CHAPTER 8 REVIEW

EXERCISES

1. Parallelogram (B)

2. Triangle (A)

3. Trapezoid (C)

4. Kite (E)

5. Regular polygon (F)

6. Circle (D)

7. Sector (J)

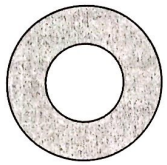
8. Annulus (I)

9. Cylinder (G)

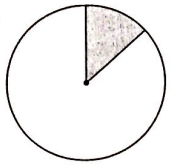
10. Cone (H)

11.

12.



13.



44. $3,000. First find the surface area of one wedge, which is a triangular prism so it has 5 faces: two triangular bases that are right triangles with base length 6 cm and height 8 cm, one rectangle with dimensions 6 cm by 0.5 cm, one rectangle with dimensions 8 cm by 0.5 cm, and one rectangle with dimensions 10 cm by 0.5 cm.

Area of two triangles $= 2\left(\frac{1}{2} \cdot 6 \cdot 8\right) = 48 \text{ cm}^2$

Sum of areas of three rectangles $= 6(0.5) + 8(0.5) + 10(0.5) = 12 \text{ cm}^2$

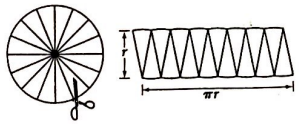
Surface area of wedge $= 48 + 12 = 60 \text{ cm}^2$

The total surface area of 10,000 metal wedges is $10{,}000(60) = 600{,}000 \text{ cm}^2$.

Find the cost for the silver to electroplate these wedges.

$$600{,}000 \text{ cm}^2 \cdot \frac{\$1}{200 \text{ cm}^2} = \$3{,}000$$

16. Sample answer: Cut a circular region into 16 wedges and arrange them into a shape that resembles a rectangle. The base length of this "rectangle" is πr and the height is r, so its area is πr^2. Thus, the area of a circle is given by the formula $A = \pi r^2$.



17. 800 cm². Use the midsegment formula for the area of a trapezoid: A = (midsegment)(height) = $(40)(20) = 800 \text{ cm}^2$.

18. 5990.4 cm². The figure is a regular octagon, so use the formula for the area of a regular polygon. $A = \frac{1}{2}asn = \frac{1}{2}(36)(41.6)(8) = 5990.4 \text{ cm}^2$.

19. $60\pi \approx 188.5 \text{ cm}^2$. The shaded region is an annulus. $A_{\text{annulus}} = \pi R^2 - \pi r^2 = \pi(8)^2 - \pi(2)^2 = 64\pi - 4\pi = 60\pi \approx 188.5 \text{ cm}^2$.

20. 32 cm. Use the formula $A = \frac{1}{2}bh$. Here, $576 = \frac{1}{2} \cdot 36 \cdot h$, so $576 = 18h$, and $h = 32$ cm.

21. 32 cm. The figure is a kite, so use the formula $A = \frac{1}{2}d_1d_2$. Here, $576 = \frac{1}{2} \cdot d_1 \cdot 36$, so $576 = 18d_1$, and $d_1 = 32$ cm.

22. 15 cm. The figure is a trapezoid, so use the formula $A = \frac{1}{2}h(b_1 + b_2)$.

$$126 = \frac{1}{2}(9)(13 + b)$$

$$252 = 9(13 + b)$$

$$28 = 13 + b$$

$$b = 15 \text{ cm}$$

23. $81\pi \text{ cm}^2$. Find the radius of the circle and then use the radius to find the area. $C = 2\pi r$, so $18\pi = 2\pi r$, and $r = 9$ cm. Then, $A = \pi r^2 = \pi(9)^2 = 81\pi \text{ cm}^2$.

24. 48π cm. Find the radius of the circle and then use the radius to find the circumference. $A = \pi r^2$, so $576\pi = \pi r^2$, $r^2 = 576$, and $r = 24$ cm. Then, $C = 2\pi r = 2\pi(24) = 48\pi$ cm.

25. 40°. The shaded region is a sector of a circle with radius 12 cm. The area of the sector is $16\pi \text{ cm}^2$ and the area of the complete circle is $144\pi \text{ cm}^2$, so

$$\frac{A_{\text{sector}}}{A_{\text{circle}}} = \frac{16\pi \text{ cm}^2}{144\pi \text{ cm}^2} = \frac{1}{9}$$

Therefore the sector is $\frac{1}{9}$ of the circle, so $m\angle FAN = \frac{1}{9}(360°) = 40°$.

26. 153.9 cm². To find the area of the shaded region, subtract the areas of the two small semicircles from the area of the large semicircle.

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