**3.1 The Tangent Ratio**

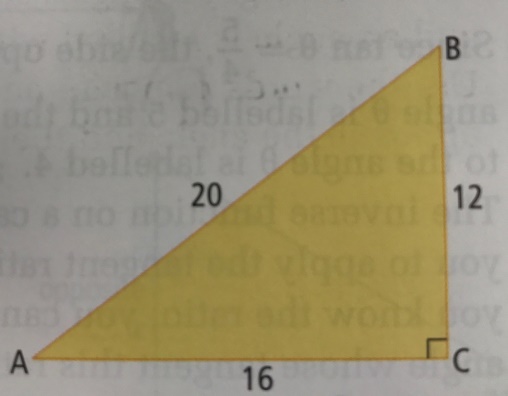
Goals

* Expanding the relationships between similar triangles and the definition of a tangent ratio
* Identifying the hypotenuse, opposite, and adjacent sides for a given acute angle in a right triangle
* Develop strategies to solve right triangles
* Solving problems using the tangent ratio

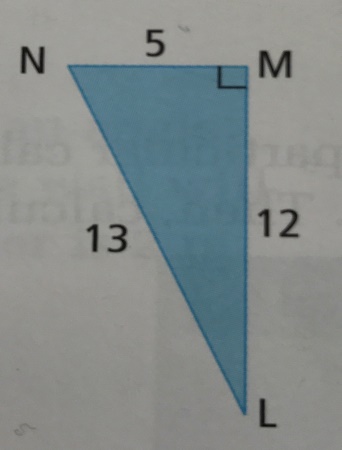
Vocabulary

* Hypotenuse
* Opposite angle
* Adjacent Angle
* Tangent Ratio

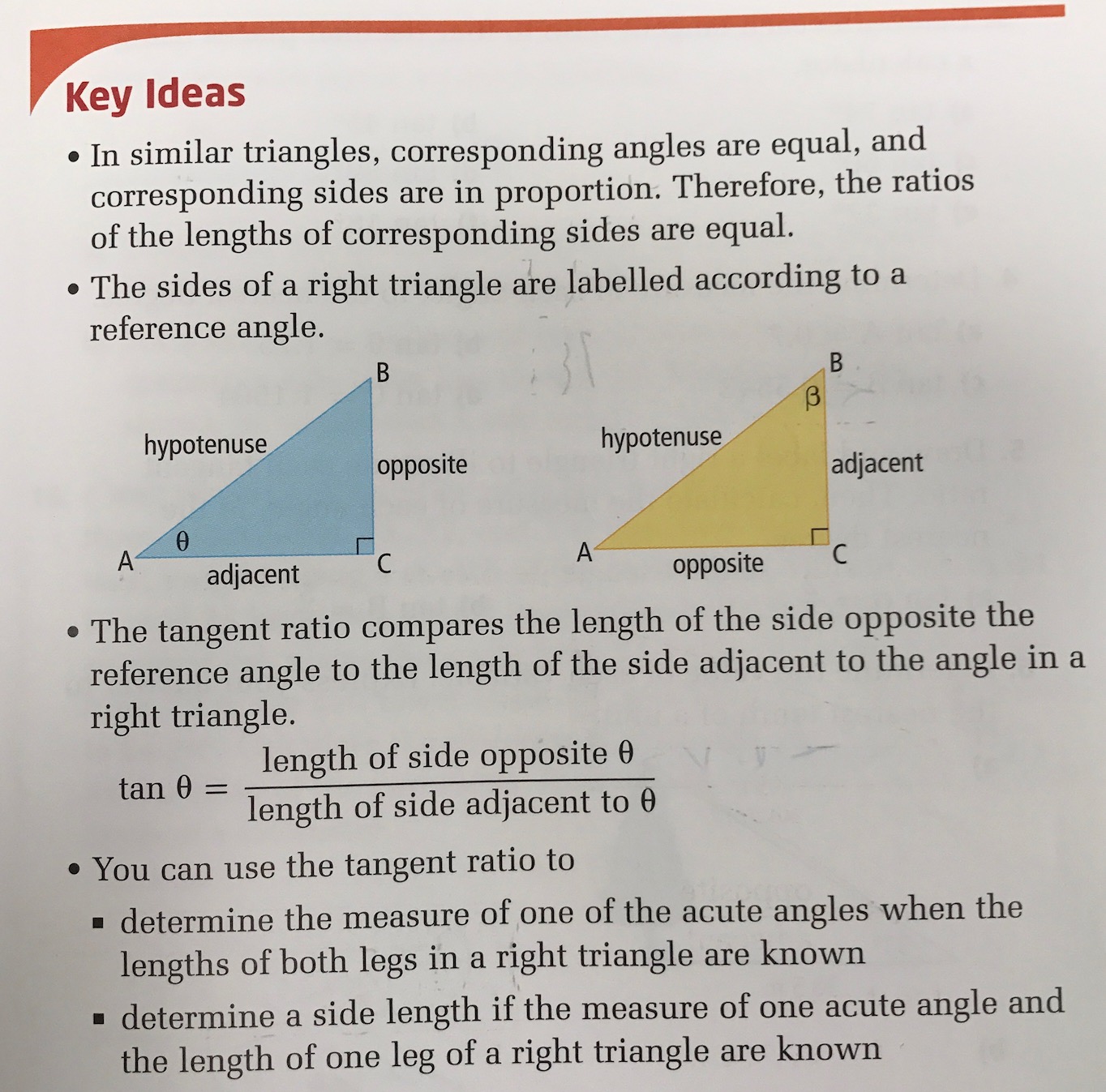
Formula

Examples

1. Write each trigonometric ratio
   1. tan A
   2. tan B



1. Write each trigonometric ratio
   1. tan L
   2. tan N
2. a. Calculate tan 25 to four decimal places  
   b. Draw a triangle to represent tan θ = 5/4. Calculate the angle θ to the tenth of a degree
3. A surveyor wants to determine the width of a river for a proposed bridge. The distance the surveyor is from the proposed bridge site is 400m. The surveyor uses a theodolite to measure angles. The surveyor measures a 31 ̊ angle to the bridge site across the river. What is the width of the river to the nearest meter?
4. A small boat is 95 m from the base of a light house that has a height of 36 meters above sea level. Calculate the angle of the boat to the top of the lighthouse. Express your answer to the nearest degree.



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