

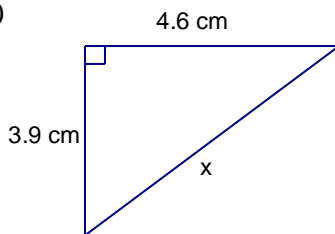
**Unit 1: Trigonometry**

**Directions:** Answer all questions in the spaces provided. Round all decimals to tenths or 1 decimal place. Show all necessary work for full marks.

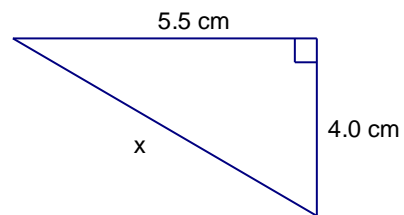
**Lesson: 1-1 Proportions and Pythagorean Theorem**

1. Find the measure of the unknown using Pythagorean Theorem. (3 marks each)

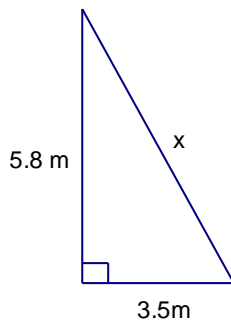
a)



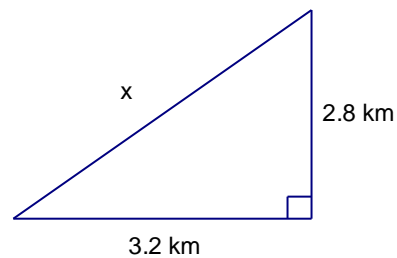
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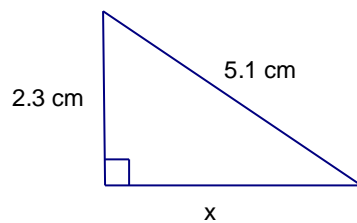
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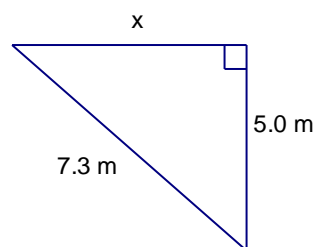
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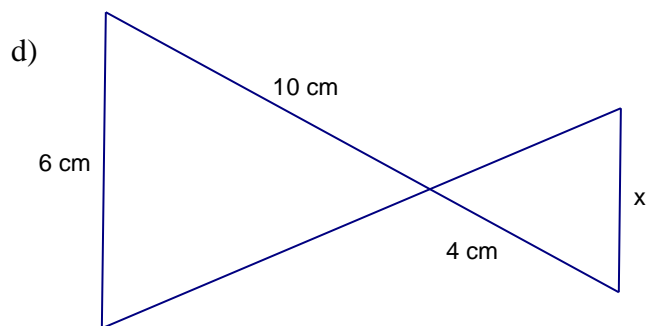
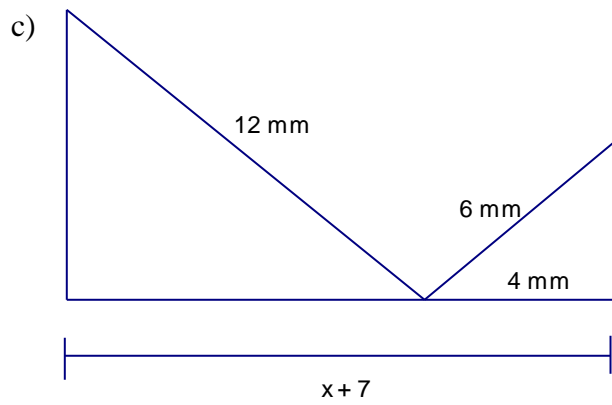
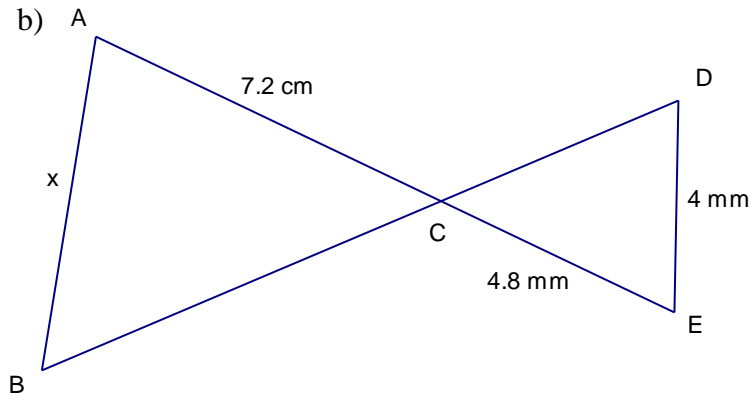
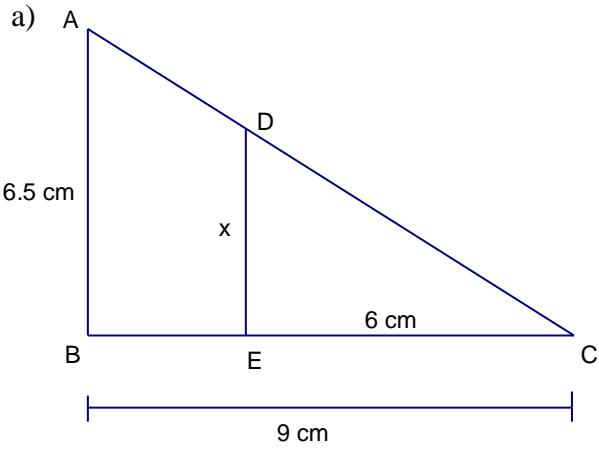
e)



