

Geometry · Law of Sines, Law of Cosines and Triangle Area · Test

Common Core G-SRT.D.9, G-SRT.D.10, G-SRT.D.11 · mathovore.fr

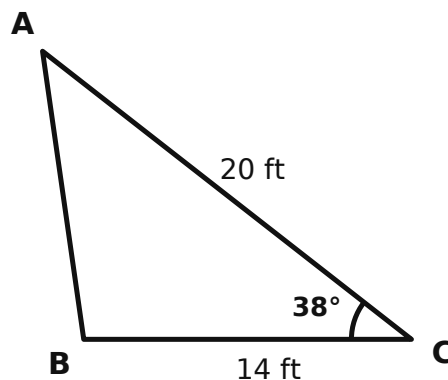
Name: _____ Date: ____/____/____ Score: _____

This test covers the area formula, the Law of Sines, the Law of Cosines and applications under Common Core standards G-SRT.D.9, G-SRT.D.10 and G-SRT.D.11. It has 9 questions worth 20 points and takes about 45 minutes with a scientific calculator in degree mode.

Test information

- **Grade:** Geometry
- **Chapter:** Law of Sines, Law of Cosines and Triangle Area
- **Common Core:** G-SRT.D.9, G-SRT.D.10, G-SRT.D.11
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 2 pts; Question 6: 2 pts; Question 7: 3 pts; Question 8: 3 pts; Question 9: 2 pts)

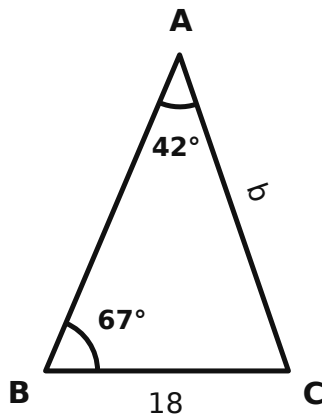
Question 1: Area of a triangle (2 points)



Sides 14 ft and 20 ft with a 38 degree included angle.

Find the area to the nearest tenth of a square foot.

Question 2: Law of Sines, find a side (2 points)



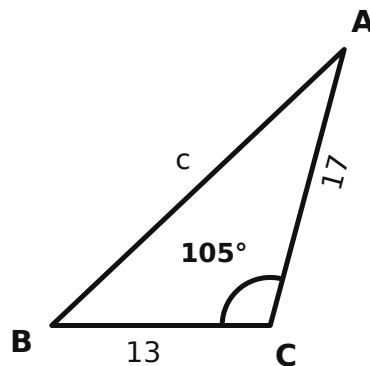
Triangle with two angles and a side.

Find side b to the nearest tenth.

Question 3: Law of Sines, find angles (2 points)

In triangle ABC, $a = 22$, $b = 16$ and $A = 75^\circ$. Find $m\angle B$ and $m\angle C$ to the nearest tenth of a degree. (1 point each)

Question 4: Law of Cosines, find a side (2 points)



Two sides 13 and 17 with included angle 105 degrees.

Find c to the nearest tenth.

Question 5: Largest angle of a triangle (2 points)

A triangle has sides 9, 12 and 17. Find the measure of its largest angle to the nearest tenth of a degree.

Question 6: Choosing a law (2 points)

Name the law you would use first in each case and explain your choice.

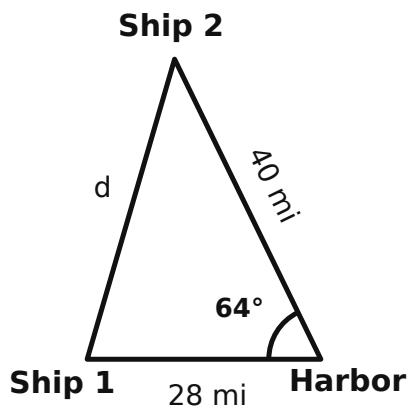
- A surveyor knows two sides of a triangle and the angle between them and needs the third side. (1 point)
- A surveyor knows two angles of a triangle and the side opposite one of them and needs another side. (1 point)

Question 7: Proof of the area formula (3 points)

In acute triangle ABC, $a = BC$ and $b = AC$. Complete the proof that $\text{Area} = \frac{1}{2}ab\sin C$ by writing the reasons (a) through (e).

Step	Statements	Reasons
1	Draw altitude $\overline{AD}$ to $\overline{BC}$ with $AD = h$	(a)
2	$\text{Area} = \frac{1}{2}ah$	(b)
3	$\sin C = \frac{h}{b}$	(c)
4	$h = b\sin C$	(d)
5	$\text{Area} = \frac{1}{2}ab\sin C$	(e)

Question 8: Two ships (3 points)



Two ships leave a harbor on courses 64 degrees apart.

Ship 1 sails 28 mi and ship 2 sails 40 mi. How far apart are the ships? Round to the nearest tenth of a mile.

Question 9: Area of a lot (2 points)

A triangular lot has sides of 85 ft and 110 ft that meet at a 52° angle. Find its area to the nearest square foot.