

Geometry · Right Triangle Trigonometry · Worksheet

Common Core G-SRT.C.6, G-SRT.C.7, G-SRT.C.8 · mathovore.fr

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

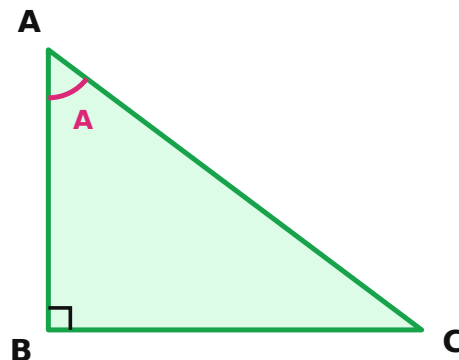
These 22 problems practice Common Core standards G-SRT.C.6, G-SRT.C.7 and G-SRT.C.8. Write sine, cosine and tangent ratios from side lengths, use similar triangles, apply complementary angle identities, work with 45-45-90 and 30-60-90 triangles, and solve right triangles.

The last six problems are word problems with angles of elevation and depression, ladders, ramps and kites. Work from easiest to hardest and round as directed.

GeometryCommon Core: G-SRT.C.6 · G-SRT.C.7 · G-SRT.C.8

Problem 1: Name the sides

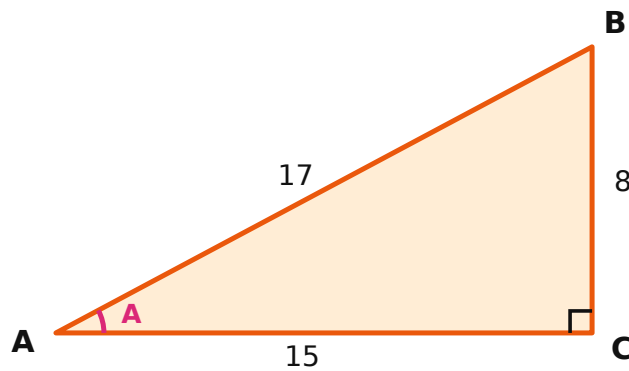
In the figure, $\angle B$ is the right angle. Name the side opposite $\angle A$, the side adjacent to $\angle A$, and the hypotenuse.



Right triangle ABC with the right angle at B.

Problem 2: Ratios from side lengths

Write $\sin A$, $\cos A$ and $\tan A$ as fractions in simplest form.



Right triangle with legs 15 and 8 and hypotenuse 17.

Problem 3: Ratios for the other angle

In right triangle DEF, $\angle F$ is the right angle, $DF = 20$, $EF = 21$ and $DE = 29$. Write $\sin D$, $\cos E$ and $\tan E$. What do you notice about $\sin D$ and $\cos E$?

Problem 4: Ratios in a 7-24-25 triangle

In right triangle PQR, $\angle Q = 90^\circ$, $PQ = 24$, $QR = 7$ and $PR = 25$. Write $\tan P$, $\cos P$ and $\sin R$.

Problem 5: Using a calculator

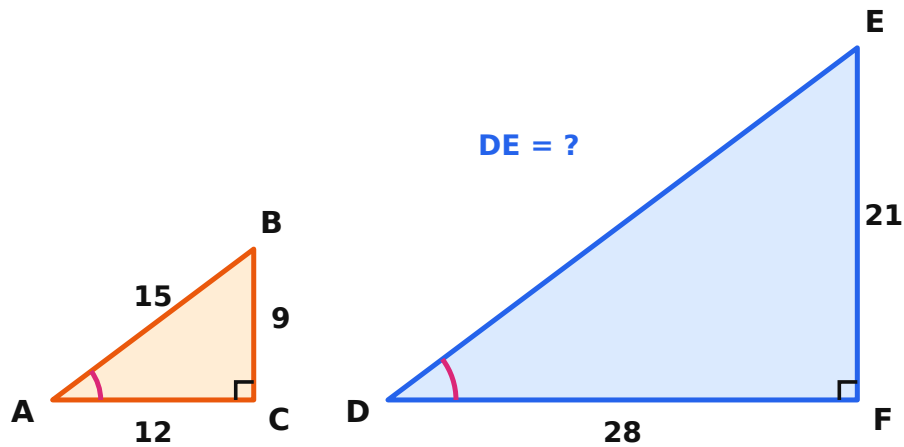
With a calculator in degree mode, find each value to four decimal places: $\sin 28^\circ$, $\cos 63^\circ$ and $\tan 51^\circ$.

