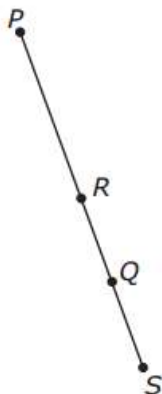


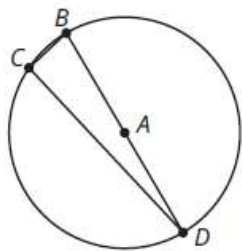
Q1: R is the midpoint of segment PS . Q is the midpoint of segment RS .



P is located at $(8, 10)$, and S is located at $(12, -6)$. What are the coordinates of Q ?

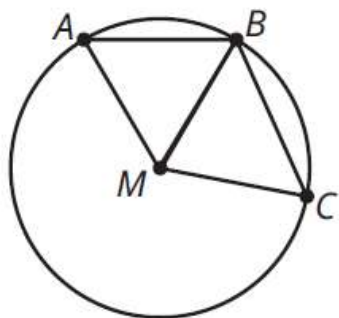
- A $(4, 2)$
- B $(2, -8)$
- C $(11, -2)$
- D $(10, 2)$

Q2: The endpoints of diameter \overline{BD} in a circle form an angle with point C . What is the measure $\angle BCD$?



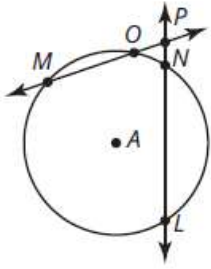
- A 180°
- B 90°
- C 60°
- D 45°

Q3: A circular token in a board game has two triangles drawn on it, as shown. For which of the following conditions would $\widehat{AB} \cong \widehat{BC}$ in circle M ?



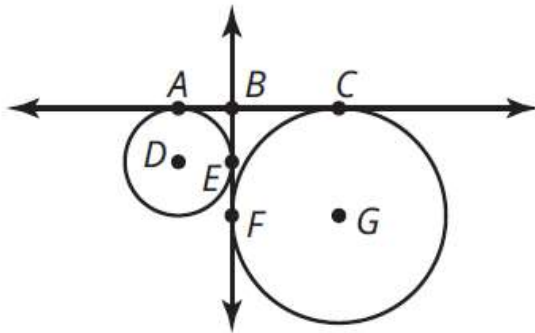
- A $\overline{MB} \cong \overline{MC}$
- B $\overline{AB} \cong \overline{BC}$
- C $\overline{CM} \cong \overline{AM}$
- D $\overline{MA} \cong \overline{MB}$

Q4: If $m\widehat{ML} = 175^\circ$ and $m\widehat{ON} = 15^\circ$, what is $m\angle MPL$?



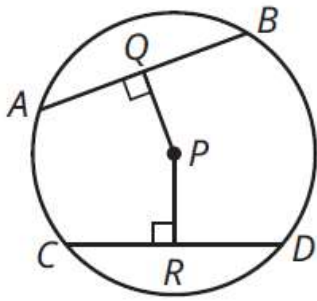
- A** 80°
B 85°
C 90°
D 95°

Q5: Veronica copies a map of the paths in a park with circular picnic areas. On her map, lines AC and BF are tangent to circle D at points A and E , respectively. Lines AC and BF are tangent to circle G at points C and F , respectively. Which of the following statements is true?



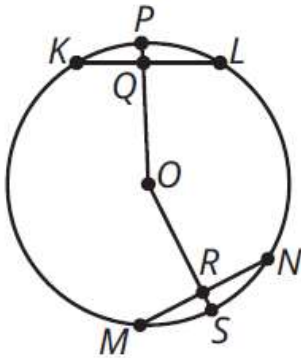
- A** $CA = BF$
B $BA = BE$
C $BF = 2BE$
D $AB = EF$

Q6: In circle P , $\overline{PQ} \cong \overline{PR}$, $AB = 5x + 16$, and $CD = 6 - 5x$. Which statement is true? Select all that apply.



- A** $x = 1$
- B** $DR = 5.5$
- C** $\overline{AQ} \cong \overline{CR}$
- D** $\widehat{AB} \cong \widehat{CD}$
-

Q7: Fill in the missing reason for the proof of the Equidistant Chord Conjecture.

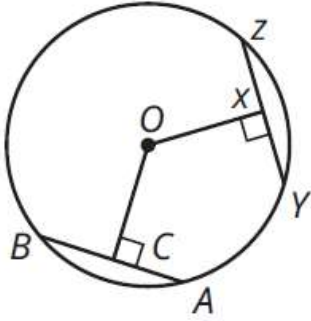


Given $\overline{KL} \cong \overline{MN}$, where radii \overline{OP} and \overline{OS} are perpendicular to \overline{KL} and \overline{MN} respectively, prove that \overline{MN} and \overline{KL} are equidistant from point O .