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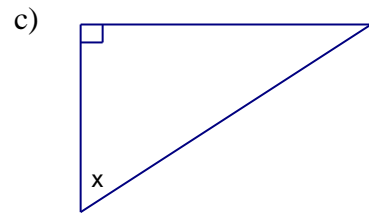
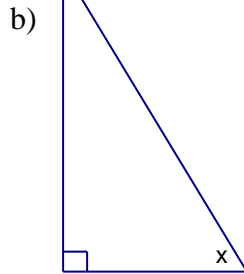
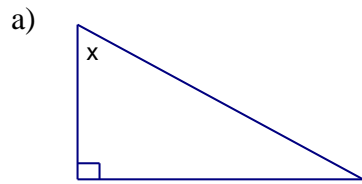


2. Given the following similar triangles, find the unknown. (4 marks each)

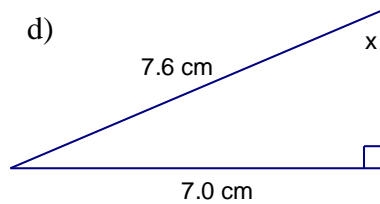
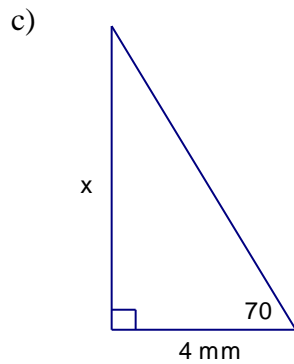
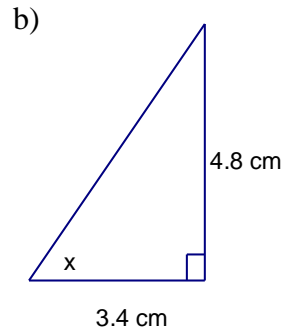
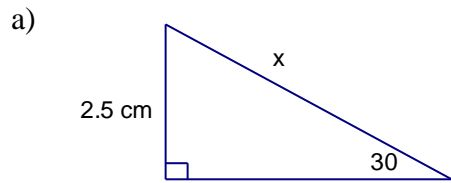


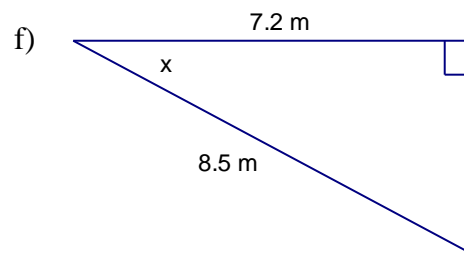
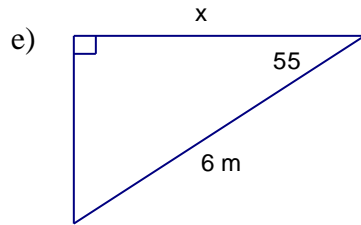
**Lesson: 1-2 Right Angle Trigonometry**

1. Label the sides of each triangle according to angle  $x$  given. Use O for opposite, A for adjacent, and H for hypotenuse. **(3 marks each)**



