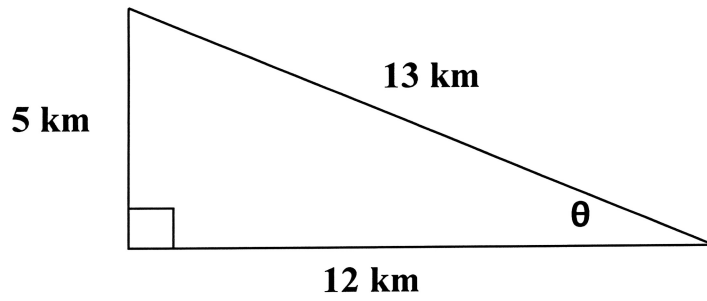


## Trigonometry Review – Practice

1. Determine the three trigonometric ratios (sine, cosine and tangent) of the angle  $\theta$  in the diagram below.



$$\sin\theta =$$

$$\cos\theta =$$

$$\tan\theta =$$

2. Evaluate the following (3 digits after the decimal).

a)  $\sin(35^\circ)$

b)  $\cos(25^\circ)$

c)  $\tan(80^\circ)$

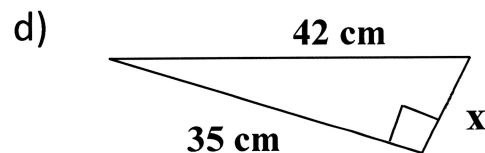
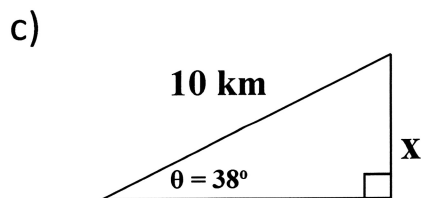
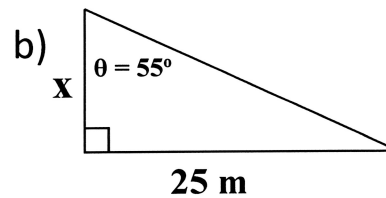
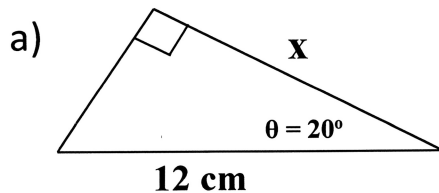
3. Solve for the angle  $\theta$  in each diagram.

a)  $\sin\theta = 0.8$

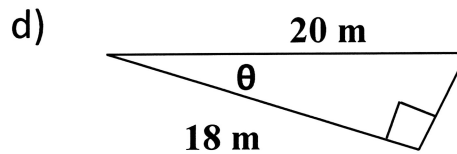
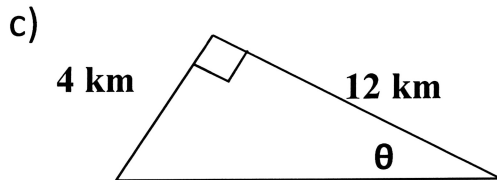
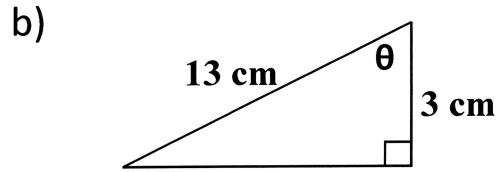
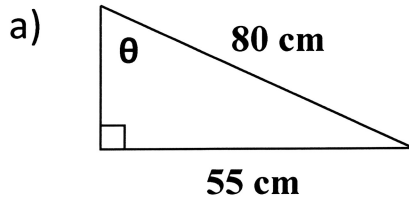
b)  $\cos\theta = 0.5$

c)  $\tan\theta = 3.5$

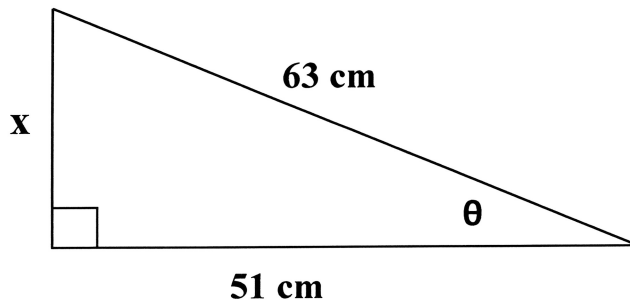
4. Determine the length of the side marked x in each diagram.



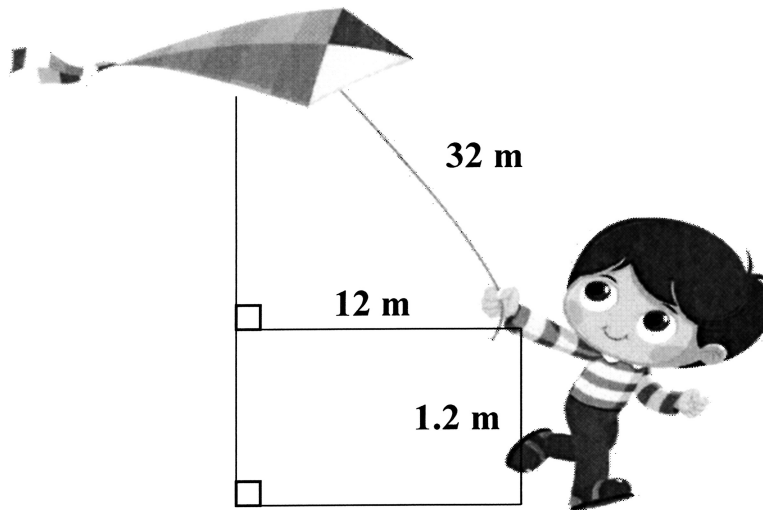
5. Determine the angle marked  $\theta$  in each diagram.



