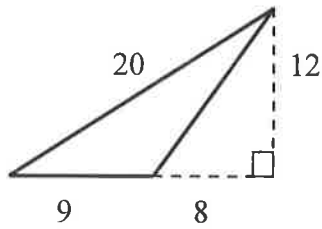
a. 6, 2, 7

b. 7, 8, 9

c. 10, 10, 10

Find the area and perimeter of each shape:

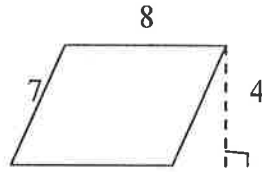
7.



Area = _____

Perimeter = ** _____ **

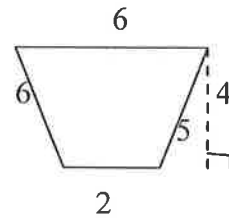
8.



Area = _____

Perimeter = _____

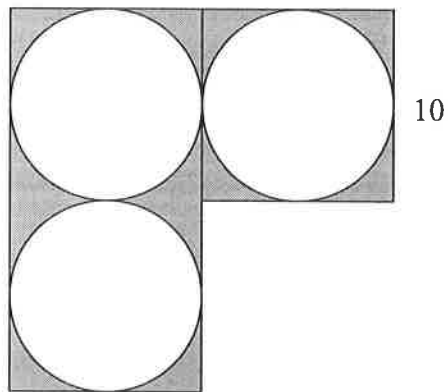
9.



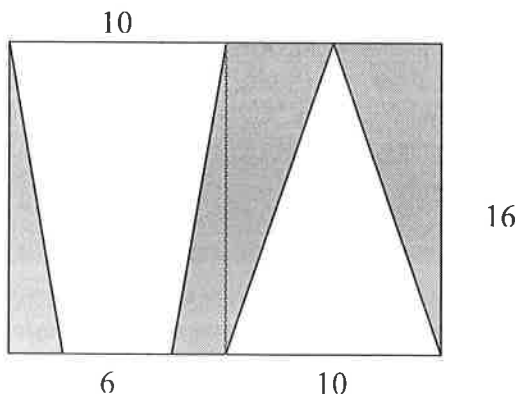
Area = _____

Perimeter = _____

10. Find the exact area of the shaded region.

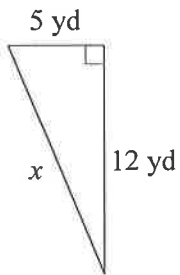


11. Find the exact area of the shaded region.

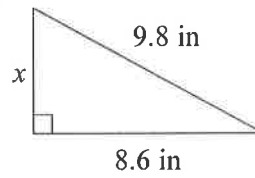


Find the missing side of each triangle. Round your answers to the nearest tenth if necessary.

12)

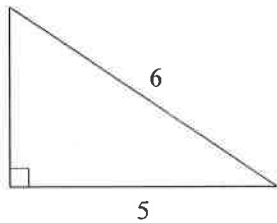


13)



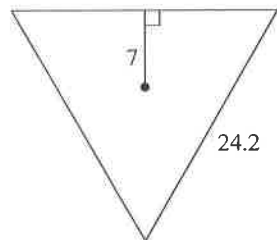
Find the area of each triangle. Round intermediate values to the nearest tenth. Use the rounded values to calculate the next value. Round your final answer to the nearest tenth.

14)

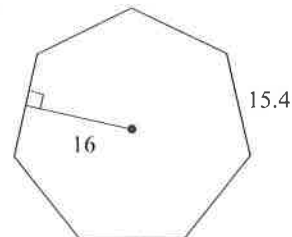


Find the area of each regular polygon. Round your answer to the nearest tenth if necessary.