Problem 6: Finding an angle from a ratio

Find each acute angle x to the nearest tenth of a degree: $\sin x = 0.6$, $\cos x = 0.25$ and $\tan x = 2.4$.

Problem 7: Similar right triangles

Right triangles ABC and DEF are similar with $\angle A \cong \angle D$. In triangle ABC, $BC = 9$ and $AB = 15$. In triangle DEF, $EF = 21$. Find DE and show that $\sin D = \sin A$.



Similar right triangles with angle A equal to angle D.

Problem 8: Complementary angle identities

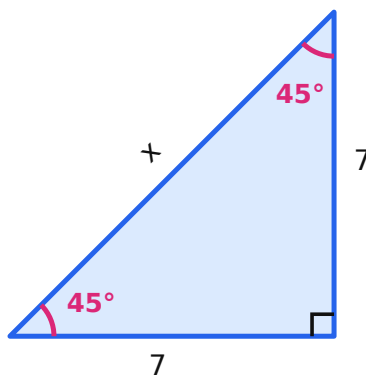
Rewrite each expression as the sine or cosine of the complementary angle: $\sin 20^\circ$, $\cos 75^\circ$ and $\sin 38^\circ$.

Problem 9: Solving with complementary angles

Find the value of x if $\sin(3x+5)^\circ = \cos(2x+10)^\circ$.

Problem 10: 45-45-90 triangle, find the hypotenuse

Find the exact length of the hypotenuse x , then round to the nearest tenth.



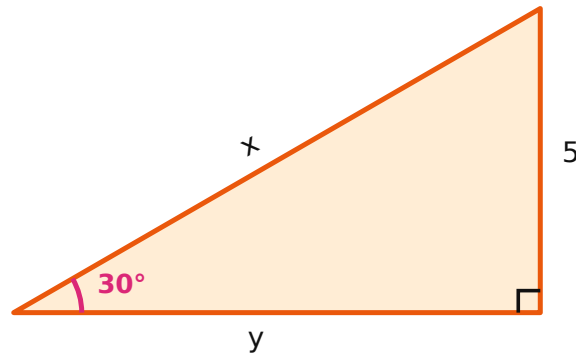
A 45-45-90 triangle with legs 7.

Problem 11: 45-45-90 triangle, find the legs

The hypotenuse of a 45-45-90 triangle is 12 inches. Find the exact length of each leg and round to the nearest tenth.

Problem 12: 30-60-90 triangle, short leg given

Find the exact values of x and y , then round y to the nearest tenth.



A 30-60-90 triangle with short leg 5.

Problem 13: 30-60-90 triangle, hypotenuse given

The hypotenuse of a 30-60-90 triangle is 18 cm. Find the exact lengths of the short leg and the long leg.

Problem 14: 30-60-90 triangle, long leg given

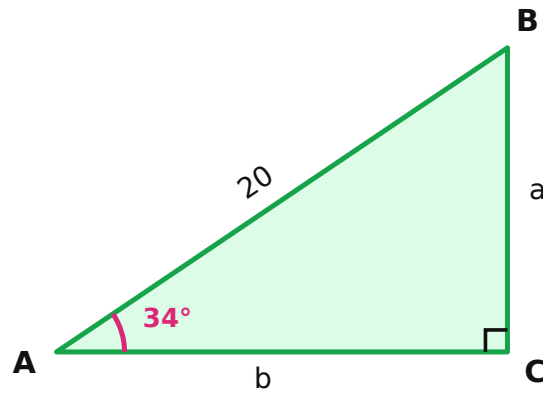
The longer leg of a 30-60-90 triangle is $6\sqrt{3}$ ft. Find the lengths of the short leg and the hypotenuse.

Problem 15: Angle from two sides

In a right triangle the side opposite angle A is 7 units and the side adjacent to A is 11 units. Find $m\angle A$ to the nearest tenth of a degree.

