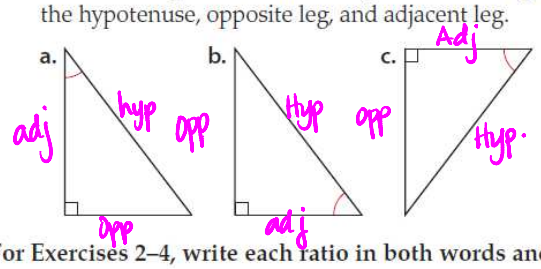
12.4 HW Page 446 #1-12

Practice for Lesson 12.4

1. In relationship to the marked angles in the triangles below, label the hypotenuse, opposite leg, and adjacent leg.

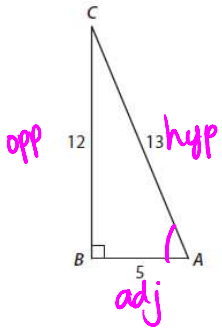


For Exercises 2–4, write each ratio in both words and numbers.

2. $\sin A = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{?}{?} \; \frac{12}{13}$

3. $\cos A = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{?}{?} \; \frac{5}{13}$

4. $\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{?}{?} \; \frac{12}{5}$



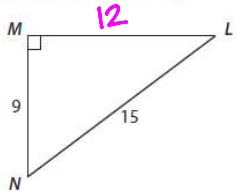
For Exercises 5–8, write each answer as a fraction and a decimal.

5. Find sin *L*.

6. Find cos *N*.

7. Find tan *L*.

8. Find sin *N*.



5) $\sin L = \frac{9}{15} = \frac{3}{5}$ or .6

6) $\cos N = \frac{9}{15} = \frac{3}{5}$ or .6

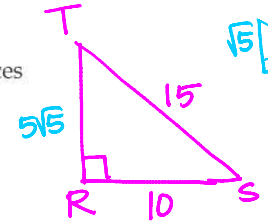
7) $\tan L = \frac{9}{12} = \frac{3}{4}$ or .75

8) $\sin N = \frac{12}{15} = \frac{4}{5}$ or .8

9. In right triangle *RST*, $RS = 10$ cm, $TS = 15$ cm, and $\overline{TS}$ is the hypotenuse of the triangle. (Round answers to four decimal places if necessary.)

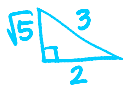
a. Find sin *T*.

b. Find sin *S*.



a) $\sin T = \frac{10}{15} = \frac{2}{3} \approx .6667$

b) $\sin S = \frac{5\sqrt{5}}{15} = \frac{\sqrt{5}}{3} \approx .7454$



$x^2 + 2^2 = 3^2$

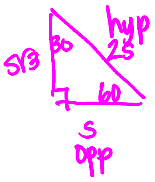
$x^2 = 5$

$x = \pm\sqrt{5}$

10. Explain why neither the sine nor the cosine of an angle can be greater than 1.

Sine is the ratio of the opposite side to the hypotenuse and the cosine is the ratio of the adjacent side to the hypotenuse. The hypotenuse is always the longest side, so the denominator will always be bigger than the numerator. Therefore the sine or cosine of a # can never be greater than 1!

11. Explain how you know that $\sin 30° = \frac{1}{2}$ or 0.5.



The ratio of the sides in a 30°-60°-90° are s-s√3-2s respectively. The sine of 30° is the ratio of the opposite side (s) to the hypotenuse (2s). $\frac{s}{2s}$ will reduce to $\frac{1}{2}$ or .5 no matter how large or small "s" is.

12 a. Complete the following table:

∠A	sin A	cos A
10°	.1736	.9848
20°	.3420	.9397
30°	.5	.8660
40°	.6428	.7660
50°	.7660	.6428
60°	.8660	.5
70°	.9397	.3420
80°	.9848	.1736

b. What patterns do you notice in the table when you compare the sine and cosine of ∠A?

c. Find the value of x in $\sin 25° = \cos x$.

d. Use your observations to complete this statement.
$\sin A = \cos B$ if ∠A and ∠B are Complementary angles.

$\sin A = \cos(90° - A)$

$x = 90 - 25$ so $x = 65°$