APTER 8 REVIEW

ERCISES

1. a. True b. False
c. True d. True
e. False f. True
g. True h. Both

2. Parallelogram (B)
3. Triangle (A)
4. Trapezoid (C)
5. Kite (E)
6. Regular polygon (F)
7. Circle (D)
8. Sector (J)
9. Annulus (I)
10. Cylinder (G)
11. Cone (H)

18. 800 cm^2. Use the midsegment formula for the area of a trapezoid: $A = (\text{midsegment})(\text{height}) = (40)(20) = 800\ \text{cm}^2$.

19. 5990.4 cm^2. The figure is a regular octagon, so use the formula for the area of a regular polygon. $A = \frac{1}{2}asn \approx \frac{1}{2}(36)(41.6)(8) = 5990.4\ \text{cm}^2$.

20. $60\pi \approx 188.5\ \text{cm}^2$. The shaded region is an annulus. $A_{\text{annulus}} = \pi R^2 - \pi r^2 = \pi(8)^2 - \pi(2)^2 = 64\pi - 4\pi = 60\pi \approx 188.5\ \text{cm}^2$.

21. 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.

22. 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.

23. 15 cm. The figure is a trapezoid, so use the formula $A = \frac{1}{2}h(b_1 + b_2)$.

$$126 = \frac{1}{2}(9)(13 + b)$$
$$252 = 9(13 + b)$$
$$28 = 13 + b$$
$$b = 15 \text{ cm}$$

24. $81\pi\ \text{cm}^2$. 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 $A = \pi r^2 = \pi(9)^2 = 81\pi\ \text{cm}^2$.

25. 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.

26. 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 $m\angle FAN = \frac{1}{9}(360°) = 40°$.

27. 153.9 cm^2. To find the area of the shaded region, subtract the areas of the two small semicircles from the area of the large semicircle.

Large semicircle: $r = 14$ cm; $A = \frac{1}{2}\pi r^2 = \frac{1}{2}\pi(14)^2 = 98\pi\ \text{cm}^2$

Two small semicircles: $r = 7$ cm; $A = 2\left(\frac{1}{2}\pi r^2\right) = \pi(7)^2 = 49\pi\ \text{cm}^2$

Therefore, the area of the shaded region is $98\pi - 49\pi = 49\pi \approx 153.9\ \text{cm}^2$.

28. 72 cm^2. By rearranging this figure into a rectangle, you can show that its area is one-half the area of the square. (See Lesson 8.6, Exercise 15a. The figure here is the same, except that it has been rotated 90°, which does not affect its area.) Because the arcs in this figure are arcs of a circle with radius 6 cm, the square has sides of length 12 cm. Therefore, the area of the square is 144 cm^2, and the area of the shaded region is $\frac{1}{2}(144) = 72\ \text{cm}^2$.

29. 30.9 cm^2. To find the area of the shaded region, subtract the combined area of the four quarter-circles from the area of the square. As in Exercise 27, the area of the square is 144 cm^2. The area of the four quarter-circles is $4\left(\frac{1}{4}\right)\pi(6)^2 = 36\pi\ \text{cm}^2$. Therefore, the area of the shaded region is $(144 - 36\pi) \approx 30.9\ \text{cm}^2$.

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48) Top & Bottom $2 \cdot \frac{1}{2} \cdot 6 \cdot 8 = 48$ cm^2
Sides $.5 \cdot 6 + .5 \cdot 8 + .5 \cdot 10 = 12$ cm^2

60 cm$^2 \cdot 10000 = 600000$ cm^2
@ 60 cm^2 per object

$200 \overline{)600000}$ = 3000

\$3000. total to silverplate

30. 300 cm^2. The solid is a triangular prism, so it has five faces: one rectangle with dimensions 8 cm by 12 cm, one rectangle with dimensions 8 cm by 5 cm, one rectangle (the slanted face) with dimensions 8 cm by 13 cm, and two right triangles, each with base of length 12 cm and height 5 cm. To find the surface area of the prism, add the areas of the five faces: $(8 \cdot 12) + (8 \cdot 5) + (8 \cdot 13) + 2\left(\frac{1}{2} \cdot 12 \cdot 5\right) = 96 + 40 + 104 + 60 = 300$, so the surface area of the triangular prism is 300 cm^2.

31. 940 cm^2. To find the surface area of the prism, add the areas of its six faces.

Area of two trapezoids: $2\left[\frac{1}{2} \cdot 12(35 + 10)\right] = 12(45) = 540$ cm^2

Area of four rectangles: $15 \cdot 5 + 10 \cdot 5 + 20 \cdot 5 + 35 \cdot 5 = 75 + 50 + 100 + 175 = 400$ cm^2

Surface area of prism $= 540 + 400 = 940$ cm^2

32. 1356 cm^2. The solid is a pyramid with a rectangular base. To find the surface area of the pyramid, add the areas of its five faces.

Area of rectangular base $= 30 \cdot 14 = 420$ cm^2

Area of two triangles with base length 30 cm and height 20 cm: $2\left(\frac{1}{2} \cdot 30 \cdot 20\right) = 600$ cm^2

Area of two triangles with base length 14 cm and height 24 cm: $2\left(\frac{1}{2} \cdot 14 \cdot 24\right) = 336$ cm^2

Surface area of pyramid $= 420 + 600 + 336 = 1356$ cm^2