2. Use right triangle trigonometry to solve for the unknown side or angle. **(3 marks each)**





**3.** Amy can see her bike laying on the ground in her driveway from her second storey window. If she is  $5\text{ m}$  above the ground and she looks down at her bike at an angle of depression of  $60$  degrees, how far from her house is the bike? \*Include a diagram as part of your answer. **(4 marks)**

**4.** Mark threw his Frisbee up into a tree. If he is going to retrieve it, he needs to place the ladder at a safe angle with the ground of at least  $70$  degrees. He knows that the ladder is  $3$  metres long. How high up can the ladder safely reach? \*Include a diagram as part of your answer. **(4 marks)**

**Lesson: 1-3 Trig Ratios of Obtuse Angles****1. Determine the value to the nearest 4 decimal places. (6 marks)**

a)  $\sin 125 =$  \_\_\_\_\_

b)  $\cos 30 =$  \_\_\_\_\_

c)  $\tan 70 =$  \_\_\_\_\_

d)  $\cos 165 =$  \_\_\_\_\_

e)  $\sin 45 =$  \_\_\_\_\_

f)  $\tan 145 =$  \_\_\_\_\_

**2. For each of the following, indicate whether the ratio is positive or negative by checking the appropriate box. (6 marks)**

Trigonometric ratio	Positive	Negative
$\tan 60$		
$\cos 125$		
$\sin 30$		
$\tan 128$		
$\sin 145$		
$\cos 49$		

**3. Determine the angle(s) given the value of the trigonometric ratio. (8 marks)**

a)  $\sin A = 0.4226$  \_\_\_\_\_

b)  $\tan A = -1.7321$  \_\_\_\_\_

c)  $\cos A = 0.7071$  \_\_\_\_\_

d)  $\sin A = 0.7660$  \_\_\_\_\_

e)  $\cos A = -0.6428$  \_\_\_\_\_

f)  $\tan A = 1.7321$  \_\_\_\_\_

4. Write the exact trig ratio indicated for the point given. (3 marks each)

a)  $\tan A$  for  $(3,7)$

b)  $\sin A$  for  $(2,5)$

c)  $\cos A$  for  $(-6,2)$

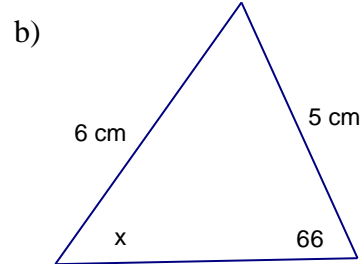
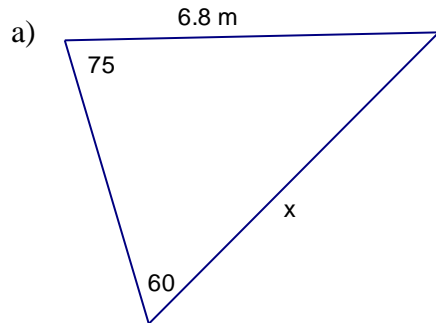
d)  $\sin A$  for  $(-5,4)$

e)  $\tan A$  for  $(-5,6)$

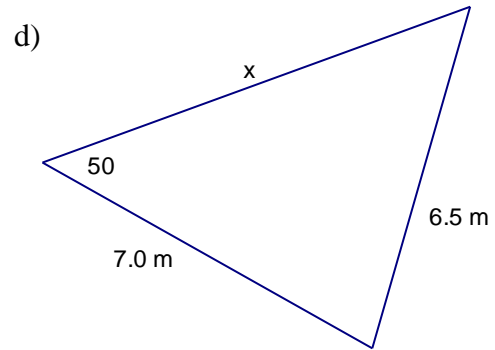
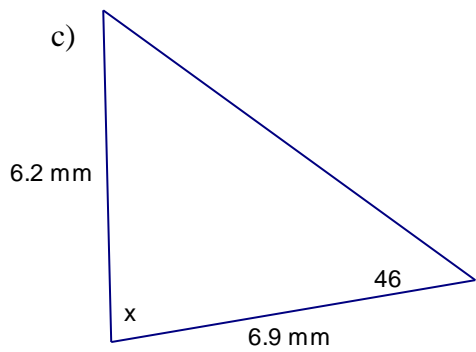
f)  $\cos A$  for  $(5,8)$

**Lesson: 1-4 Sine Law**

1. Find the unknown for each using the Sine Law. Round each answer to the nearest tenth (1 decimal). Show all necessary work in the space provided.



