

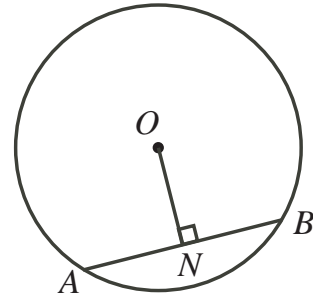


Intermediate Math Circles

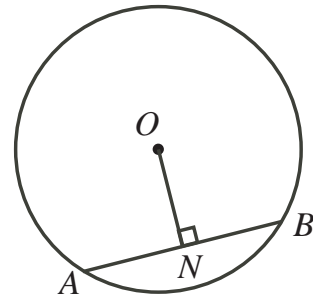
Wednesday October 19 2016

Problem Set 3

1. Determine the length of the chord AB if $OA = 5$ and $ON = 3$.



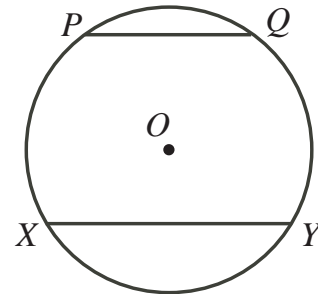
2. If $AB = 10$ and $OA = 13$, determine the length of ON .



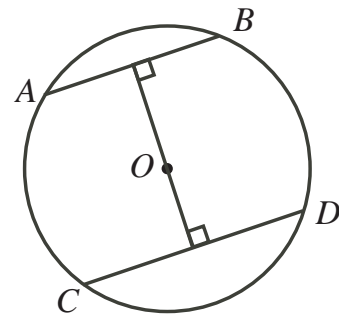
3. A circle has a diameter of length 26. If a chord of the same circle has a length of 10, how far is the chord from the centre?



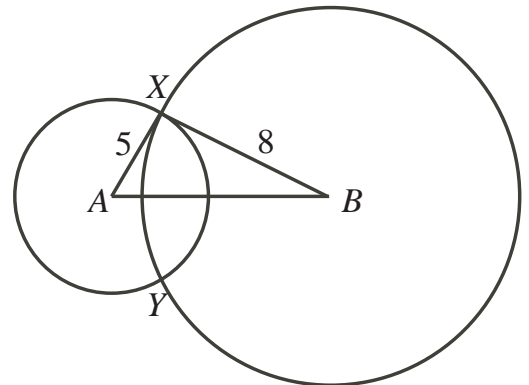
4. Calculate the distance between the parallel chords PQ and XY if $PQ = 6$, $XY = 8$, and the radius of the circle is 5.



5. The two parallel chords AB and CD are a distance of 14 apart. If AB has length 12 and the radius of the circle is 10, calculate the length of CD .

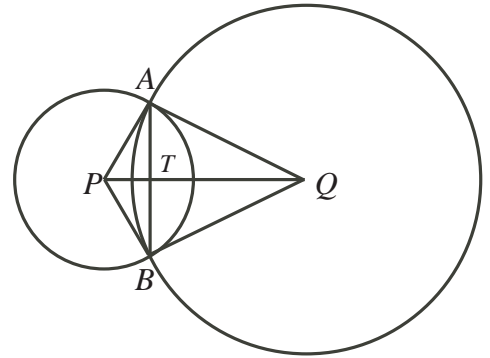


6. Two circles with centre A and B have radii 5 and 8, respectively. The circles intersect at the points X and Y . If $XY = 8$, determine the length of AB , the distance between the centres.

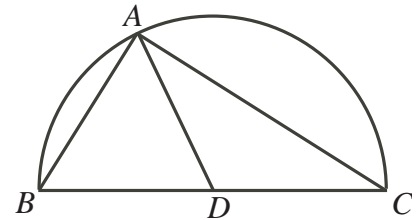




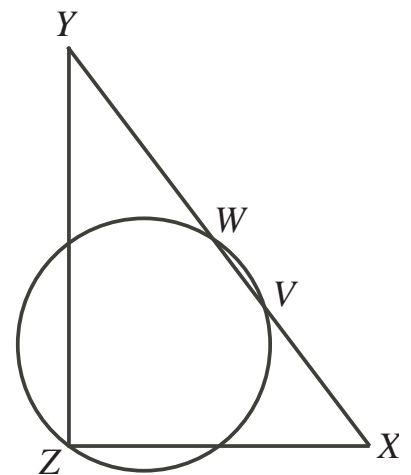
7. In the diagram, $PA = 13$ and $QA = 20$, where P and Q are the centres of the circles. Determine the length of AB if $PQ = 21$.



8. In the diagram, $\triangle ABC$ is inscribed in the semicircle with centre D . If $AB = AD$, determine the measure of $\angle ACD$.



9. In the diagram, $\triangle XYZ$ is right-angled at Z . W is the midpoint of XY , and the circle with diameter ZW intersects WX at V . If $XY = 50$ and $WV = 7$, determine the length of XZ .



Answers

1. 8 2. 12 3. 12 4. 7 5. 16 m 6. $4\sqrt{3} + 3$
 7. $\sqrt{20} = 2\sqrt{5}$ 8. $z = 30^\circ$ 9. $\frac{30}{3}$