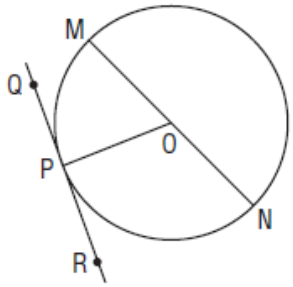
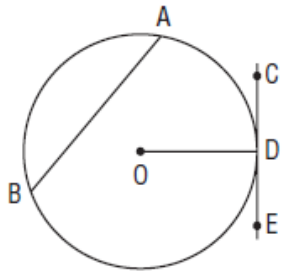
3. In each diagram, point O is the centre of each circle. Which lines are tangents?

a)

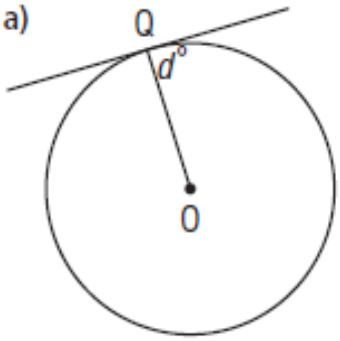


b)

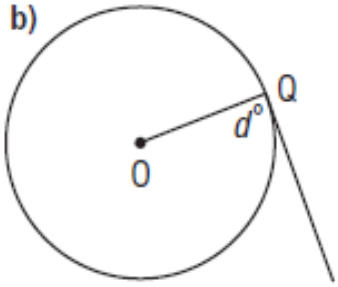


4. Point Q is a point of tangency. Point O is the centre of each circle. What is each value of $d°$?

a)

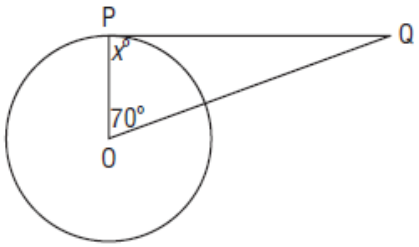


b)

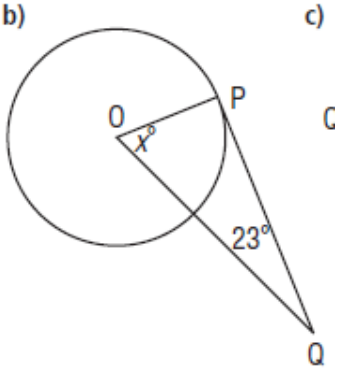


5. Point P is a point of tangency and O is the centre of each circle. Determine each value of $x°$.

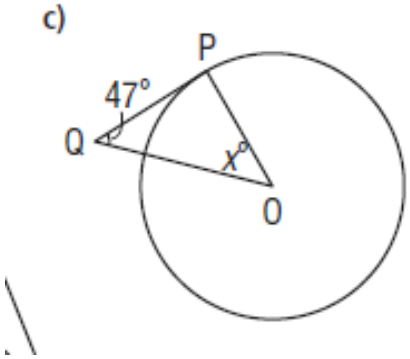
a)



b)

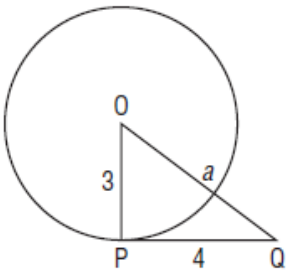


c)

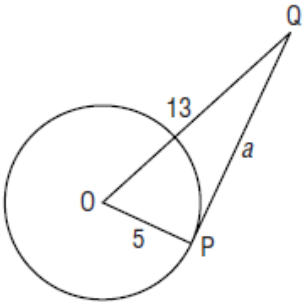


6. Point P is a point of tangency and O is the centre of each circle. Determine each value of a.

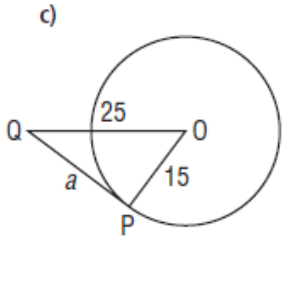
a)



b)

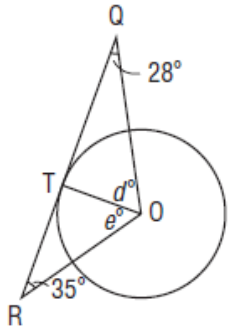


c)

