

# Measurement

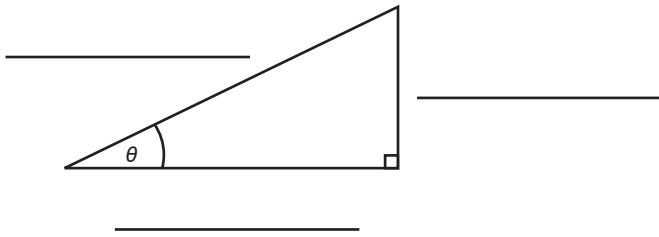
## LESSON THREE - *Trigonometry I*

### Lesson Notes

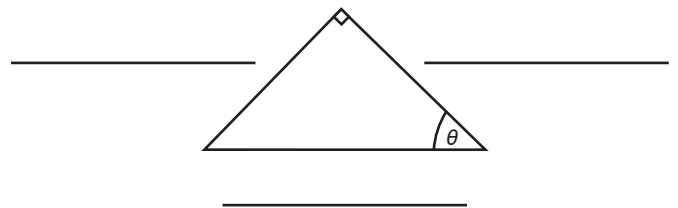
#### Introduction Trigonometry I

a) Label the sides of each triangle, relative to the given angle.

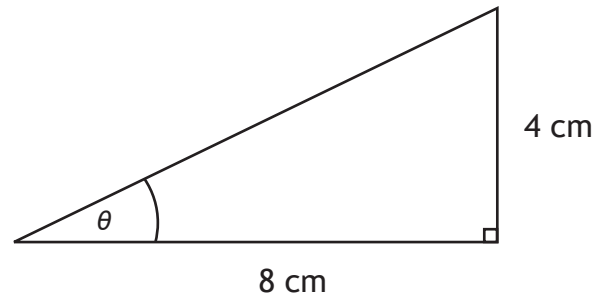
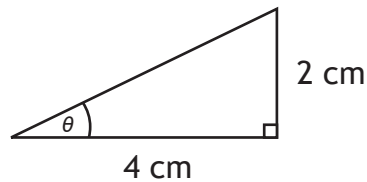
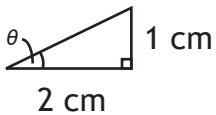
i)



ii)



b) Calculate the ratio of the opposite side to the adjacent side for each similar triangle.

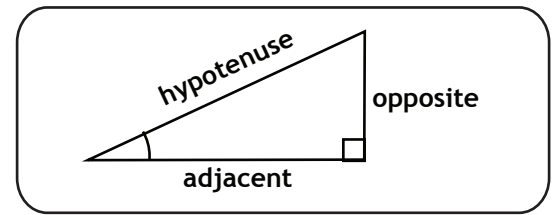


c) Define the tangent ratio.

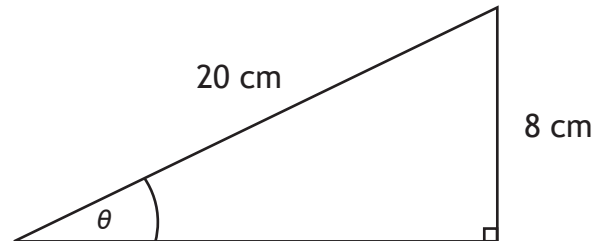
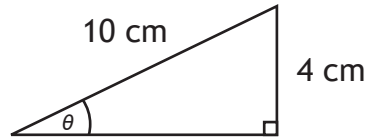
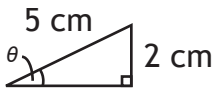
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## LESSON THREE - *Trigonometry I*

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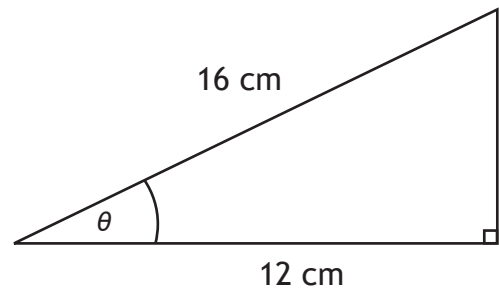
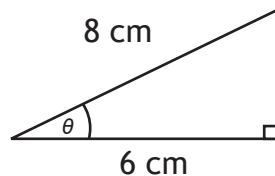
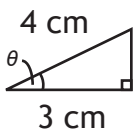


d) Calculate the ratio of the opposite side to the hypotenuse for each similar triangle.



