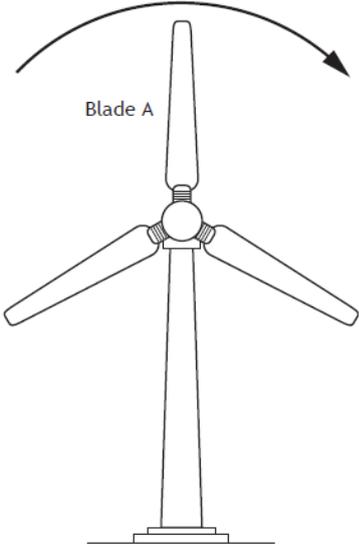
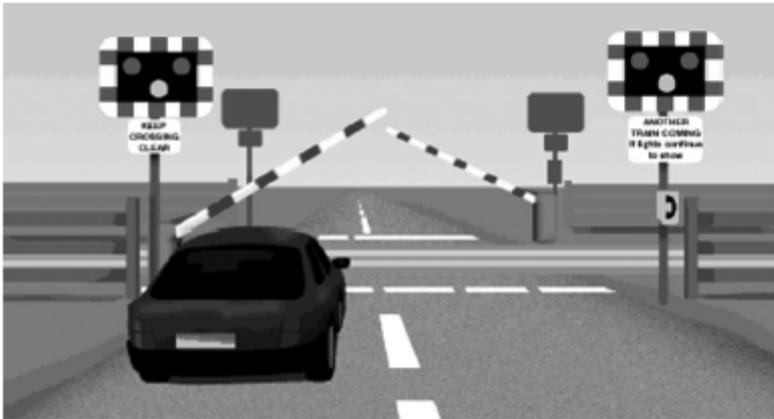


2018 P2 Q8	Solve the equation $7 \sin x^\circ + 2 = 3$, for $0 \leq x < 360$.	3
Ans	$x = 8.2^\circ, x = 171.8^\circ$	
2017 P2 Q15	<p>A wind turbine has three blades as shown below.</p>  <p>The height, h metres, of the tip of blade A above the ground in each rotation is given by</p> $h = 40 + 23 \cos x^\circ, \quad 0 \leq x < 360$ <p>where x is the angle blade A has turned clockwise from its vertical position.</p> <p>(a) Calculate the height of the tip of blade A after it has turned through an angle of 60°.</p> <p>(b) Find the minimum height of the tip of blade A above the ground.</p> <p>(c) Calculate the values of x for which the tip of blade A is 61 metres above the ground.</p>	1 1 4
Ans	(a) 51.5m (b) 17m (c) $24.1^\circ, 335.9^\circ$	
2016 P2 Q14	Solve the equation $2 \tan x^\circ + 5 = -4$, for $0 \leq x \leq 360$.	3

Ans	$x = 102.5^\circ, 282.5^\circ$	
2015 P2 Q9	<p>Solve the equation</p> $3 \tan x^\circ - 2 = 4, \quad 0 \leq x < 360.$	3
Ans	$x = 63.4^\circ, 243.4^\circ$	
2014 P2 Q12	<p>Solve the equation $11\cos x^\circ - 2 = 3$, for $0 \leq x \leq 360$.</p>	3
Ans	$x = 63^\circ, 297^\circ$	
2014 P2 Q12	<p>The barrier at a level crossing is raised after a train has passed.</p>  <p>The height, h centimetres, of the end of the barrier can be calculated using the formula below</p> $h = 320 \sin x^\circ + 150, \quad 0 \leq x \leq 90,$ <p>where x° is the size of the angle between the barrier and the horizontal.</p> <p>Calculate the size of the angle between the barrier and the horizontal when the height of the end of the barrier is 458 centimetres.</p>	3
Ans	74.3°	

2013 P2 Q13



A Ferris wheel is turning at a steady rate.

The height, h metres, of one of the cars above the ground at a time t seconds is given by the formula

$$h = 7 + 5\sin t^\circ.$$

Find **two** times during the first turn when the car is at a height of 10.8 metres above the ground.

4

Ans 49s, 131s

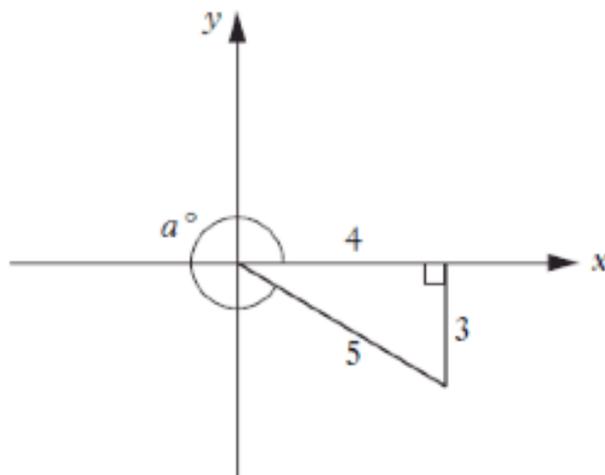
2012 P2 Q8

Solve the equation $5 \cos x^\circ - 3 = 1$, $0 \leq x \leq 360$.