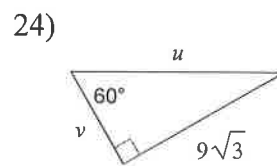
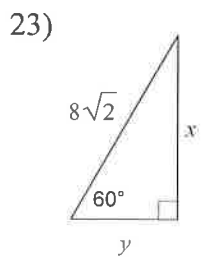
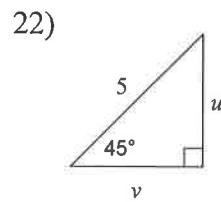
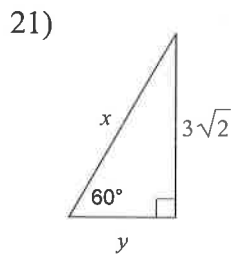
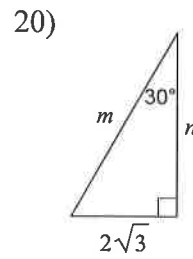
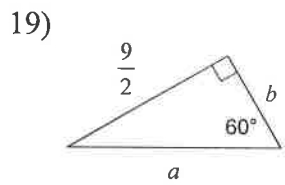
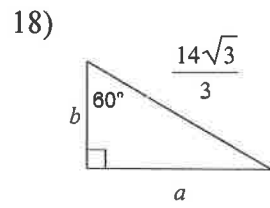
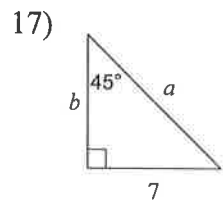
15)



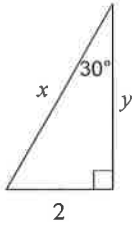
16)



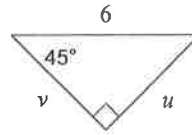
Find the missing side lengths. Leave your answers as radicals in simplest form.



25)



26)



Find the radius of each circle.

27) circumference = 6π m

28) area = 36π cm²

Find the diameter of each circle.

29) area = 9π ft²

Find the circumference of each circle.

30) area = 144π in²

31) radius = 10 m

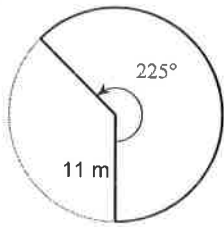
Find the area of each.

32) circumference = 24π yd

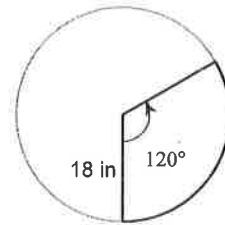
33) diameter = 12 m

Find the area of each sector.

34)



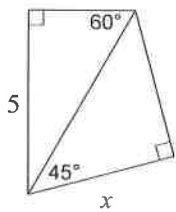
35)



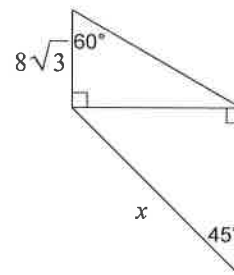
36) The diagonal of a square is $\sqrt{20}$. Find its perimeter and area.

****CHALLENGE**** Find the missing side lengths. Leave your answers as radicals in simplest form.

37)



38)



Concepts:

1. What happens to the circumference of a circle whose radius is doubled?

$$C = 2\pi r \quad C = 2\pi(2r) = 4\pi r$$

old new

Circumference is doubled

2. What happens to the area of a circle whose radius is doubled?

$$A = \pi r^2 \quad A = \pi(2r)^2 = 4\pi r^2$$

old new

area is multiplied by 4

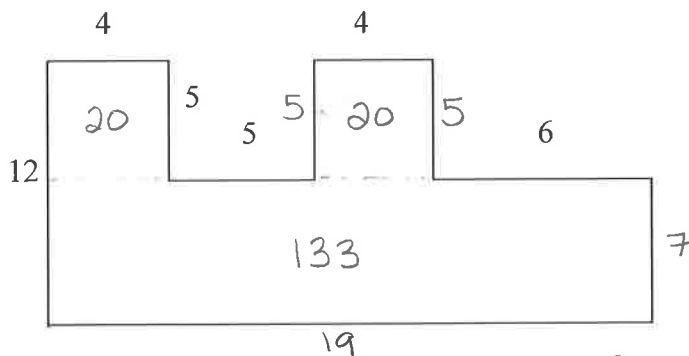
3. Why can't we bisect a line?

you can't measure it to cut it in half

4. What is the difference between perimeter and area?

Perimeter is distance around the outside,
Area is unit squares inside a shape

5. Find the perimeter and area of the figure.

Perimeter: 72 units Area: 173 units²

6. Determine if the side lengths given could be a triangle, if so, tell if the triangle is acute, obtuse or right.

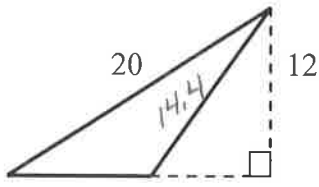
a. 6, 2, 7 $6+2 > 7$ ✓
 $7^2 \square 6^2 + 2^2$
 $49 \square 36 + 4$
 $49 \square 40$
 obtuse

b. 7, 8, 9 $7+8 > 9$ ✓
 $9^2 \square 7^2 + 8^2$
 $81 \square 49 + 64$
 $81 \square 113$
 acute

c. 10, 10, 10 $10+10 > 10$ ✓
 $10^2 \square 10^2 + 10^2$
 $100 \square 100 + 100$
 $100 \square 200$
 acute

