

Warm Up 98

1. component
2. vertical: 4.11,
horizontal: 5.66
3. 48°

Lesson Practice 98

- a. 64
- b. 30°
- c. $a = 30.4$; You could use the Pythagorean Theorem to find a .
- d. 45.58 yards

Practice 98

1. $\theta = 127^\circ$
2. Yes, their images are the same. It does not matter if the dilation or the translation occurs first, because the dilation changes only the radius of the circle, leaving the center unmoved, while the translation changes only the location of the center of the circle, without changing the radius length; The equation of the new circle is $(x + 3)^2 + (y + 2)^2 = 36$.
3. 1492 m^2
4. 3 inches
5. 5
6. $x = 58; y = 56$
7. $\cos \theta = 0.6, \theta = 53^\circ$
8. Since \overline{SX} and \overline{SY} are both radii of the same circle, they are congruent. By the definition of isosceles triangles, $\triangle SYX$ is isosceles. By the Isosceles Triangle Theorem, $\angle SXY \cong \angle SYX$. By the Vertical Angles Theorem, $\angle SXY \cong \angle 1$ and $\angle SYX \cong \angle 2$. By the Transitive Property of Congruence, $\angle 1 \cong \angle 2$.
9. $10,000 \text{ ft}^2$
10. 2 unique vectors; with angles of 120° above and 60° below the positive x -axis.
11. $\theta = 94^\circ$
12. $\triangle JKL$ and $\triangle PQR$ are right triangles, $\overline{JK} \cong \overline{PQ}$, and acute $\angle K \cong \angle Q$; by the LA Congruence Theorem, $\triangle JKL \cong \triangle PQR$.
13. $14; \left(\frac{1}{2}P\right) + \frac{1}{2}\left(\frac{1}{6}P\right)$

14. $(-8, -3)$
15. rectangle
16. $x = 30^\circ$
17. $(x + 1)^2 + y^2 = 100;$
 $(x + 1)^2 + y^2 = 25;$
 The circles are concentric with center at $(-1, 0)$. The radius of the smaller circle is 5 and of the larger circle is 10.
18. Sample: Since $\cos 90^\circ = 0$,
 $-2ab(\cos 90^\circ) = 0$.
 So the Law of Cosines simplifies to $c^2 = a^2 + b^2$.
19. The angles opposite the 18-unit side can either be acute or obtuse. From the given information, it is impossible to tell which it will be.

20.

Statements	Reasons
1. $\angle JMK \cong \angle LMH$	1. Vertical Angles
2. $\angle LHK \cong \angle JKH$	2. Alternate Interior Angles
3. $\overline{JK} \cong \overline{HL}$	3. Given
4. $\triangle JKM \cong \triangle LHM$	4. AAS
5. $\overline{MK} \cong \overline{MH}$	5. CPCTC
6. $\overline{ML} \cong \overline{ML}$	6. Reflexive Property
7. $KL > HL$	7. Hinge Theorem

21. $\frac{75}{\sqrt{2}}$ in. or $\frac{75\sqrt{2}}{2}$ in.

22. 68 ft

23. Sample: Squaring each side of $\sin \theta + \cos \theta = 1$ results in $\sin^2 \theta + 2(\sin \theta)(\cos \theta) + \cos^2 \theta = 1$ which is not equivalent to $\sin^2 \theta + \cos^2 \theta = 1$. The sum of radicals is not the same as the radical of a sum.

24. $x = 46^\circ$

25. B
26. 2 tangents, 4 common tangents
27. rectangle; $P = 16$ units;
 $A = 12$ units²
28. $\frac{675}{961}$
29. The larger circle will have a circumference $\frac{7}{4}$ times that of the smaller circle and an area that is $\frac{49}{16}$ times the area of the smaller circle.

30.

