**SOLVING TRIANGLES**

|  |
| --- |
| To "**solve**" a triangle means to find all sides and all angles  Unless otherwise specified, round **angles** to **nearest degree** and round **lengths**/ratios to **one decimal place**.  **Hints for Solving Trig Word Problems**   1. Draw and label a diagram 2. Choose the rule or law needed 3. Solve for the unknown 4. Write a concluding sentence including units. |

|  |  |  |
| --- | --- | --- |
| **Type of Triangle** | **Information Given** | **Rule/Law** |
| Right Triangle | Any 2 pieces of info  (except 2 angles only) | SOH CAH TOA  Pythagorean theorem |
| Oblique (i.e. triangle which contains no right angle, and which may or may not contain an obtuse angle) | AAS, ASA  SSA  SSS, SAS  AAA | Sine Law  Sine Law, ambiguous?  Cosine Law  \*\* Can't solve without at least one side |

**REVIEW OF SINE LAW – AMBIGUOUS CASE**

**Ex1.** In ∆ABC, A = 30o, c = 12cm and a = 9cm. Determine the number of triangles possible. Solve the triangle(s) if possible.

**Ex2.** Albert and Belle are part of a scientific team studying thunderclouds. The team is about to launch a weather balloon into an active part of a cloud. Albert’s rope is 7.8m long and makes an angle of 36° with the ground. Belle’s rope is 5.9m long. How far, to the nearest tenth of a metre, is Albert from Belle?

**Ex3.** Mitchell wants his 8m wide house to be heated with a solar hot – water system. The tubes form an array that is 5.1 m long. In order for the system to be effective, the array must be installed on the south side of the roof and the roof needs to be inclined by 60°. If the north side of the roof is inclined more than 40°, the roof will be too steep for Mitchell to install the system himself. Will Mitchell be able to install this system by himself?

**CHALLENGE**

**Ex4.** Determine the distance from the top of the ramp to the roof.