Find the area and perimeter of each shape:

7.



$$A = \frac{1}{2}(9)(12)$$

$$A = 54$$

$$8^2 + 12^2 = c^2$$

$$64 + 144 = c^2$$

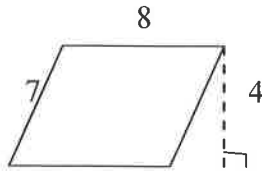
$$208 = c^2$$

$$14.4 \approx c$$

Area = 54 units²

Perimeter = 43.4 units

8.

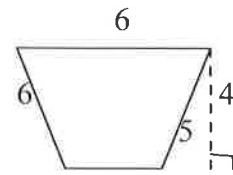


$$A = 8 \cdot 4$$

Area = 32 units²

Perimeter = 30 units

9.



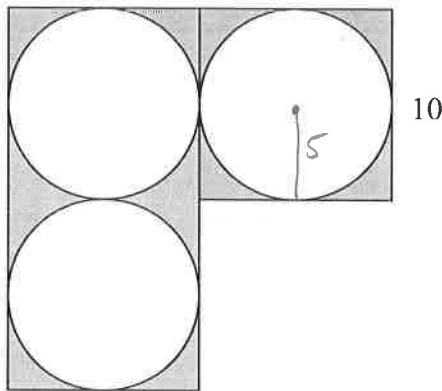
$$A = \frac{1}{2}(4)(6+2)$$

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

Area = 16 units²

Perimeter = 19 units

10. Find the exact area of the shaded region.



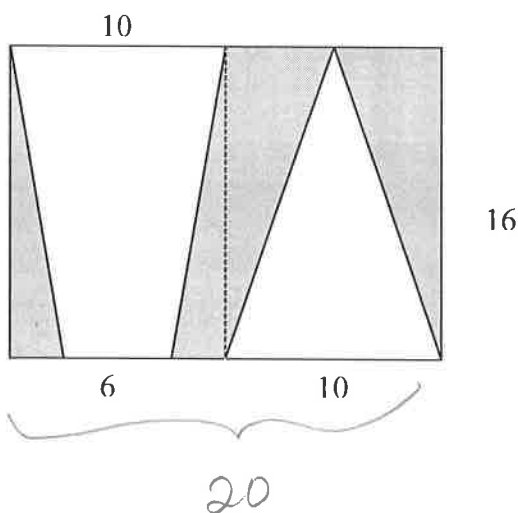
3 squares - 3 circles

$$3(10 \times 10) \quad 3(\pi(5)^2)$$

$$3(100) \quad 3(25\pi)$$

$$\boxed{300 - 75\pi \text{ units}^2}$$

11. Find the exact area of the shaded region.



rectangle - (trapezoid + triangle)

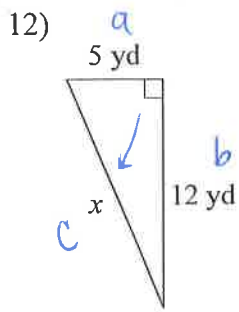
$$20 \times 16 \quad \frac{1}{2}(16)(6+10) \quad \frac{1}{2}(10)(16)$$

$$320 \quad \frac{1}{2}(16)(16) \quad 80$$

$$320 - (128 + 80)$$

$$320 - 208 = \boxed{112 \text{ units}^2}$$

Find the missing side of each triangle. Round your answers to the nearest tenth if necessary.



$$5^2 + 12^2 = x^2$$

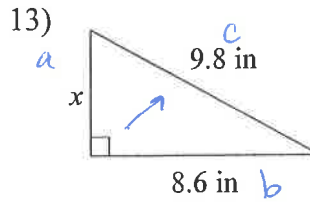
$$25 + 144 = x^2$$

$$169 = x^2$$

$$\sqrt{169} = \sqrt{x^2}$$

$$13 = x$$

$x = 13 \text{ yd}$



$$x^2 + 8.6^2 = 9.8^2$$

$$x^2 + 73.96 = 96.04$$

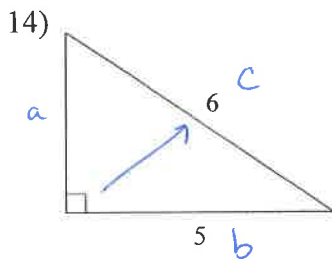
$$-73.96 \quad -73.96$$

$$x^2 = 22.08$$

$$\sqrt{x^2} = \sqrt{22.08}$$

$x = 4.7 \text{ in}$

Find the area of each triangle. Round intermediate values to the nearest tenth. Use the rounded values to calculate the next value. Round your final answer to the nearest tenth.



