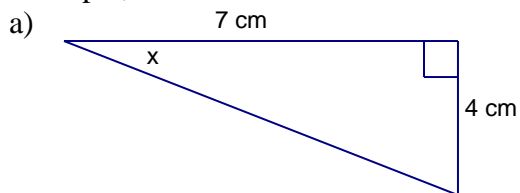


Course: MFM2P Gr. 10 AppliedLesson: 2 - 5Unit: Right Triangle TrigonometryTopic: Tangent Ratio in Right Triangles✚ *homework check:* Lesson 2 - 4✚ *note:* Tangent Ratio in Right Triangles

The tangent ratio in a right triangle also allows us to determine any missing angle or side measures. The tangent ratio compares the length of the opposite side to the adjacent side

$$\tan x = \frac{\text{length of opposite side}}{\text{length of adjacent side}}$$

For example,

**Step 1:** identify sides**Step 2:** identify ratio**Step 3:** solve for unknown angle

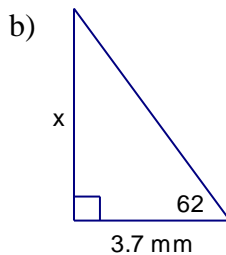
$$\tan x = \frac{\text{opposite}}{\text{adjacent}}$$

$$\tan x = \frac{4}{7}$$

$$\tan x = 0.5714$$

$$x = \tan^{-1} 0.5714$$

$$x = 29.7^\circ$$

**Step 1:** identify sides**Step 2:** identify ratio**Step 3:** solve for unknown side

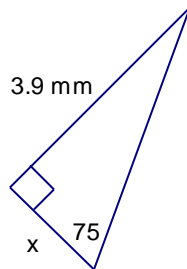
$$\tan x = \frac{\textit{opposite}}{\textit{adjacent}}$$

$$\tan 62 = \frac{x}{3.7}$$

$$3.7 \tan 62 = x$$

$$x = 7.0\text{mm}$$

c)

**Step 1:** identify sides**Step 2:** identify ratio**Step 3:** solve for unknown side

$$\tan x = \frac{\textit{opposite}}{\textit{adjacent}}$$

$$\tan 75 = \frac{3.9}{x}$$

$$x \tan 75 = 3.9$$

$$x = \frac{3.9}{\tan 75}$$

$$x = 1.0\text{mm}$$

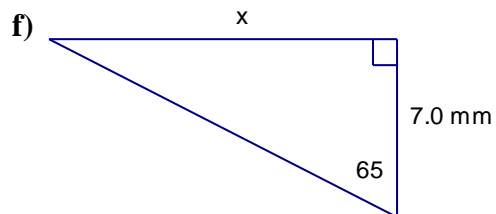
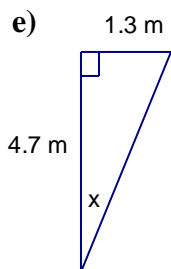
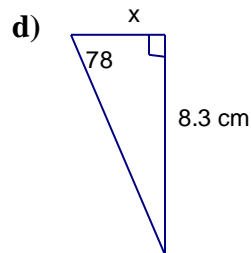
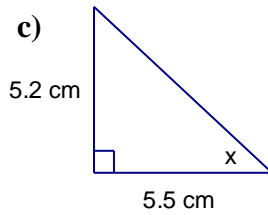
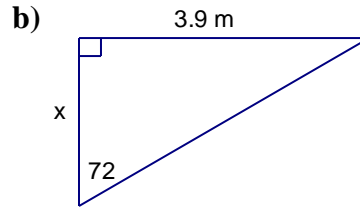
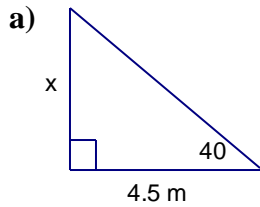
✚ **homework assignment:** Lesson 2 - 5

Lesson 2 – 5: Tangent Ratio**1. Use your calculator to evaluate to 4 decimal places.**

- a) $\tan 28^\circ =$ b) $\tan 39^\circ =$ c) $\tan 108^\circ =$ d) $\tan 158^\circ =$

2. Use your calculator to find angle A. Round your answer to the nearest tenth.

- a) $\tan A = 0.3443$ b) $\tan A = 2.2460$ c) $\tan A = 1.5399$ d) $\tan A = 2.8363$

3. Solve for the unknown. Decimals should be rounded to the nearest tenth.

****round to the nearest tenth for all word problems**

3. In a right triangle, the side adjacent to an angle of 44 degrees is 45 cm. How long is the opposite side? A diagram will be part of your solution.

4. In a right triangle, the side opposite an angle that measures 34 degrees is 12 cm. How long is the side adjacent to the angle? A diagram will be part of your solution.

5. A surveyor for a city stands 35 ft. to one side of a proposed build site. From this point, he measures a 47 degree angle between his lines of sight to the two ends of the proposed build site. Find the length of the build site.

6. An airplane flying 7.5 km above the ground starts its decent 200 km from the airport. What is the angle that the plane descends at?

7. A ladder leans against a wall and makes an angle of 76 degrees with the ground. The foot of the ladder is 1.8 m from the wall. How high up the wall does the ladder reach?