What You Will Learn

- Use the tangent ratio.
- Solve real-life problems involving the tangent ratio.

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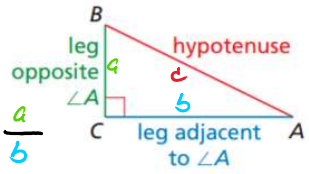
Tangent Ratio

Let $\triangle ABC$ be a right triangle with acute $\angle A$.

The tangent of $\angle A$ (written as $\tan A$) is defined as follows.

$$\tan A = \frac{\text{length of leg opposite } \angle A}{\text{length of leg adjacent to } \angle A} = \frac{BC}{AC} = \frac{a}{b}$$



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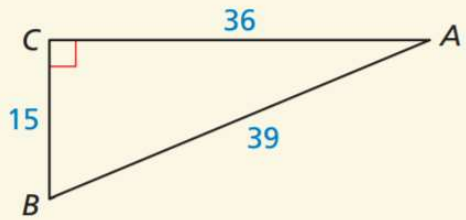
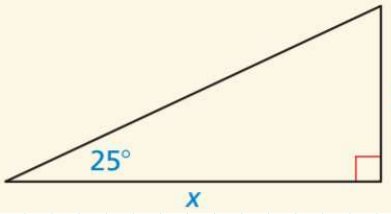
Find tan A and tan B. Write each answer as a fraction and as a decimal rounded to four places.



$\tan A = \frac{opp}{adj} = \frac{15}{36} = .4167$

$\tan B = \frac{opp}{adj} = \frac{36}{15} = 2.4000$

Find the value of x. Round your answer to the nearest tenth.



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$\tan 25 = \frac{12}{x}$

$x \cdot .4663 = \frac{12}{x} \cdot \frac{x}{1}$

$\frac{x(.4663)}{(.4663)} = \frac{12}{.4663}$

$12(.4663) = \frac{12}{x} \cdot \frac{12}{1}$

$\frac{12}{x} \cdot \frac{12}{1} = \frac{144}{x}$

25.7

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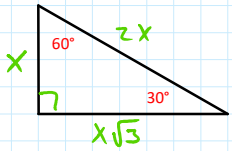
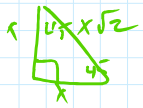
Use a special Right Triangle to find the tangent of a 60° angle.



$\tan 60 = 1.7321 = \frac{x\sqrt{3}}{x} = \sqrt{3}$

$hyp = 2l$

$ll = l\sqrt{3}$



Practice sec 9.4 pg.
491: 1, 3, 5-15A
