NAME _____ DATE _____ PERIOD _____

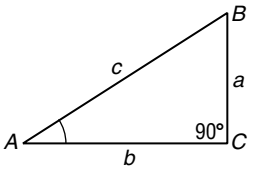
11-7 Study Guide and Intervention

Trigonometric Ratios

Trigonometric Ratios For each acute angle of a right triangle, certain ratios of side lengths are useful. These ratios are called **trigonometric ratios**. Three common ratios are the **sine**, **cosine**, and **tangent**, as defined at the right.

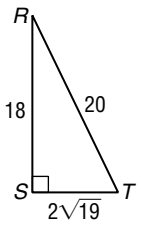
sine of $\angle A$	$\sin A = \frac{a}{c}$
cosine of $\angle A$	$\cos A = \frac{b}{c}$
tangent of $\angle A$	$\tan A = \frac{a}{b}$

SOHCAHTOA



Example

a. Find the sine, cosine, and tangent of $\angle R$ of $\triangle RST$. Round to the nearest thousandth.



$\sin R = \frac{2\sqrt{19}}{20} \approx 0.436$ $r = 2\sqrt{19}$, $s = 20$

$\cos R = \frac{18}{20} = 0.9$ $t = 18$, $s = 20$

$\tan R = \frac{2\sqrt{19}}{18} \approx 0.484$ $r = 2\sqrt{19}$, $t = 18$

b. Find the measure of $\angle R$ to the nearest degree.

$\tan R \approx 0.484$ From part a above

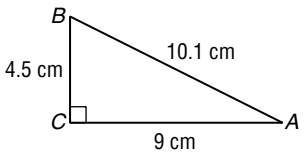
Use TAN^{-1} on a calculator to find the measure of the angle whose tangent ratio is 0.484.

KEYSTROKES: 2nd [TAN^{-1}] .484 ENTER 25.82698212 or about 26°

Exercises

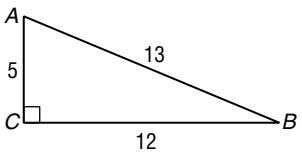
Find the sine, cosine, and tangent of each acute angle. Round your answers to the nearest ten thousandth.

1.



i.e. Find sin A, cos A, tan A, sin B, cos B, tan B

2.



i.e. Find sin A, cos A, tan A, sin B, cos B, tan B

Use a calculator to find the value of each trigonometric ratio to the nearest ten thousandth.

3. sin 45°

4. cos 47°

5. tan 48°

Use a calculator to find the measure of each angle to the nearest degree.

6. $\sin A = 0.7547$

7. $\tan C = 2.3456$

8. $\cos B = 0.6947$

9. $\sin A = 0.6589$

10. $\tan C = 1.9832$

11. $\cos B = 0.0136$