Problem 16: Solve a right triangle

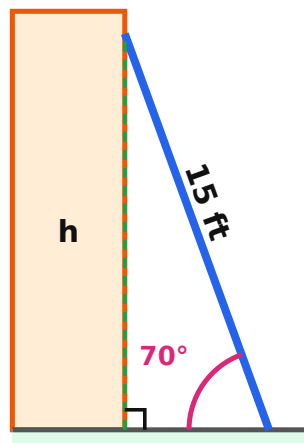
Solve right triangle ABC with $\angle C = 90^\circ$, $\angle A = 34^\circ$ and hypotenuse $c = 20$. Round sides to the nearest tenth.



Right triangle ABC with angle A 34 degrees and hypotenuse 20.

Problem 17: Ladder against a wall

A 15-ft ladder leans against a wall and makes a 70° angle with the level ground. How high on the wall does the ladder reach? Round to the nearest tenth of a foot.



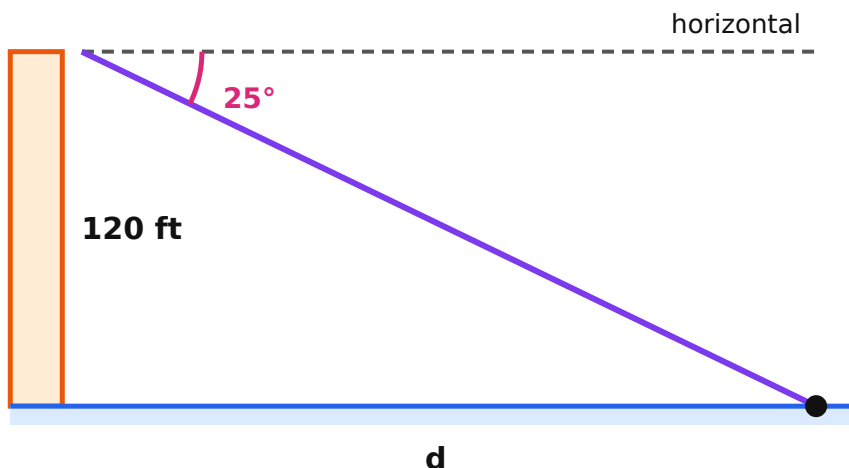
A 15 ft ladder at 70 degrees to the ground.

Problem 18: Height of a flagpole

Maya stands 85 ft from the base of a flagpole. Her eyes are 5.5 ft above the ground, and the angle of elevation to the top of the pole is 32° . How tall is the flagpole? Round to the nearest tenth of a foot.

Problem 19: Lighthouse and boat

From the top of a lighthouse 120 ft above sea level, the angle of depression to a boat is 25° . How far is the boat from the base of the lighthouse? Round to the nearest tenth of a foot.



The angle of depression from the lighthouse is 25 degrees.

Problem 20: Wheelchair ramp

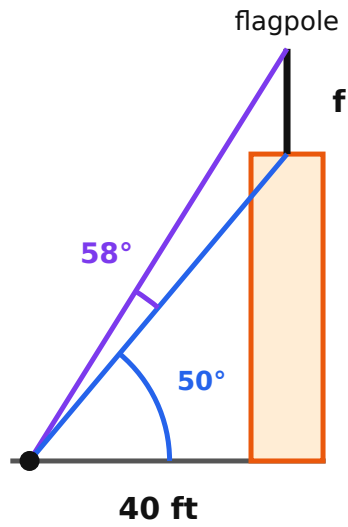
A wheelchair ramp rises 2.5 ft and makes an angle of 4.8° with the ground. Find the length of the ramp surface and the horizontal distance it covers. Round to the nearest tenth of a foot.

Problem 21: Kite height

Jamal flies a kite with 100 ft of string out. The string is pulled tight and makes a 48° angle with level ground. His hand holds the string 4 ft above the ground. How high above the ground is the kite? Round to the nearest tenth of a foot.

Problem 22: Flagpole on a building

Standing 40 ft from a building, Diego measures the angle of elevation to the roof as 50° and to the top of a flagpole on the roof as 58° . How tall is the flagpole? Round to the nearest tenth of a foot.



Two angles of elevation from the same point, 40 ft from the building.