Trigonometry Revision Questions

LC HL Project Maths

1. **Basic definitions**
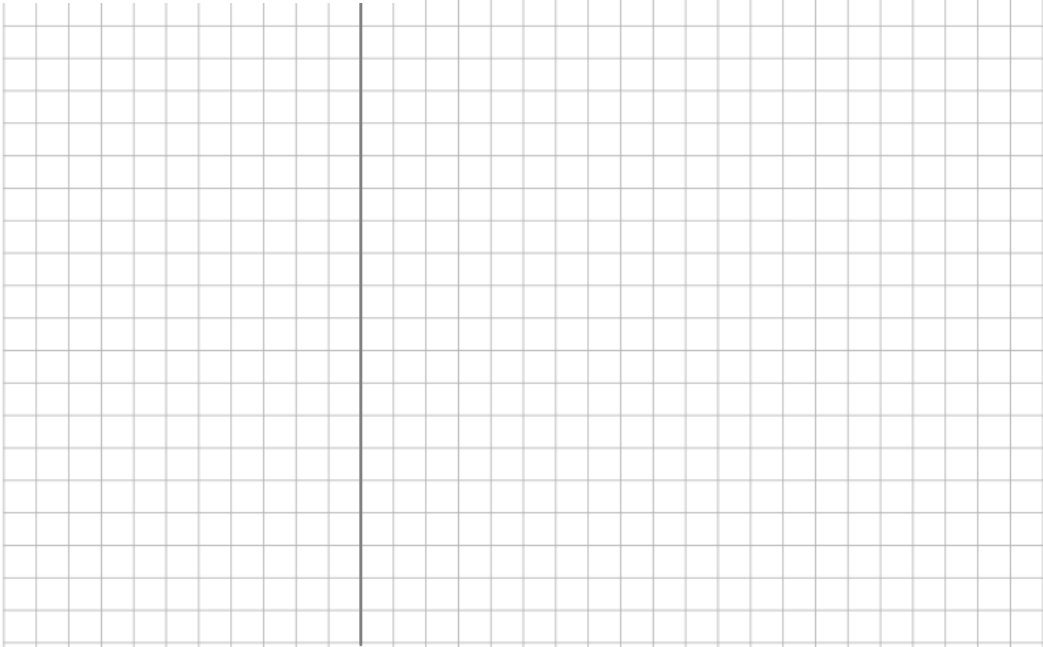
   e.g. if $\tan A = \dfrac{t}{2}$, for $0° \le A \le 90°$,
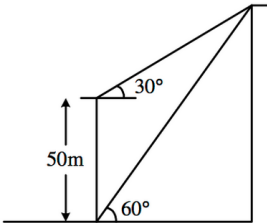
   express $\cos A$ and $\sin A$ in terms of t

Trigonometry Revision Questions

2. **Trig graphs**
   e.g. A trigonometric function is given by
   $$f(x) = a + b\cos cx,$$
   where $a, b, c \in \mathbb{R}$ and x is in degrees.

   The range of the graph $y = f(x)$ is $[-10, 50]$ and its period is $72°$.

   If $b < 0$, find the values of the constants a, b and c.

3. **Right-angled triangles**
   e.g. A vertical tower and a vertical column are situated on horizontal ground.
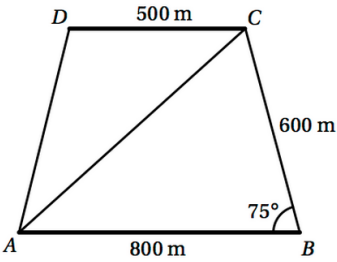

   From the foot of the tower, the angle of elevation of the top of the column is $60°$; from the top of the tower, which is 50 m high, the angle of elevation is $30°$. Find the height of the column.
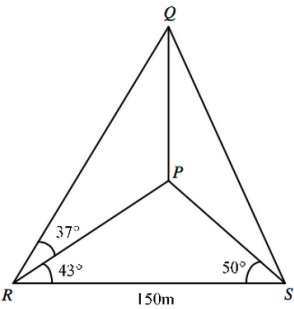
Trigonometry Revision Questions

4. **Solving triangles**

   e.g. In the diagram, $[AB]$ and $[DC]$ are two parallel roads, where $|AB| = 800$ m and $|DC| = 500$ m . By measurement, it is determined that $|\angle ABC| = 75°$ and that $|BC| = 600$ m .

   Find
   (i) $|AC|$, correct to the nearest metre,
   (ii) $|\angle BAC|$, in degrees to two decimal places,
   (iii) $|AD|$, correct to the nearest metre.

5. **3D problems**

   e.g. $[PQ]$ is a vertical mast and P, R, S are points on horizontal ground.

   $|\angle PRS| = 43°$, $|\angle PSR| = 50°$,
   $|\angle PRQ| = 37°$ and $|RS| = 150$ m.

   Calculate
   (i) $|PR|$, correct to one decimal place,
   (ii) $|PQ|$, correct to one decimal place,
   (iii) $|\angle RQS|$, correct to the nearest degree.

3

Trigonometry Revision Questions

6. **Arcs and sectors**
   e.g. a sector of a circle of radius length 6cm has central angle 150°, express in terms of π the area of the sector

7. **Trig proofs**
   e.g. In a triangle, the sides a, b and c are opposite the angles A, B and C respectively. Prove that
   $$a^2 = b^2 + c^2 - 2bc\cos A.$$

Trigonometry Revision Questions

8. **Trig identities**

   e.g. Write $\tan 2A$ in terms of $\tan A$.
   Hence, or otherwise, find $\tan A$, where
   A is an acute angle, if $\tan 2A = \dfrac{3}{4}$. Do
   not use a calculator.

9. **Trig equations**

   e.g. Find the general solution of the
   equation

   $$\sin 2x = -\dfrac{\sqrt{3}}{2}$$

   and use it to find all the solutions for
   $0° \leq x \leq 720°$.