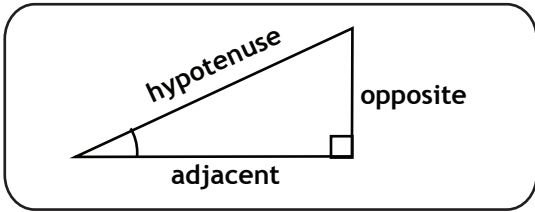
e) Define the sine ratio.

f) Calculate the ratio of the adjacent side to the hypotenuse for each similar triangle.



g) Define the cosine ratio.

h) What is a useful memorization tool to remember the trigonometric ratios?



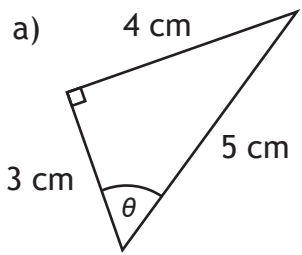
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## LESSON THREE - Trigonometry I

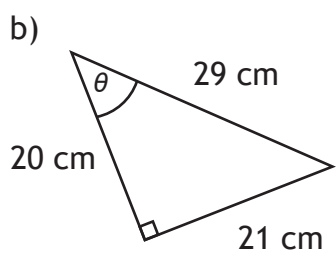
### Lesson Notes

### Example 1

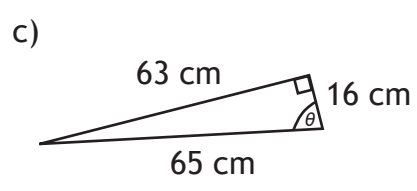
For each triangle, calculate each trigonometric ratio.



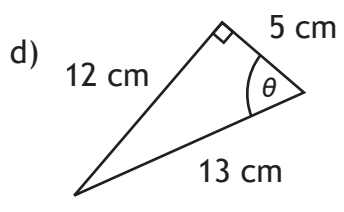
$\sin \theta$	$\cos \theta$	$\tan \theta$



$\sin \theta$	$\cos \theta$	$\tan \theta$



$\sin \theta$	$\cos \theta$	$\tan \theta$

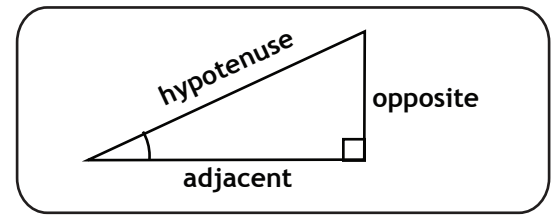


$\sin \theta$	$\cos \theta$	$\tan \theta$

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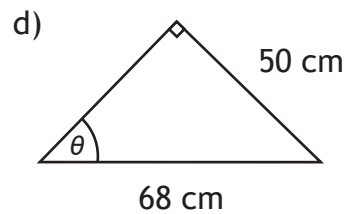
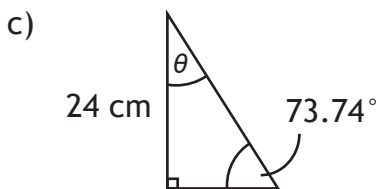
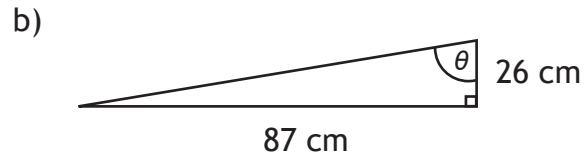
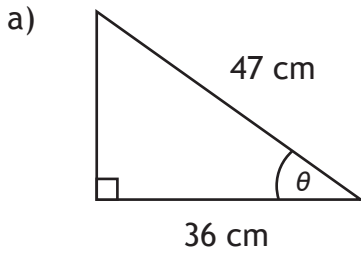
## LESSON THREE - *Trigonometry I*

### Lesson Notes



#### Example 2

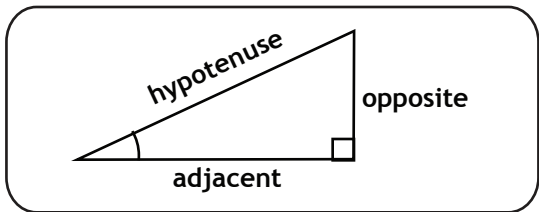
Calculate the angle  $\theta$  in each triangle.



