

Name: _____ Date: _____

Handheld Trigonometry Lesson – Post-Lesson Quiz – Answer Key

Directions

Using complete sentences, answer *two of the three* following writing prompts.

Questions

- 1) How are similar triangles related to trigonometry?

Since all right triangles have exactly one right angle, any two right triangles with one pair of congruent acute angles will be similar by the Angle-Angle Similarity Postulate. Therefore, any right triangle with a given acute angle will have exactly the same side-length proportions as any other right triangle with the same acute angle. This allows us to know definite ratios of side lengths for any right triangle if we know one of the acute angles. For example, any right triangle with one acute angle of 30° will always have a ratio 1:2 for the side opposite the 30° angle and the hypotenuse, and a $\sqrt{3}:2$ ratio for the side adjacent and the hypotenuse.

- 2) Engineers use trigonometry in many different situations. Cite one example where this can happen and explain how trig is used.

Engineers, particularly civil engineers, need to measure very large objects (bridges, buildings, trees, etc.), which is impractical, if not impossible, by simply using a tape measure. By creating a right triangle and measuring the angle of elevation or depression to the object using a device like a clinometer, an engineer can calculate the size of objects instead of measuring them.

- 3) What is a clinometer and how can it be used by engineers?

A clinometer is a device used to measure the angle of elevation or depression of an object with respect to gravity. Clinometers can be used to measure angles between objects or the tilt of a stationary object, allowing for indirect measurement of distance using trigonometry.