(3, 3)



(3, 4)

2. Given  $\triangle DEF$ ,  $D = 29^\circ$ ,  $E = 113^\circ$ , and  $f = 4.2m$ , find  $e$ . Your answer MUST include a diagram.

(5)

3. Given  $\triangle ABC$ ,  $A = 32^\circ$ ,  $B = 20^\circ$ , and  $b = 5.4cm$ , find  $a$ . Your answer MUST include a diagram.

(5)

4. Given  $\triangle XYZ$ ,  $X = 102^\circ$ ,  $Y = 58^\circ$ , and  $z = 55mm$ , find  $x$ . Your answer MUST include a diagram.

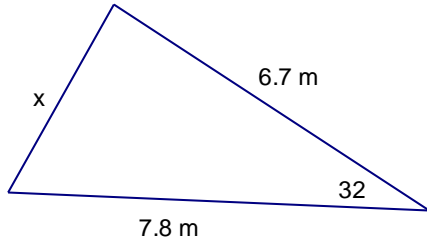
(5)



**Lesson: 1-5 Cosine Law**

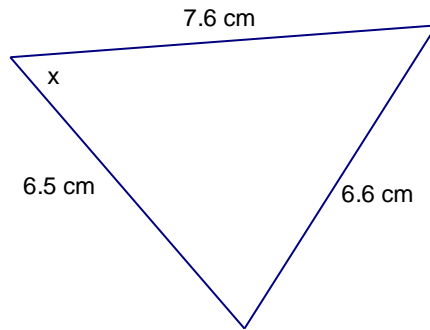
1. Find the unknown using the Cosine Law. Round you answer to the nearest tenth (1 decimal place).

a)

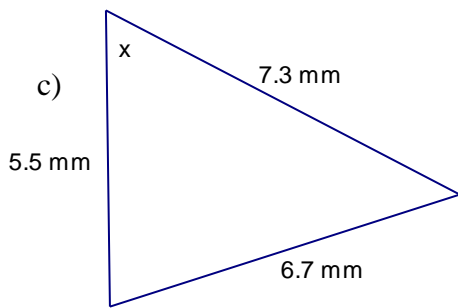


(3, 3)

b)

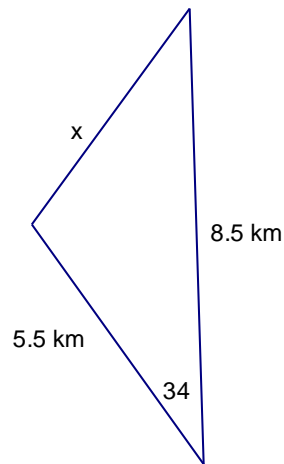


c)



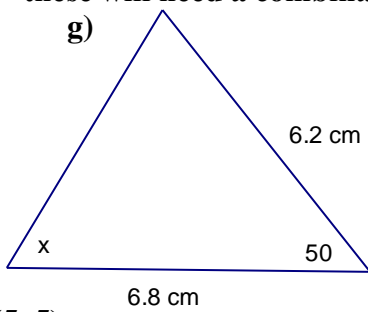
(3, 3)

d)



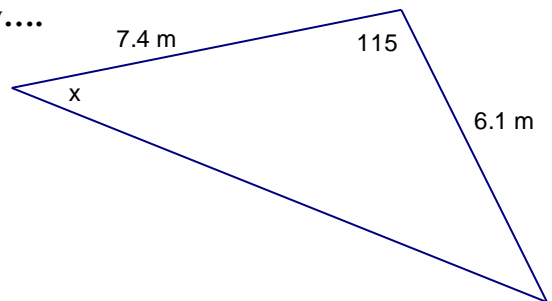
**\*\*these will need a combination of cosine law and sine law....**

g)



(5, 5)

h)



2. Given  $\triangle XYZ$ ,  $X = 102^\circ$ ,  $y = 50mm$ , and  $z = 30mm$ , find  $x$ . A complete answer will include a diagram.

(5)

3. Given  $\triangle ABC$ ,  $a = 4.9m$ ,  $b = 7m$ , and  $c = 6.4m$ , find  $A$ . A complete answer will include a diagram.

