

LESSON 134

1. $(6 + 6)^2 = 6^2 + a^2$
 $a = \sqrt{108} = 6\sqrt{3}$
2. $a = 6$
 $b = 180 - 116 = 64$
3. $a + a + 166 = 360$
 $a = 97$
4. $a = 90$
 $b = 180 - 102 = 78$
 $c = b/2 = 39$
5. $a = 154/2 = 77$
 $b = 2(36) = 72$
6. $a = 2(124) = 248$
 $b = 360 - a = 112$
7. $a = 180 - 93 = 87$
 $b = (a + 129)/2 = 108$
8. $a = 360 - 117 = 243$
 $b = (a - 117)/2 = 63$
9. $8a = 6(10)$
 $a = 15/2$
10. $6(6 + 12) = 8(8 + a)$
 $a = 11/2$
11. 3. All radii of a circle are congruent.
4. Reflexive Property
5. SSS
- 12 ~ 27. All areas are in square units.
12. area = $bh = 12(11) = 132$
13. Use the 3-4-5 Pythagorean triple to find $a = 3$.
Opposite sides of a rectangle are congruent, so $b = 5$.
area = $\frac{1}{2}h(b_1 + b_2) = \frac{1}{2}(4)(3 + 5 + 5) = 26$
14. area = $\frac{1}{2}sa \cdot n = \frac{1}{2}(7.4)(6)(5) = 111$
15. Use a 30-60-90 triangle to find $a = 4\sqrt{3}$.
area = $\frac{1}{2}sa \cdot n = \frac{1}{2}(8)(4\sqrt{3})(6) = 96\sqrt{3}$
16. The area ratio is 4:25 or $4/25$.
17. The area ratio is $54/6 = 9/1$, so the side ratio is $3/1$. Set up and solve the proportion $3/1 = 15/x$ to get $x = 5$.
So, the hypotenuse of the similar triangle is 5 in.
18. circumference = $2\pi r = 2\pi(5) = 10\pi$ in
19. arc length = $\frac{\theta}{360} \cdot 2\pi r = \frac{80}{360} \cdot 2\pi(9) = 4\pi$ cm
20. $14\pi = \frac{\theta}{360} \cdot 2\pi(18)$
 $\theta = 14(360) \cdot \frac{1}{2(18)} = 140^\circ$
21. radius = $20/2 = 10$ in
area = $\pi r^2 = \pi(10)^2 = 100\pi$ in²
22. area = $\frac{\theta}{360} \cdot \pi r^2 = \frac{110}{360} \cdot \pi(6)^2 = 11\pi$ cm²

$$23. 150\pi = \frac{240}{360} \cdot \pi r^2$$

$$r^2 = 150 \cdot \frac{360}{240} = 225$$

$$r = 15$$

$$24. \frac{120}{360} = \frac{x}{2\pi}$$

$$360x = 120(2\pi)$$

$$x = (2/3)\pi \text{ radians}$$

$$25. \frac{x}{360} = \frac{\pi/6}{2\pi}$$

$$2\pi x = 360(\pi/6)$$

$$x = 30^\circ$$

26. Use the Pythagorean Theorem to find $x = 6$.
area = large rectangle – triangle

$$= 12(6) - \frac{1}{2}(3)(6) = 72 - 9 = 63$$

27. Radius is half diameter, so $r = 4$.
Use a 30-60-90 triangle to find $h = 4\sqrt{3}$.
area = semicircle + triangle

$$= \frac{1}{2}\pi r^2 + \frac{1}{2}bh = \frac{1}{2}\pi(4)^2 + \frac{1}{2}(8)(4\sqrt{3})$$

$$= 8\pi + 16\sqrt{3}$$