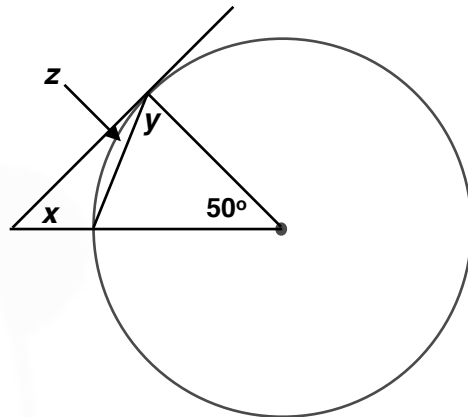


Alternate Segment Theorem

Starter

1. (Review of last lesson)

Find the marked angles, giving reasons for your answers.



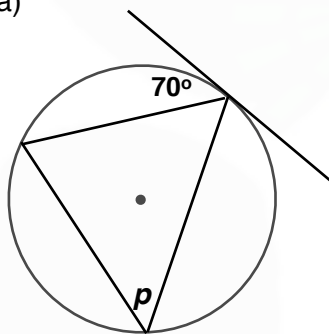
Working: The angle between the radius and the tangent is 90° so $y + z = 90^\circ$
 $\therefore x = 180 - 90 - 50 = 40^\circ$

Angles y and 50° are in an isosceles triangle so $y = \frac{180 - 50}{2} = 65^\circ$

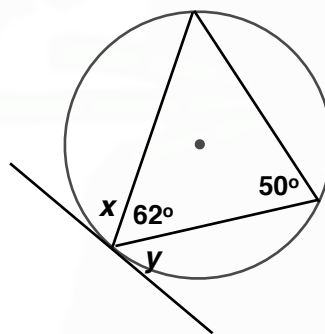
Since $y + z = 90^\circ$, $z = 90 - 65 = 25^\circ$

E.g. 1 Find the marked angles:

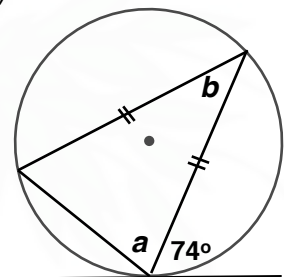
(a)



(b)



(c)



Working: (a) $p = 70^\circ$ (alternate segment theorem)

(b) $x = 50^\circ$ (alternate segment theorem)

$x + 62 + y = 180$ (angles in a straight line add up to 180°)

$y = 180 - 50 - 62 = 68^\circ$

(c) By the alternate segment theorem, the 3rd angle in the triangle is 74° .

Since the triangle is isosceles, $a = 74^\circ$.

Angles in a triangle add up to 180° so $b = 180 - 2 \times 74 = 32^\circ$

Video: [Circle theorems](#)

[Solutions to Starter and E.g.s](#)

Exercise

9-1 class textbook: p82 E3.4 Qu 1-16 odd, 17-22
A*-G class textbook: p76 E3.4 Qu 1-16 odd, 17-21
9-1 homework book: p29 E3.4 Qu 1-13
A*-G homework book: p22 E3.4 Qu 1-12

[Homework book answers \(only available during a lockdown\)](#)