$$a^2 + 5^2 = 6^2$$

$$a^2 + 25 = 36$$

$$\underline{-25 \quad -25}$$

$$a^2 = 11$$

$$\sqrt{a^2} = \sqrt{11}$$

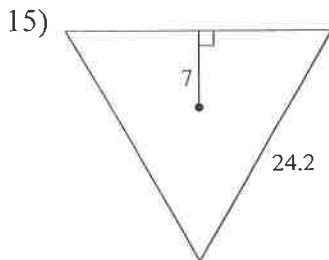
$$a \approx 3.3$$

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

$$A = \frac{1}{2}(5)(3.3)$$

$A = 8.3 \text{ units}^2$

Find the area of each regular polygon. Round your answer to the nearest tenth if necessary.



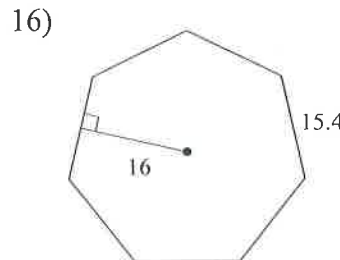
$$p = 24.2 \times 3$$

$$p = 72.6$$

$$A = \frac{1}{2}ap$$

$$A = \frac{1}{2}(7)(72.6)$$

$A = 254.1 \text{ units}^2$



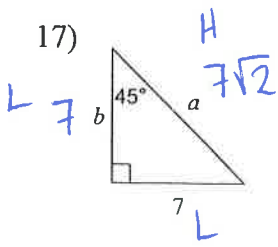
$$p = 15.4 \times 7 = 107.8$$

$$A = \frac{1}{2}ap$$

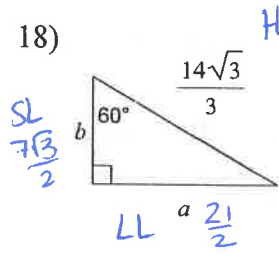
$$A = \frac{1}{2}(16)(107.8)$$

$A = 862.4 \text{ units}^2$

Find the missing side lengths. Leave your answers as radicals in simplest form.

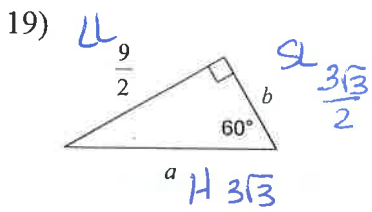


$$\begin{cases} a = 7\sqrt{2} \\ b = 7 \end{cases}$$

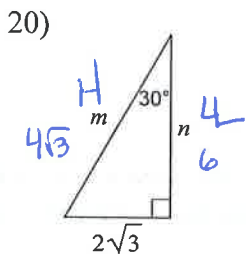


$$\begin{cases} a = 7 \\ b = \frac{7\sqrt{3}}{3} \end{cases}$$

H → SL $\frac{14\sqrt{3}}{3 \cdot 2} = \frac{14\sqrt{3}}{6} = \frac{7\sqrt{3}}{3}$
 SL → LL $\frac{7\sqrt{3}}{3} \cdot \sqrt{3} = \frac{7\sqrt{9}}{3} = \frac{7 \cdot 3}{3} = 7$
 divided means multiply the denominator



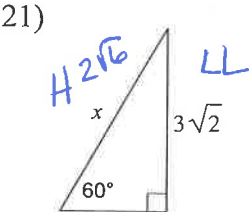
$$\begin{cases} a = 3\sqrt{3} \\ b = \frac{3\sqrt{3}}{2} \end{cases}$$



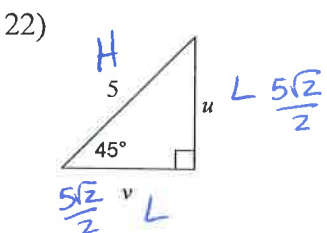
$$\begin{cases} m = 4\sqrt{3} \\ n = 6 \end{cases}$$

