The Panda Math Tutor

www.thepandamathtutor.com

The Sine & Cosine Rules

Student Worksheet

Questions & Working Space

IGCSE Mathematics

Name: _____

Date: _____

The Panda Math Tutor

Prepared by

Nikolas Agisilaou

Contents

1 Part I — Topic-by-Topic Exercises **2**
1.1 Labelling and Choosing the Rule 2
1.2 The Sine Rule — Finding a Missing Side 4
1.3 The Sine Rule — Finding a Missing Angle 7
1.4 The Ambiguous Case (SSA) 9
1.5 The Cosine Rule — Finding a Missing Side 11
1.6 The Cosine Rule — Finding a Missing Angle 13
1.7 Area of a Triangle Using the Sine Formula 16
1.8 Multi-Step Problems and Applications 18

2 Part II — Mixed Review **22**

3 Part III — Examination-Style Practice **26**

The Panda Math Tutor

Note

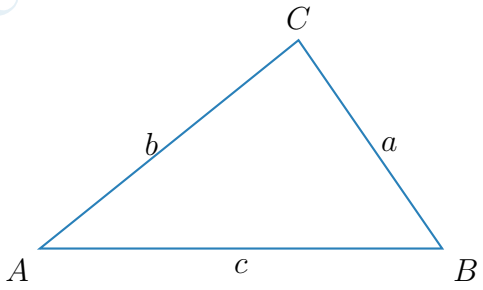
How to use this worksheet. These questions are built *strictly* on the *Sine & Cosine Rules* notes: standard labelling of non-right-angled triangles, the Sine Rule for sides and for angles, the ambiguous case (SSA), the Cosine Rule for sides and for angles, the area formula $\frac{1}{2}ab\sin C$, choosing the correct rule, and multi-step problems.
Calculator. A calculator is needed throughout. Make sure it is in **degree mode**. Keep full accuracy in your calculator memory and round only at the *final* step — rounding early is the most common cause of lost marks in this topic.
Working space. Ruled lines are provided after each question — show *all* of your working there, name the rule you are using, and state the accuracy asked for. Harder questions have a teal **Hint** box; try the question first and use the hint only if you are stuck.
Checking your answers. Full step-by-step solutions, a marking scheme for the exam paper, and a quick answer key are in the separate booklet *"The Sine & Cosine Rules — Solutions & Answer Key."* Try each question honestly before you look.

1 Part I — Topic-by-Topic Exercises

1.1 Labelling and Choosing the Rule

Note

Reminder of the standard convention: capital letters for angles, and each lowercase letter for the side *opposite* the angle of the same name.



Exercise L1 *[Basic]*

In triangle DEF, angle $D = 47°$ and angle $E = 61°$. Write down the size of angle F, and state which side of the triangle is opposite angle F.

The Panda Math Tutor

Exercise L2 *[Basic]*

In triangle KLM, angle $K = 38°$, $k = 7.4\,\text{cm}$ and $l = 9.1\,\text{cm}$. State which angle side l is opposite, and say whether the information given is AAS, SAS, SSA or SSS.

Exercise L3 *[Standard]*

For each triangle, state which rule you would use and give a brief reason. Do **not** carry out the calculation.

(a) $b = 10\,\text{cm}$, $c = 14\,\text{cm}$, $A = 68°$; find a.

(b) $A = 41°$, $C = 96°$, $b = 15\,\text{cm}$; find c.

(c) $a = 12\,\text{cm}$, $b = 19\,\text{cm}$, $c = 23\,\text{cm}$; find the largest angle.

(d) $a = 8\,\text{cm}$, $c = 13\,\text{cm}$, $B = 74°$; find the area.

The Panda Math Tutor

Exercise L4 *[Intermediate]*

A student is given $b = 11\,\text{cm}$, $c = 16\,\text{cm}$ and angle $A = 55°$, and starts by writing $\dfrac{a}{\sin A} = \dfrac{b}{\sin B}$. Explain why the Sine Rule cannot be used to find a here, and state which rule should be used instead.

Preview ends here

27 more pages are in the full pack.

The Sine & Cosine Rules — Worksheet — €11.99

Buy the pack and the complete PDF lands in your inbox.

Personal study use only — please don't resell or share.