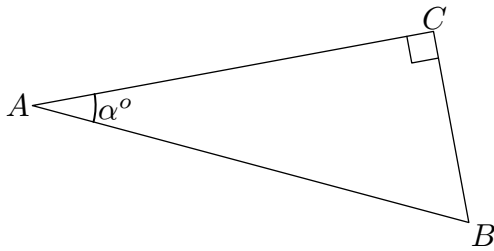


1. Properties

E.5671



Consider the triangle ABC right-angled C shown below :



1 Express the trigonometric ratios:
 $\cos \alpha^\circ$; $\sin \alpha^\circ$; $\tan \alpha^\circ$

2 a Establish the following equality:
 $(\cos \alpha)^2 + (\sin \alpha)^2 = 1$

b Establish the following equality: $\tan \alpha = \frac{\sin \alpha}{\cos \alpha}$

2. Notable Angles and Square Roots

E.709



- 1 Construct a triangle ABC equilateral with side 4 cm . Let H be the foot of the height from A .
- 2 Give the exact value of the length AH .
- 3 Determine the exact value of $\sin(60^\circ)$ in the triangle ACH

E.715



The unit of length is the centimeter

- 1 Construct a triangle DOS such that:
 $DS = DO = 6$; $\widehat{DOS} = 120^\circ$
What is the nature of the triangle DOS ? Justify.
- 2 In triangle DOS , draw the height coming from D . It intersects $[OS]$ at H .
The following table is given :

x	0°	30°	45°	60°	90°
$\cos x$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\sin x$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\tan x$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	$\times$

a Calculate the exact value of OH .

b Deduce that: $OS = 6\sqrt{3}$

- 3 Place the point M of $[DS]$ such that $SM=5$. Draw the parallel to (OS) passing through M ; it intersects $[DO]$ at N . Calculate the exact value of MN .

E.707



Let $\mathcal{C}$ be a circle of center O and radius 4 cm .

Let B and C be two diametrically opposed points and A a third point of the circle such that $AC=4\text{ cm}$.

- 1 Draw the picture.
- 2 Show that the triangle ABC is right-angled.

The triangle ABC has an area equal to $8\sqrt{2}$.

- 3 Deduce the length of $[AB]$.
- 4 Calculate the measure of $\widehat{ABC}$.

Let A' be the symmetric of A relative to the (BC) axis. Note H the point of intersection of $[AA']$ and (BC) .

- 5 Show that: $\widehat{ABA'} = 60^\circ$
- 6 Show that ABA' is an equilateral triangle.