LL → SL $\frac{9}{2 \cdot \sqrt{3}} = \frac{9}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{9\sqrt{3}}{2\sqrt{9}} = \frac{9\sqrt{3}}{2 \cdot 3} = \frac{9\sqrt{3}}{6} = \frac{3\sqrt{3}}{2}$
 SL → H $\frac{3\sqrt{3}}{2} \cdot 2 = \frac{6\sqrt{3}}{2} = 3\sqrt{3}$

SL → H $2\sqrt{3} \cdot 2 = 4\sqrt{3}$
 SL → LL $2\sqrt{3} \cdot \sqrt{3} = 2\sqrt{9} = 2 \cdot 3 = 6$



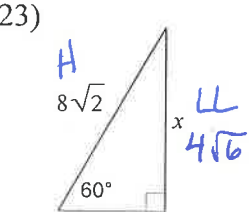
$$\begin{cases} x = 2\sqrt{6} \\ y = \sqrt{6} \end{cases}$$



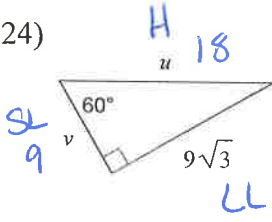
$$\begin{cases} u = \frac{5\sqrt{2}}{2} \\ v = \frac{5\sqrt{2}}{2} \end{cases}$$

SL $y = \sqrt{6}$
 LL → SL $\frac{3\sqrt{2}}{\sqrt{3}} = \frac{3\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{6}}{\sqrt{9}} = \frac{3\sqrt{6}}{3} = \sqrt{6}$
 SL → H $\sqrt{6} \cdot 2 = 2\sqrt{6}$

H → L $\frac{5}{\sqrt{2}} = \frac{5}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{\sqrt{4}} = \frac{5\sqrt{2}}{2}$



$$\begin{cases} x = 4\sqrt{6} \\ y = 4\sqrt{2} \end{cases}$$

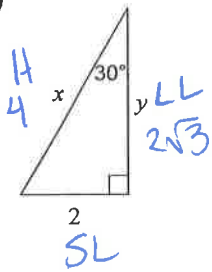


$$\begin{cases} u = 18 \\ v = 9 \end{cases}$$

$4\sqrt{2}$ y SL
 H → SL $\frac{8\sqrt{2}}{2} = 4\sqrt{2}$
 SL → LL $4\sqrt{2} \cdot \sqrt{3} = 4\sqrt{6}$

LL → SL $\frac{9\sqrt{3}}{\sqrt{3}} = 9$
 SL → H $9 \cdot 2 = 18$

25)

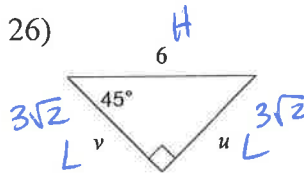


$$\begin{aligned} x &= 4 \\ y &= 2\sqrt{3} \end{aligned}$$

$$SL \rightarrow LL \\ 2 \cdot \sqrt{3} = 2\sqrt{3}$$

$$SL \rightarrow H \\ 2 \cdot 2 = 4$$

26)



$$\begin{aligned} u &= 3\sqrt{2} \\ v &= 3\sqrt{2} \end{aligned}$$

H → L

$$\frac{6}{\sqrt{2}} = \frac{6}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{6\sqrt{2}}{\sqrt{4}} = \frac{6\sqrt{2}}{2} = 3\sqrt{2}$$

Find the radius of each circle.27) circumference = 6π m

$$\begin{aligned} C &= 2\pi r \\ 6\pi &= \frac{2\pi r}{\pi} \\ 3 &= r \end{aligned}$$

$$r = 3 \text{ m}$$

28) area = 36π cm²

$$\begin{aligned} A &= \pi r^2 \\ 36\pi &= \frac{\pi r^2}{\pi} \\ 36 &= r^2 \\ \sqrt{36} &= \sqrt{r^2} \\ 6 &= r \end{aligned}$$

$$r = 6 \text{ cm}$$

Find the diameter of each circle.29) area = 9π ft²

$$\begin{aligned} A &= \pi r^2 \\ 9\pi &= \frac{\pi r^2}{\pi} \\ 9 &= r^2 \end{aligned}$$