Statements	Reasons
1. $\overline{KL} \cong \overline{MN}$, \overline{OP} and \overline{OS} are perpendicular to \overline{KL} and \overline{MN}	1. Given
2. Draw radii \overline{OK} , \overline{OL} , \overline{OM} , and \overline{ON} .	2. Construction
3. $\overline{OK} \cong \overline{OL} \cong \overline{OM} \cong \overline{ON}$	3. _____
4. $\triangle OKL \cong \triangle ONM$	4. SSS Congruence Theorem
5. $\angle L \cong \angle N$	5. Corresponding parts of congruent triangles are congruent.
6. $\angle OQL$ and $\angle ORN$ are right angles.	6. Definition of perpendicular lines
7. $\angle OQL \cong \angle ORN$	7. All right angles are congruent.
8. $\triangle OQL \cong \triangle ORN$	8. AAS Congruence Theorem
9. $\overline{OQ} = \overline{OR}$	9. Corresponding parts of congruent triangles are congruent.
10. $OQ = OR$	10. Definition of congruent segments
11. \overline{MN} and \overline{KL} are equidistant from the center point, O .	11. Definition of equidistance

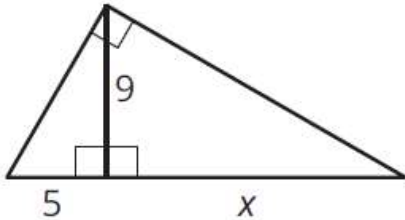
- A** Radii of the same circle are congruent
- B** Definition of perpendicular segments
- C** Reflexive Property of Equality
- D** Definition of segment bisector

Q8: Segments \overline{OC} and \overline{OX} are perpendicular to chords \overline{AB} and \overline{YZ} , respectively. If \overline{OX} is congruent to \overline{OC} , and the length of \overline{AB} is 10 millimeters, what is the length of \overline{YZ} ?



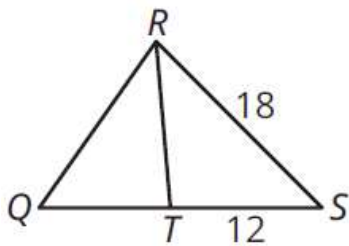
- A 8 millimeters
- B 9 millimeters
- C 10 millimeters
- D 12 millimeters

Q9: In $\triangle ABC$, what is the value of x ?



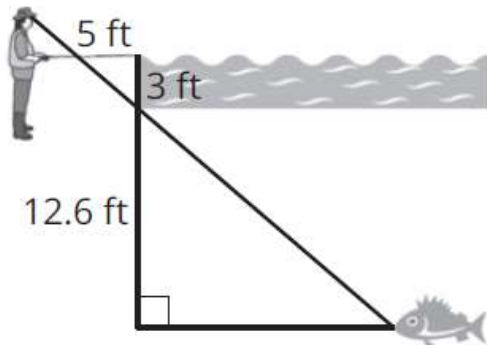
- A 11
- B 14
- C 15.6
- D 16.2

Q10: Triangle QRS has a perimeter of 55. If \overline{RT} bisects angle R , what is the length of \overline{QT} ?



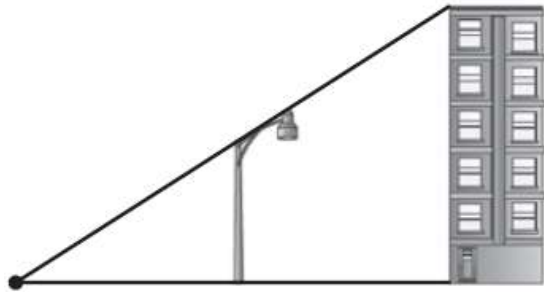
- A 10
- B 12
- C 15
- D 18

Q11: Victoria holds a 5-foot long fishing pole. The fishing line extends 3 feet to the water's surface and then another 12.6 feet to a hook. How far is the fish from the hook?



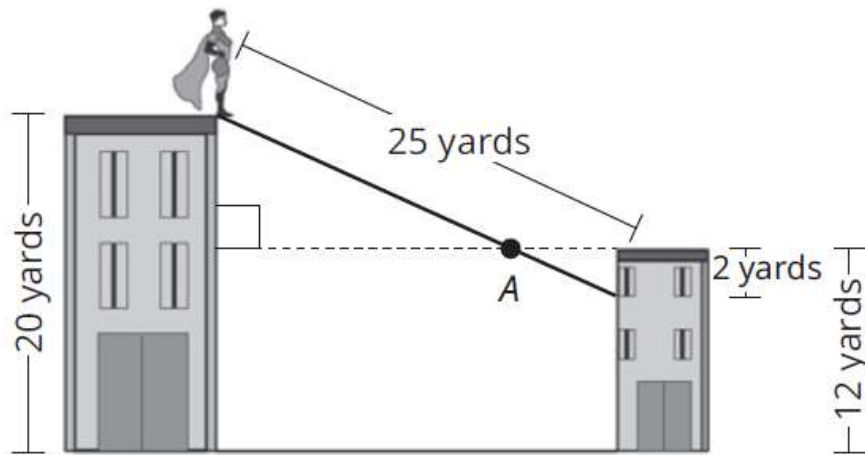
- A 21 ft
- B 24.6 ft
- C 27 ft
- D 30.6 ft

Q12: A 30-foot-long support wire for a 16-foot high streetlight runs from the top corner of a building to a point on the ground, forming a straight line. The length of the wire from the top of the building to the top of the street light is 6 feet. How tall is the building?



