Cumulative Review: Chapters 1–12

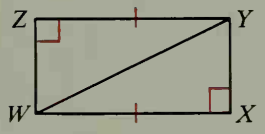
For Exercises 1–9 classify each statement as true or false.

A

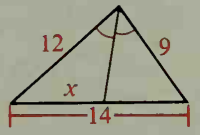
1. No more than one plane contains two given intersecting lines.
2. The conditional "p only if q" is equivalent to "if p, then q."
3. If the vertex angle of an isosceles triangle has measure j, then the measure of a base angle is $180 - 2j$.
4. In $\triangle RST$, if $m\angle R = 48$ and $m\angle S = 68$, then $RT > RS$.
5. If right $\triangle JEH$ has hypotenuse $\overline{JE}$, then $\tan J = \dfrac{JH}{EH}$.
6. It is possible to construct an angle of measure 105.
7. The area of a triangle with sides 3, 3, and 2 is $4\sqrt{2}$.
8. When a square is circumscribed about a circle, the ratio of the areas is $4:\pi$.
9. A triangle with sides of length $\sqrt{3}$, 2, and $\sqrt{7}$ is a right triangle.

B

10. In $\square JKLM$, $m\angle J = \frac{3}{2}x$ and $m\angle L = x + 17$. Find the numerical measure of $\angle K$.
11. Given: $\overline{WZ} \perp \overline{ZY}$; $\overline{WX} \perp \overline{XY}$; $\overline{WX} \cong \overline{YZ}$
    Prove: $\overline{WZ} \parallel \overline{XY}$



12. Prove: If the diagonals of a parallelogram are perpendicular, then the parallelogram must be a rhombus.
13. For $\triangle JKL$ and $\triangle XYZ$ use the following statement:
    "If $\angle J \cong \angle X$ and $\angle K \cong \angle Y$, then $\triangle JKL \sim \triangle XYZ$."
    a. Name the postulate or theorem that justifies the statement.
    b. Write the converse of the statement. Is the converse true or false?
14. Find the value of x in the diagram at the right.



15. $\overline{AB}$ and $\overline{CD}$ are chords of $\odot P$ intersecting at X. If $AX = 7.5$, $BX = 3.2$, $CD = 11$, and $CX > DX$, find CX.
16. Describe each possibility for the locus of points in space that are equidistant from the sides of a $\triangle ABC$ and 4 cm from A.
17. $\overset{\frown}{AB}$ lies on $\odot O$ with $m\overset{\frown}{AB} = 60$. $\odot O$ has radius 8. Find AB.
18. A regular square pyramid has base edge 10 and height 12. Find its total area and volume.
19. A cylinder has a radius equal to its height. The total area of the cylinder is 100π cm^2. Find its volume.
20. A sphere has a diameter of 1.8 cm. Find its surface area to the nearest square centimeter. (Use $\pi \approx 3.14$.)