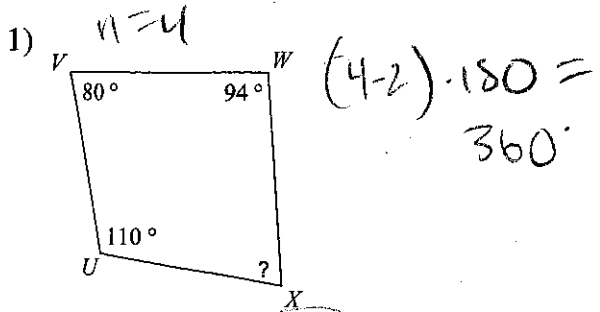
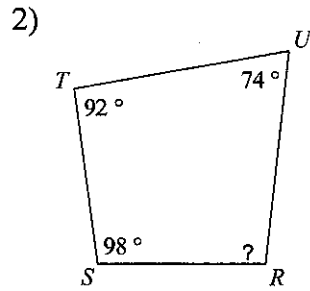


Ch. 8 Review - Polygons & Circles

Find the measure of each angle indicated.

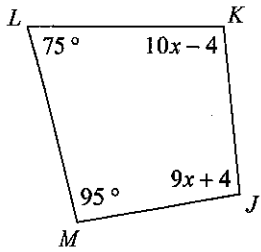


$\angle X = 76^\circ$



$\angle R = 96^\circ$

3)  $m\angle K$

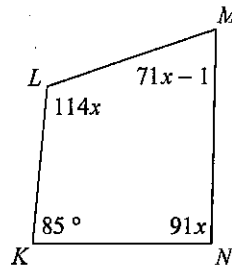


$19x + 170 = 360$

$x = 10$

$\angle K = 10(10) - 4 = 96^\circ$

4)  $m\angle M$



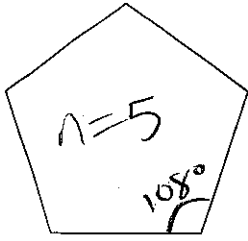
$276x + 84 = 360$

$x = 1$

$\angle M = 70^\circ$

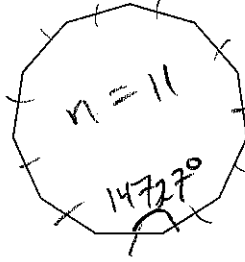
Find the measure of one interior angle in each regular polygon. Round your answer to the nearest tenth if necessary.

5)



$$\frac{(5-2) \cdot 180}{5} = 108^\circ$$

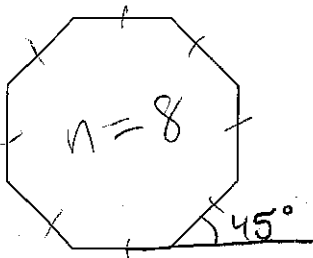
6)



$$\frac{(11-2) \cdot 180}{11} = 147.27^\circ$$

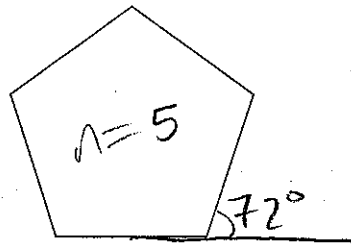
Find the measure of one exterior angle in each regular polygon. Round your answer to the nearest tenth if necessary.

7)



$$\frac{360}{8} = 45^\circ$$

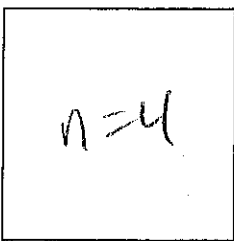
8)



$$\frac{360}{5} = 72^\circ$$

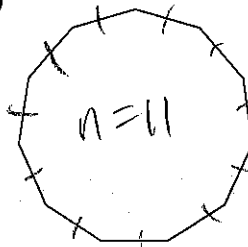
Find the interior angle sum for each polygon. Round your answer to the nearest tenth if necessary.