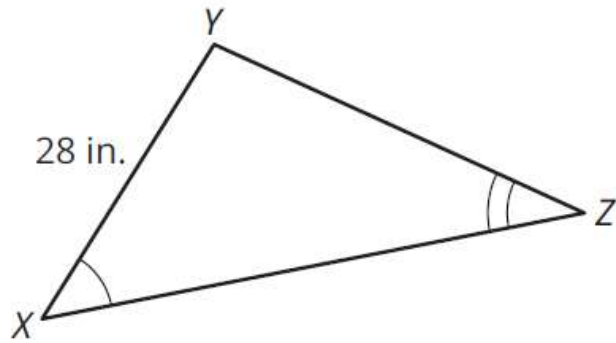
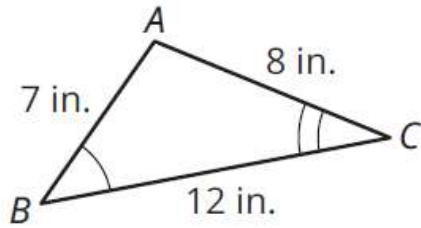
- A 16 feet
- B 20 feet
- C 32 feet
- D 48 feet

Q13: A super-heroine slides down a 25-yard-long wire from the top of a 20-yard-tall building into a window 2 yards below the top of a 12-yard-tall building. Her photo is taken by a photographer when she is at point *A*. At that moment, how far is she from the window?



- A 4 yds
- B 5 yds
- C 6 yds
- D 20 yds

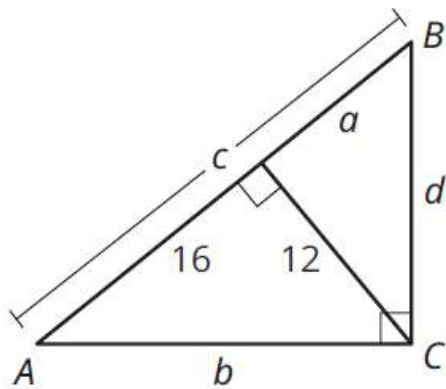
Q14: Triangle XYZ is a dilation of triangle ABC .



What is the perimeter of triangle XYZ ?

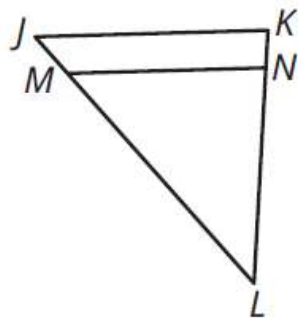
- A** 81 in.
- B** 90 in.
- C** 108 in.
- D** 135 in.

Q15: Which is true? Select all that apply.



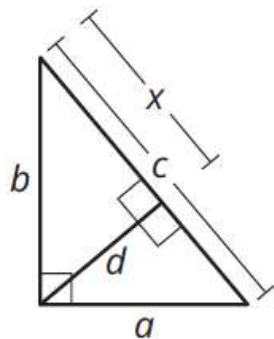
- A** $a = 9$
- B** $b = 20$
- C** $c = 30$
- D** $d = 15$

Q16: In triangle JKL with $\overline{MN} \parallel \overline{JK}$, which theorem can be used to show that $JM = \frac{KN}{NL} \cdot ML$?



- A Converse of the Pythagorean Theorem
- B Side-Angle-Side Similarity Theorem
- C Triangle Proportionality Theorem
- D Triangle Midsegment Theorem

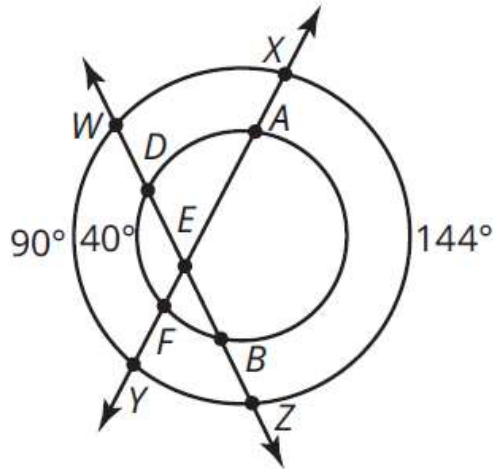
Q17: Which of these expressions is equal to the value of x in the right triangle shown? Select all that apply.



- A $\frac{bd}{a}$
- B $\frac{b^2}{c}$
- C $\sqrt{b^2 - d^2}$
- D $\frac{a}{bc}$

Q18: Two secants intersect two concentric circles.

The arcs include $m\widehat{XZ} = 144^\circ$, $m\widehat{WY} = 90^\circ$, and $m\widehat{DF} = 40^\circ$. What is the measure of AB ?



- A 117°
- B 138°
- C 176°
- D 194°