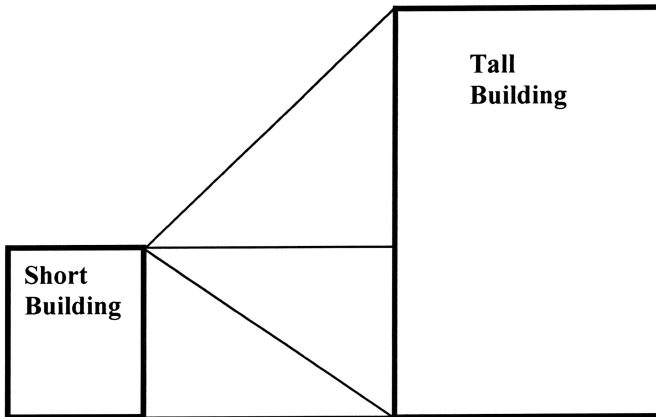
6. Determine the length of side marked  $x$  using two different methods: trigonometry and the Pythagorean Theorem.



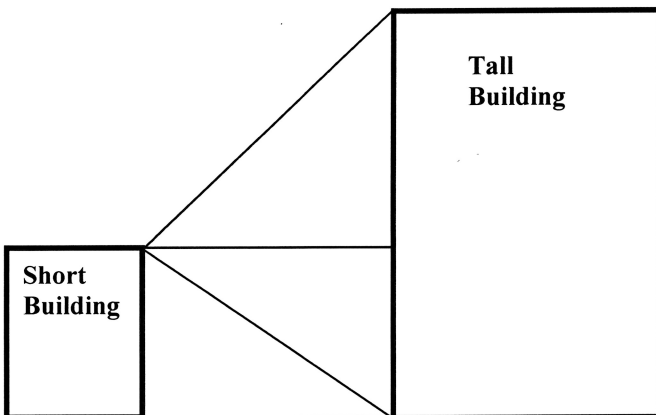
7. Luc is flying a kite. He is holding the string 1.2 m above the ground. If the string is 32 m long and the kite's shadow (with the sun shining directly above him) is 12 m away from him, how high is the kite above the ground?



8. Two buildings stand side by side. The short building is 20 m high. From the top of the short building, the angle of elevation to the top of the tall building is  $50^\circ$ . From the top of the short building, the angle of depression to the bottom of the tall building is  $30^\circ$ . What is the height of the tall building?



9. Two buildings stand side by side. The distance between the two buildings is 25 m. From the top of the short building, the angle of elevation to the top of the tall building is  $40^\circ$ . From the top of the short building, the angle of depression to the bottom of the tall building is  $21^\circ$ . What is the height of the tall building?



10. A 12 foot ladder leans against a wall. The base of the ladder is 2 feet from the wall. The ladder is considered safe if the angle between the ladder and ground is no greater than  $75^\circ$ .

- a) What angle does the ladder make with the ground? Is the ladder safe?
- b) If the ladder is not safe, by exactly how much must the bottom of the ladder be moved to make it safe?

## Success Criteria

- I can use the three basic trigonometric ratios ( $\sin \theta$ ,  $\cos \theta$ , and  $\tan \theta$ ) to determine a side length on a right triangle.
- I can use the inverse of the three basic trigonometric ratios ( $\sin^{-1} \theta$ ,  $\cos^{-1} \theta$ , and  $\tan^{-1} \theta$ ) to determine an angle in a right triangle.
- I know how to use my calculator to evaluate expressions that include the basic trigonometric functions.
- I can solve problems that involve two triangles such as the two building problem.
- I know how to apply the Pythagorean theorem to solve for a side length.
- I know how to correctly label diagrams to solve word problems that may require trigonometry or the Pythagorean Theorem to solve for a side length or angle; this includes properly labeling an angle of elevation or an angle of depression.
- I know when to use angle sum in a triangle theorem, the trigonometric ratios, the inverse of the trigonometric ratios and the Pythagorean Theorem.

## Answers

1.  $\sin \theta = \frac{5}{13}$ ,  $\cos \theta = \frac{12}{13}$ ,  $\tan \theta = \frac{5}{12}$ , 2. a) 0.574 b) 0.906 c) 5.671, 3. a)  $53.1^\circ$   
b)  $60^\circ$  c)  $74.1^\circ$ , 4. a) 11.3 cm b) 17.5 m c) 6.2 km d) 23.2 cm, 5. a)  $43.4^\circ$  b)  $76.7^\circ$   
c)  $18.4^\circ$  d)  $25.8^\circ$ , 6. 37 cm, 7. 30.9 m, 8. 61.3 m, 9. 30.9 m, 10. a)  $80.4^\circ$ ; not safe  
b) pull away 1.1 foot