9)



$$360^\circ$$

10)



$$(11-2) \cdot 180 = 1620^\circ$$

11) regular 18-gon

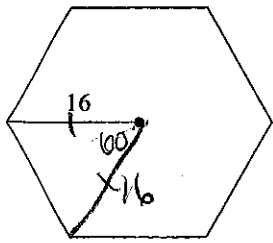
$$(18-2) \cdot 180 = 2,880^\circ$$

12) regular 23-gon

$$(23-2) \cdot 180 = 3,780^\circ$$

Find the area of each figure. Round your answer to the nearest tenth.

13)



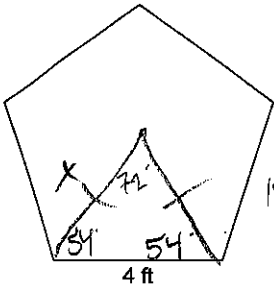
$$\frac{360}{6} = 60^\circ$$

$$A_{\Delta} = \frac{1}{2}(16)(16) \cdot \sin 60^\circ$$

$$= 110.85 \times 6$$

$$A_{\text{hex}} = 665.11 \text{ u}^2$$

15)



$$\frac{360}{5} = 72^\circ$$

$$180 - 72 = 108$$

$$\frac{108}{2} = 54^\circ$$

$$\frac{\sin 72}{4} = \frac{\sin 54}{x}$$

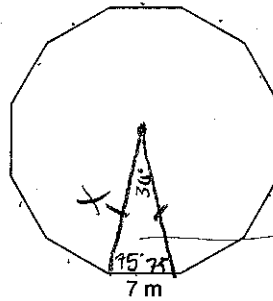
$$x \approx 3.403 \text{ ft}$$

$$A_{\Delta} = \frac{1}{2}(3.403)(3.403) \sin 72^\circ$$

$$= 5.51 \times 5$$

$$A_{\text{pent.}} = 27.53 \text{ ft}^2$$

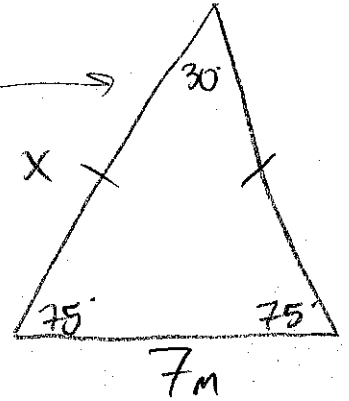
14)



$$\frac{360}{12} = 30^\circ$$

$$180 - 30 = 150$$

$$\frac{150}{2} = 75^\circ$$



$$\frac{\sin 30}{7} = \frac{\sin 75}{x}$$

$$x \approx 13.52 \text{ m}$$

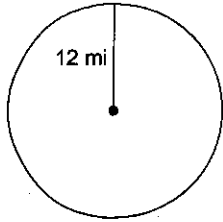
$$A_{\Delta} = \frac{1}{2}(13.52)(13.52) \cdot \sin 30^\circ$$

$$= 45.72 \times 12$$

$$A_{12\text{-gon}} = 548.61 \text{ m}^2$$

Find the area of each. Use your calculator's value of  $\pi$ . Round your answer to the nearest tenth.

16)

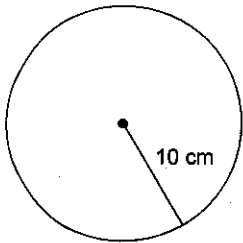


$$A = \pi \cdot 12^2 = 144\pi \text{ mi}^2$$

$$\approx 452.39 \text{ mi}^2$$

Find the circumference of each circle. Use your calculator's value of  $\pi$ . Round your answer to the nearest tenth.

17)

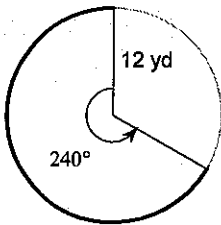


$$C = 2\pi \cdot 10 = 20\pi \text{ cm}$$

$$\approx 62.83 \text{ cm}$$

Find the length of each arc. Round your answers to the nearest tenth.