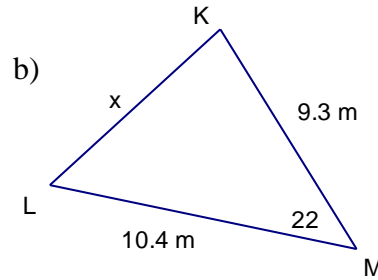
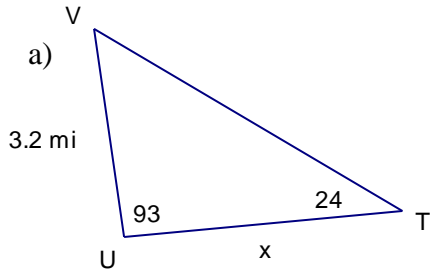
(5)

4. A ship is navigating from island A to island B to island C. The distance between island A and B is 22km. The distance between island B and C is 17.5km. The distance between island A and C is 32km. Find the angle at island C that the ship needs to navigate. Your answer will include a diagram.

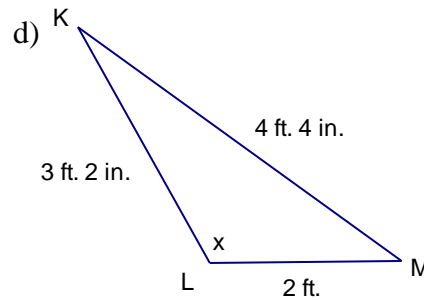
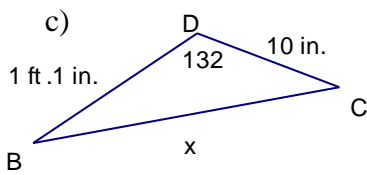
(5)

**Lesson: 1-5 Mixed Trigonometric Problems**

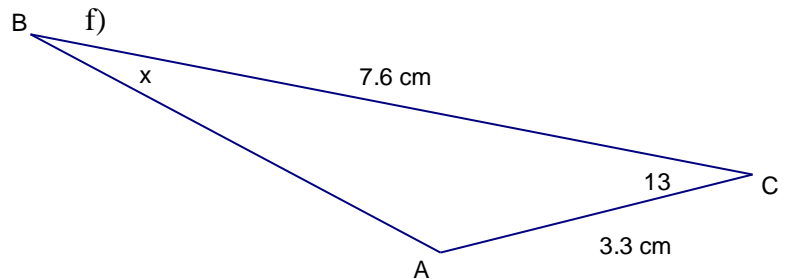
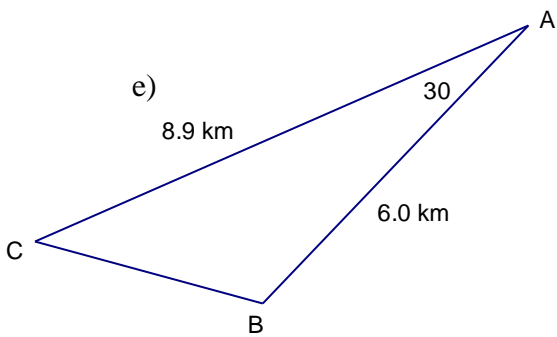
1. Solve for the unknown. Show your work in the space provided. Round to the nearest tenth (1 decimal place).



(3, 3)

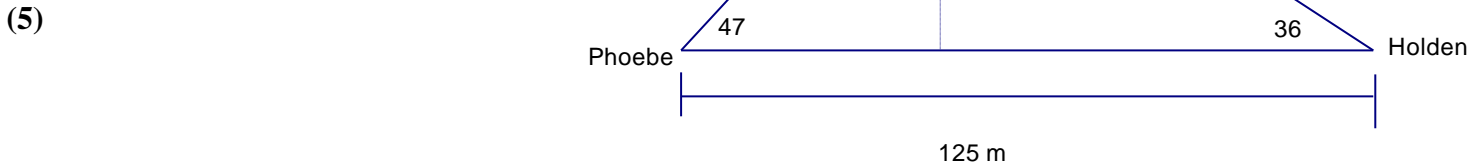


(3, 3)



(3, 5)

2. Phoebe and Holden are on opposite sides of a tall tree, 125 m apart. The angles of elevation to the top of the tree are 47 degrees and 36 degrees. What is the height of the tree?



3. A baby fox is in his den. His mother is hunting 800m away from the den. The mother fox knows that the water in the lake is only 500m from the den. If the baby fox goes to the water supply making an angle of 62 degrees at the den, how far apart are the mother and baby fox? A complete solution will include a labelled diagram.

(5)

4. Two boats leave the harbor at the same time. One sails at 30 km/h at a bearing of 305 degrees. The other sails at 27 km/h on a bearing of 333 degrees. How far apart are the boats after 2 hours? Include a diagram as part of your solution.

(5)