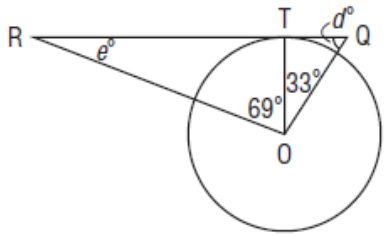


7. Point T is a point of tangency and O is the centre of each circle. Determine each value of $d°$ and $e°$.

a)

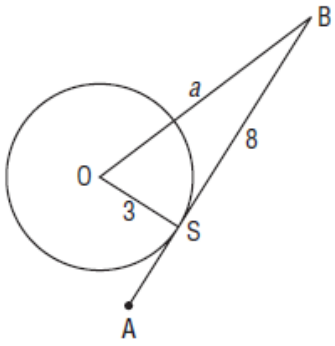


b)

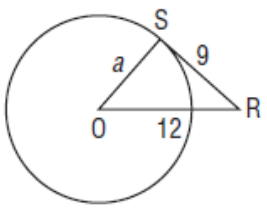


8. Point S is a point of tangency and O is the centre of each circle. Determine each value of a to the nearest tenth.

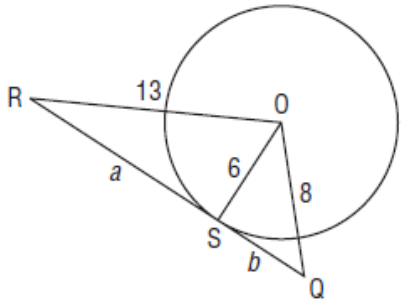
a)



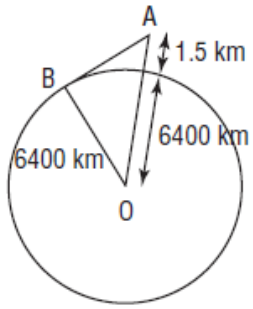
b)



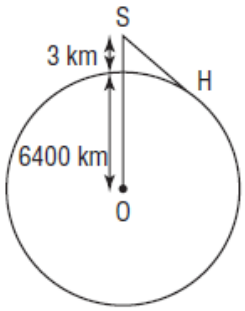
9. Point S is a point of tangency and O is the centre of the circle. Determine the values of a and b to the nearest tenth.



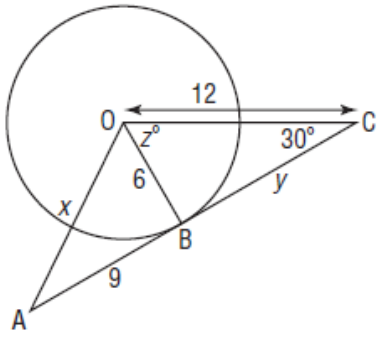
12. A small aircraft, A, is cruising at an altitude of 1.5 km. The radius of Earth is approximately 6400 km. How far is the plane from the horizon at B? Calculate this distance to the nearest kilometre.



13. A skydiver, S, jumps from a plane at an altitude of 3 km. The radius of Earth is approximately 6400 km. How far is the horizon, H, from the skydiver when she leaves the plane? Calculate this distance to the nearest kilometre.



14. Point O is the centre of the circle. Point B is a point of tangency. Determine the values of x, y, and $z°$. Give the answers to the nearest tenth where necessary. Justify the strategies you used.



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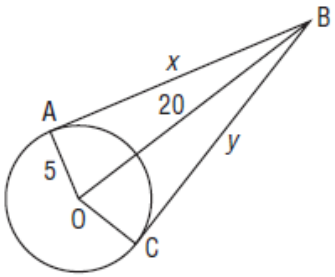
16 c) Points A and C are points of tangency and O is the centre of the circle. Calculate the values of x and y to the nearest tenth. Do the answers confirm your conclusions in part b? Explain.



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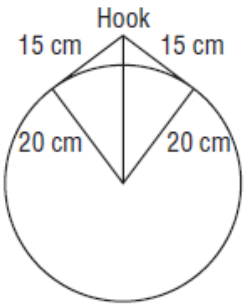
17. A circular mirror with radius 20 cm hangs by a wire from a hook. The wire is 30 cm long and is a tangent to the mirror in two places. How far above the top of the mirror is the hook? How do you know?



20. What is the radius of the largest circle that can be cut from a square piece of paper whose diagonal is 24 cm long?