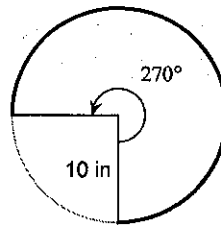
18)



$$\begin{aligned} \text{Arc length} &= \left(\frac{240}{360}\right) \cdot 2\pi \cdot 12 \\ &= 16\pi \text{ yd} \end{aligned}$$

$$\approx 50.27 \text{ yd}$$

19)

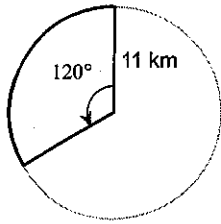


$$\begin{aligned} \text{Arc length} &= \left(\frac{270}{360}\right) \cdot 2\pi \cdot 10 \\ &= 15\pi \text{ in} \end{aligned}$$

$$\approx 47.12 \text{ in}$$

Find the area of each sector. Round your answers to the nearest tenth.

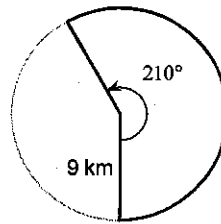
20)



$$A_D = \left(\frac{120}{360}\right) \cdot \pi \cdot 11^2 = \frac{121\pi}{3} \text{ km}^2$$

$$\approx 126.71 \text{ km}^2$$

21)



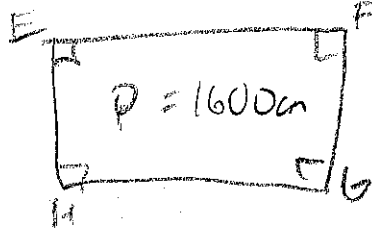
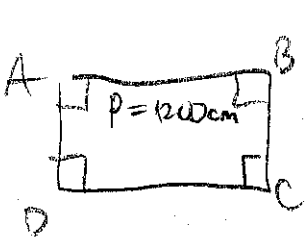
$$A_D = \left(\frac{210}{360}\right) \cdot \pi \cdot 9^2$$

$$= \frac{189\pi}{4} \text{ km}^2$$

$$\approx 148.44 \text{ km}^2$$

Use ratios for side length, perimeter, and area to answer the following questions.

22) Rectangle ABCD has a perimeter of 1200 cm and a similar rectangle, EFGH, has a perimeter of 1600 cm. What is the area of rectangle EFGH if the area of ABCD is 50000 cm<sup>2</sup>?



$$\text{Linear ratio} = \frac{1600}{1200}$$

$$= \frac{4}{3}$$

$$\text{Area ratio} = \left(\frac{4}{3}\right)^2 = \frac{16}{9}$$

$$\text{Area of EFGH} = \left(\frac{16}{9}\right) \cdot 50000 = 88888.89 \text{ cm}^2$$

23) Two trapezoids have areas of 12 ft<sup>2</sup> and 32 ft<sup>2</sup>. If the smaller trapezoid has a height of 3 ft, what is the height of the larger trapezoid?

$$\text{Area ratio} = \frac{32}{12} = \frac{8}{3}$$

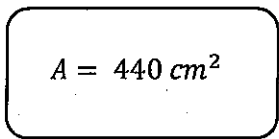
$$\text{Linear ratio} = \sqrt{\frac{8}{3}} \approx 1.633$$

$$\text{Height of larger trapezoid} = (1.633) \cdot 3$$

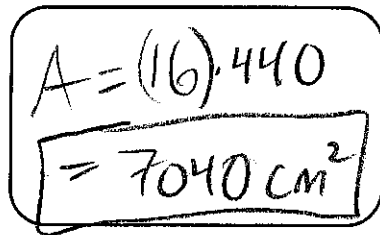
$$= 4.9 \text{ ft}$$

Given the similar figures below, answer the following questions.

