

Warm Up 64

1. inscribed angle
2. $x = 18^\circ$
3. $x = 90^\circ$

Lesson Practice 64

a. $x = 102^\circ$

b. $\widehat{MNO} = 184^\circ$

- c. **Case 1:** Assume \overline{AB} is a diameter of the circle. Then $m\widehat{AB} = 180^\circ$, and $\angle ABC$ is a right triangle. Thus $m\angle ABC = \frac{1}{2}m\widehat{AB}$.

Case 2: Assume \overline{AB} is not a diameter of the circle. Let X be the center of the circle and draw radii \overline{XA} and \overline{XB} . Since they are radii, $\overline{XA} \cong \overline{XB}$, so $\triangle AXB$ is isosceles. Thus $\angle XAB \cong \angle XBA$ and $2m\angle XBA + m\angle AXB = 180^\circ$. This means that $m\angle XBA = 90^\circ - \frac{1}{2}m\angle AXB$. Since tangents are perpendicular to radii drawn to the point of tangency, $\angle XBC$ is a right angle. Therefore, $m\angle XBA + m\angle ABC = 90^\circ$ or $m\angle ABC = 90^\circ - (90^\circ - \frac{1}{2}m\angle AXB)$. Simplifying gives $m\angle ABC = \frac{1}{2}m\angle AXB$. $m\angle AXB = m\widehat{AB}$ because $\angle AXB$ is a central angle. Thus $m\angle ABC = \frac{1}{2}m\widehat{AB}$.

d. $x = 87^\circ$

e. 120°

Practice 64

1.
 - a. 60 square units
 - b. $\frac{1}{12}$ or 0.083 for each
 - c. $\frac{1}{4}$; 0
2.
 - a. 3 sides
 - b. 4 faces
3. approximately 53% is not stained
4. C
5. $\angle B \cong \angle Y$, $\angle C \cong \angle Z$,
 $\triangle ABC \sim \triangle XYZ$ by
AA Similarity
6. Yes, because connecting any two of the given points produces a line segment, and a parallel line segment of equal length can be drawn through the third point, and connecting the endpoints of these two segments results in a parallelogram.
7. 19.1
8. 7
9. $\widehat{ABC} = 234^\circ$
10. $\langle 0, 0 \rangle$; opposite vectors
11. $\frac{\sqrt{3}}{2}$ or approximately 0.866 inches
12. See student work.
13. 107° and 59°
14. She should use two 30° - 60° - 90° triangles to measure. Since she wants each side to be 3 feet, she can use the relationship between the hypotenuse and the shorter side. The hypotenuse is 3 feet and the shorter side would be 1.5 feet. They meet at a right angle, so she could cut out the right shape and then repeat for the second side.
15. $x = 81^\circ$

16. They are both correct, as both techniques will generate the same answer. Here $34\sqrt{2} = 48$, rounded to the nearest whole number.
17. 565.2 in^2
18. Sample: $p = -4, q = 2$
19. A
20. 2
21. 132 panes
22. 1243.44 cm^2
23. $x = 34; y = 9$
24. 2.2
25. $(1, -2)$
26. $x = 120^\circ$
27. equal to; equal to; greater than
28. $x = 87.5^\circ$
29. a. 5 million
b. 2 million
c. 0.25 million or 250,000
30. $\langle 5, -3 \rangle$