# Measurement

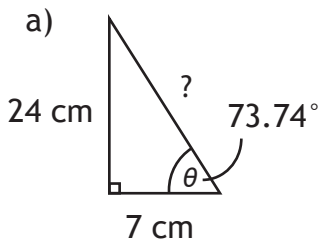
## LESSON THREE - *Trigonometry I*

### Lesson Notes

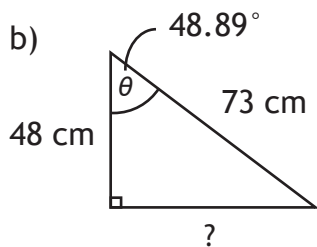


### Example 3

Calculate the missing side of each triangle using two methods.



Pythagorean Theorem	Trigonometric Ratio

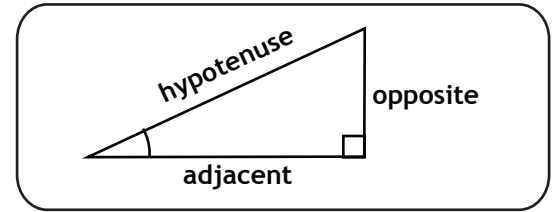


Pythagorean Theorem	Trigonometric Ratio

# Measurement

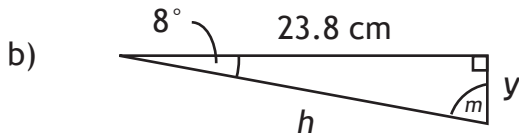
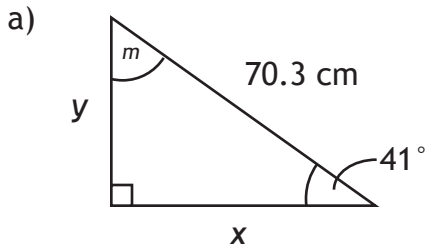
## LESSON THREE - *Trigonometry I*

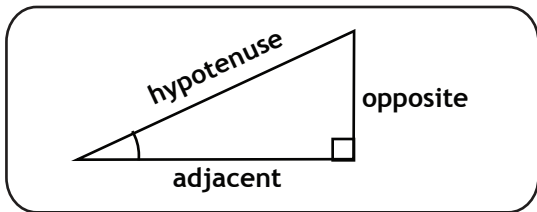
### Lesson Notes



#### Example 4

Solve each triangle.





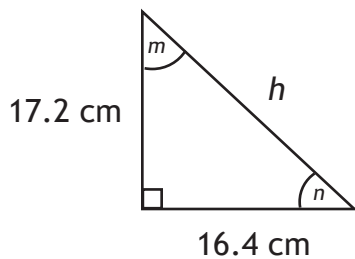
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## LESSON THREE - *Trigonometry I*

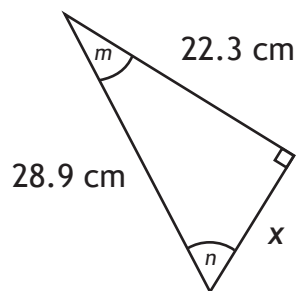
### Lesson Notes

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c)



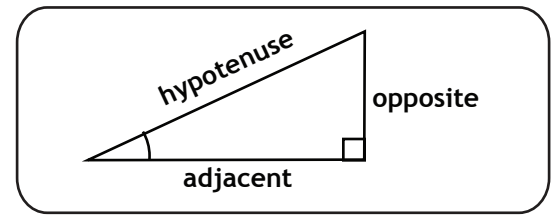
d)



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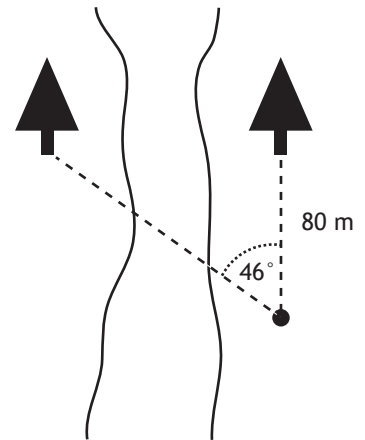
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#### Example 5

Solve each of the following problems.

a) The sketch on the right was drawn by a surveyor who is trying to determine the distance between two trees across a river. Using the information in the sketch, calculate the distance between the trees.



b) A 16 ft. ladder is leaning against the roof of a house. The angle between the ladder and the ground is  $62^\circ$ . How high above the ground is the base of the roof?

