

Right Triangles and Trigonometry: math test, Grade 10 – download the PDF

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Pythagorean theorem

/ 4 pts

(a) Find the hypotenuse of a right triangle with legs 20 and 21. (b) A right triangle has hypotenuse 17 and one leg 15. Find the other leg. (c) Is a triangle with sides 11, 60 and 61 a right triangle?

2 Special right triangles

/ 3 pts

(a) The hypotenuse of a 45-45-90 triangle is 20 in. Find the legs. (b) The long leg of a 30-60-90 triangle is $9\sqrt{3}$ cm. Find the short leg and the hypotenuse.

3 Geometric mean

/ 3 pts

The altitude to the hypotenuse of a right triangle cuts the hypotenuse into segments of 5 and 20. Find the altitude, the hypotenuse and the two legs (exact values, then to the nearest hundredth).

4 Trigonometric ratios

/ 4 pts

Triangle ABC is right at C with $AC = 24$ and $BC = 10$. (a) Find AB . (b) Write $\sin A$, $\cos A$ and $\tan A$ in lowest terms. (c) Find A and B to the nearest tenth of a degree.

5 The balloon

/ 3 pts

An observer stands 150 ft from the point on the ground directly below a hot-air balloon. The observer's eyes are 6 ft above the ground and the angle of elevation to the balloon is 34° . (a) Find the height of the balloon above the ground, to the nearest tenth of a foot. (b) What is the angle of depression from the balloon to the observer's eyes?

6 Law of Sines and Law of Cosines

/ 3 pts

(a) In triangle PQR , $P = 38^\circ$, $Q = 84^\circ$ and $p = 9$. Find q to the nearest hundredth. (b) A triangle has sides 6 and 10 with a 60° angle between them. Find the third side to the nearest hundredth.



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