24. Find the area of the larger shape.



10 cm

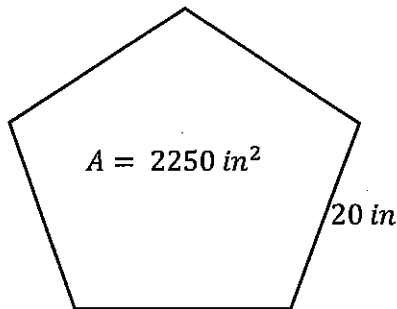
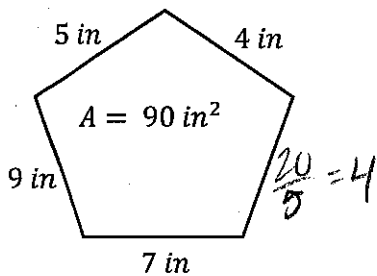


40 cm

$$\text{Linear } zf = \frac{40}{10} = 4$$

$$\text{Area } zf = 4^2 = 16$$

25. Find the perimeter of the larger shape.



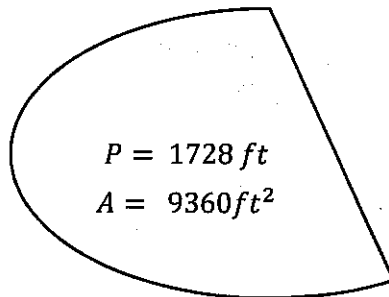
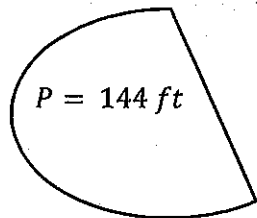
$$\text{Area } zf = \frac{2250}{90} = 25$$

$$\text{Linear } zf = \sqrt{25} = 5$$

$$P_{\text{smaller}} = 29 \text{ in}$$

$$P_{\text{larger}} = (5) \cdot 29 = 145 \text{ in}$$

26. Find the area of the smaller shape.



$$\text{Linear } zf = \frac{1728}{144}$$

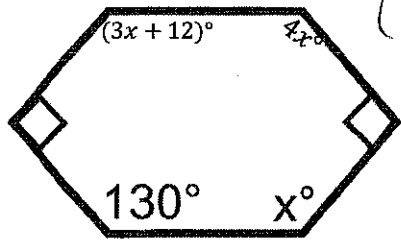
$$= 12$$

$$\text{Area } zf = 12^2 = 144$$

$$A_{\text{smaller}} = \frac{9360}{144} = 65 \text{ ft}^2$$

Solve for the given variable. Show all work.

27.

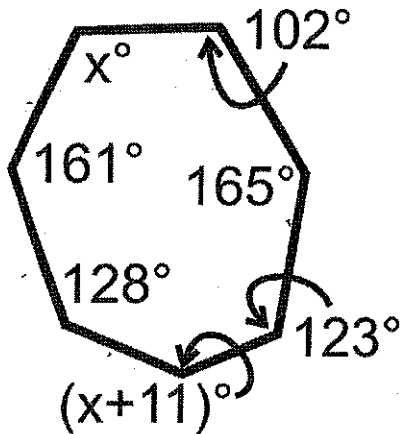


$$(6-2) \cdot 180 = 720$$

$$8x + 322 = 720$$

$$x = 49.75$$

28.



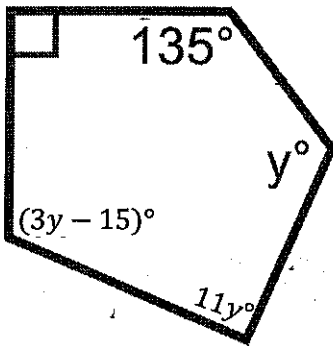
$$(7-2) \cdot 180 = 900$$

$$2x + 690 = 900$$

$$x = 105$$

29.

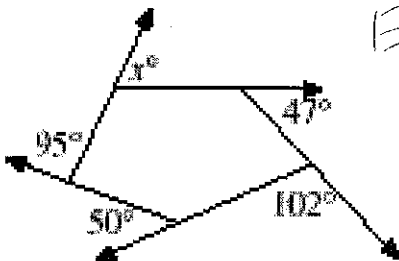
$$(5-2) \cdot 180 = 540$$



$$15y + 210 = 540$$

$$y = 22$$

30.



$$\Sigma x \text{ angle sum} = 360$$

$$x + 294 = 360$$

$$x = 66$$