3

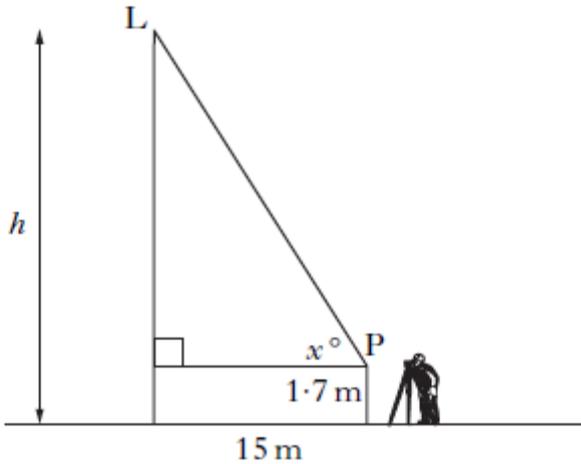
Ans 36.9° , 323.1°

2011 P1 Q10

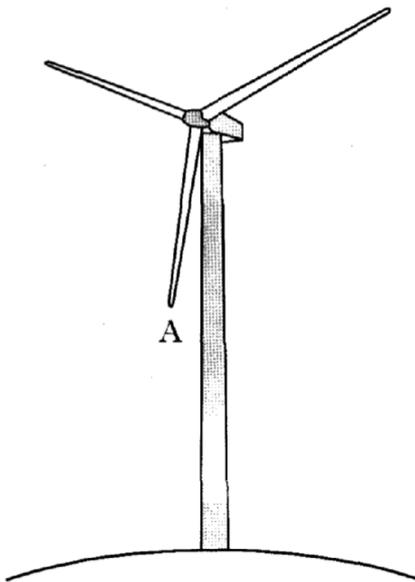


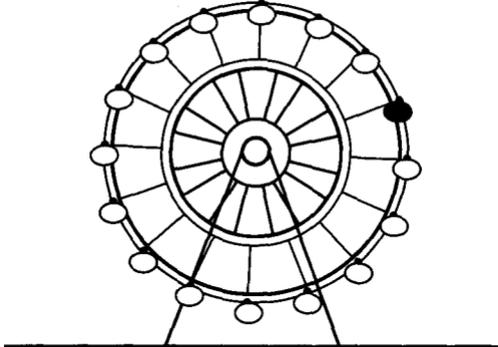
Write down the value of $\cos a^\circ$.

1

Ans	$\frac{4}{5}$
2011 P2 Q10	<p>Solve the equation</p> $2 \tan x^\circ - 3 = 5, \quad 0 \leq x \leq 360.$
Ans	$76^\circ, 256^\circ$
2010 P2 Q14	<p>A surveyor views a lift as it travels up the outside of a building.</p>  <p>In the diagram below, the point L represents the lift.</p>  <p>The height, h metres, of the lift above the ground is given by the formula</p> $h = 15 \tan x^\circ + 1.7,$ <p>where x° is the angle of elevation of the lift from the surveyor at point P.</p> <p>(a) What is the height of the lift above the ground when the angle of elevation from P is 25°?</p> <p>(b) What is the angle of elevation at point P when the height of the lift above the ground is 18.4 metres?</p>
Ans	(a) 8.69m (b) 48°

2009 P1 Q6	<p>An angle, a°, can be described by the following statements.</p> <ul style="list-style-type: none"> • a is greater than 0 and less than 360 • $\sin a^\circ$ is negative • $\cos a^\circ$ is positive • $\tan a^\circ$ is negative <p>Write down a possible value for a.</p>	1
Ans	Any value a such that $270 < a < 360$	
2009 P2 O10	<p>Solve the equation</p> $7 \sin x^\circ + 1 = -5, \quad 0 \leq x \leq 360.$	3
Ans	$239^\circ, 301^\circ$	
2008 P2 O8	<p>Solve the equation</p> $4 \cos x^\circ + 3 = 0, \quad 0 \leq x \leq 360.$	3
Ans	$138.6^\circ, 221.4^\circ$	
2007 P2 O13	<p>Solve the equation</p> $5 \tan x^\circ - 6 = 2, \quad 0 \leq x < 360.$	3
Ans	$58^\circ, 238^\circ$	

2006 P2 Q12	<p>The arms on a wind turbine rotate at a steady rate.</p>  <p>The height, h metres, of a point A above the ground at time t seconds is given by the equation</p> $h = 8 + 4 \sin t^\circ.$ <p>(a) Calculate the height of point A at time 30 seconds.</p> <p>(b) Find the two times during the first turn of the arms when point A is at a height of 10.5 metres.</p>	2 4
Ans	(a) 10m (b) 38.7 seconds, 141.3 seconds	
2005 P2 O11a	<p>Solve the equation</p> $7 \cos x^\circ - 5 = 0, \quad 0 \leq x < 360.$	3
Ans	44.4°, 315.6°	
2004 P2 O10	<p>Solve the following equation for $0 \leq x \leq 360$.</p> $7 \sin x^\circ - 3 = 0$	3
Ans	25.4°, 154.6°	
2003 P2 O12a	<p>Solve the equation</p> $2 \tan x^\circ + 7 = 0, \quad 0 \leq x < 360.$	3
Ans	106°, 286°	

2002W P2 O11	<p>Solve the equation</p> $2 \tan x^\circ + 4 = 5, \quad 0 \leq x < 360.$	3
Ans	$26.6^\circ, 206.6^\circ$	
2002 P2 Q12	<p>At the carnival, the height, H metres, of a carriage on the big wheel above the ground is given by the formula</p> $H = 10 + 5 \sin t^\circ,$ <p>t seconds after starting to turn.</p> <div style="text-align: center;">  </div> <p>(a) Find the height of the carriage above the ground after 10 seconds.</p> <p>(b) Find the two times during the first turn of the wheel when the carriage is 12.5 metres above the ground.</p>	2 4
Ans	<i>(a) 10.9 metres (b) 30 and 150 seconds</i>	
2001 P2 O11a	<p>Solve the equation</p> $4 \tan x^\circ + 5 = 0, \quad 0 \leq x \leq 360.$	3
Ans	$128.7^\circ, 308.7^\circ$	