$$\begin{aligned} \sqrt{9} &= \sqrt{r^2} \\ 3 &= r \\ d &= 6 \end{aligned}$$

$$d = 6 \text{ ft}$$

Find the circumference of each circle.30) area = 144π in²

$$\begin{aligned} A &= \pi r^2 \\ 144\pi &= \frac{\pi r^2}{\pi} \\ \sqrt{144} &= \sqrt{r^2} \\ 12 &= r \end{aligned}$$

$$\begin{aligned} C &= 2\pi r \\ C &= 2\pi(12) \end{aligned}$$

$$C = 24\pi \text{ in}$$

31) radius = 10 m

$$\begin{aligned} C &= 2\pi r \\ C &= 2\pi(10) \end{aligned}$$

$$C = 20\pi \text{ m}$$

Find the area of each.32) circumference = 24π yd

$$\begin{aligned} C &= 2\pi r \\ 24\pi &= \frac{2\pi r}{2\pi} \\ 12 &= r \end{aligned}$$

$$\begin{aligned} A &= \pi r^2 \\ A &= \pi(12)^2 \end{aligned}$$

$$A = 144\pi \text{ yd}^2$$

33) diameter = 12 m

$$\begin{aligned} d &= 12 \\ r &= 6 \end{aligned}$$

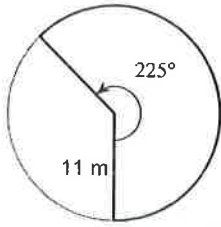
$$\begin{aligned} A &= \pi r^2 \\ A &= \pi(6)^2 \end{aligned}$$

$$A = 36\pi \text{ m}^2$$

Find the area of each sector.

$$S_A = \frac{M}{360} \cdot \pi r^2$$

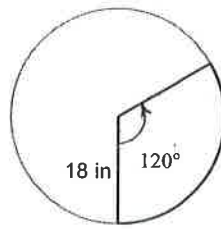
34)



$$S_A = \frac{225}{360} \cdot \pi (11)^2$$

$$S_A = \frac{605}{8} \pi \text{ m}^2$$

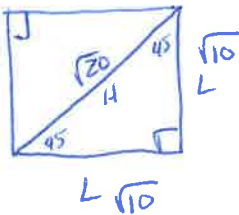
35)



$$S_A = \frac{120}{360} \cdot \pi (18)^2$$

$$S_A = 108\pi \text{ in}^2$$

36) The diagonal of a square is $\sqrt{20}$. Find its perimeter and area.



$$H \rightarrow L$$

$$\frac{\sqrt{20}}{\sqrt{2}} = \sqrt{10}$$

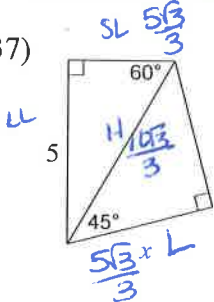
$$p = 4\sqrt{10} \text{ units}$$

$$A = lw$$

$$A = (\sqrt{10})(\sqrt{10}) = 10 \text{ units}^2$$

****CHALLENGE**** Find the missing side lengths. Leave your answers as radicals in simplest form.

37)



$$x = \frac{5\sqrt{3}}{3}$$

LL \rightarrow SL

$$\frac{5}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{5\sqrt{3}}{\sqrt{9}} = \frac{5\sqrt{3}}{3}$$

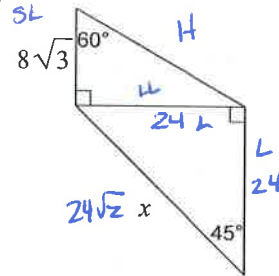
SL \rightarrow H

$$\frac{5\sqrt{3}}{3} \cdot 2 = \frac{10\sqrt{3}}{3}$$

H \rightarrow L (45-45-90)

$$\frac{10\sqrt{3}}{3 \cdot \sqrt{2}} = \frac{10\sqrt{3}}{3\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{10\sqrt{6}}{3\sqrt{4}} = \frac{10\sqrt{6}}{3 \cdot 2} = \frac{10\sqrt{6}}{6} = \frac{5\sqrt{6}}{3}$$

38)



$$x = 24\sqrt{2}$$

SL \rightarrow LL (30-60-90)

$$8\sqrt{3} \cdot \sqrt{3} = 8\sqrt{9} = 8 \cdot 3 = 24$$

L \rightarrow H (45-45-90)

$$24 \cdot \sqrt{2} = 24\sqrt{2}$$