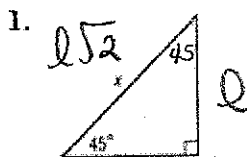


February 3, 2014

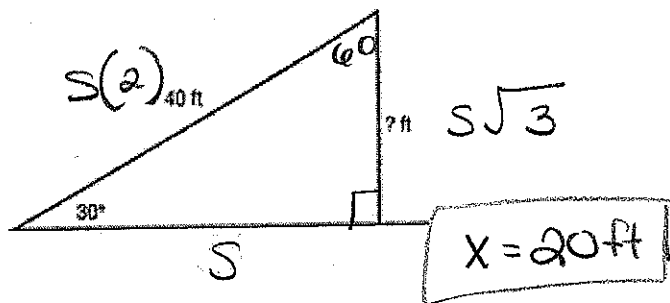
8.4 Warm-Up

Find x.



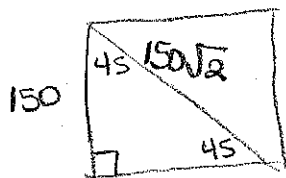
$x = 14\sqrt{2}$

2. ESCALATORS A 40-foot-long escalator rises from the first floor to the second floor of a shopping mall. The escalator makes a 30° angle with the horizontal.



How high above the first floor is the second floor?

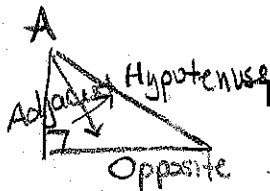
3. ORIGAMI A square piece of paper 150 millimeters on a side is folded in half along a diagonal. The result is a 45° - 45° - 90° triangle. What is the length of the hypotenuse of this triangle?



$150 \cdot \sqrt{2}$
 212.13 mm

8.4 Trigonometry

Target: Use Properties of trigonometry to solve problems.



(sin) sine <u>S</u> oh	(cos) Cosine <u>C</u> ah	(tan) tangent <u>T</u> oa
$\sin = \frac{\text{opposite}}{\text{hypotenuse}}$	$\cos = \frac{\text{adjacent}}{\text{hypotenuse}}$	$\tan = \frac{\text{opposite}}{\text{adjacent}}$
$\sin = \frac{O}{H}$	$\cos = \frac{A}{H}$	$\tan = \frac{O}{A}$

Soh-Cah-Toa

Express each ratio as a fraction and as a decimal to the nearest hundredth.

a. $\sin A$

$$\frac{\text{opp}}{\text{hyp}} = \frac{12}{13}$$

b. $\cos A$

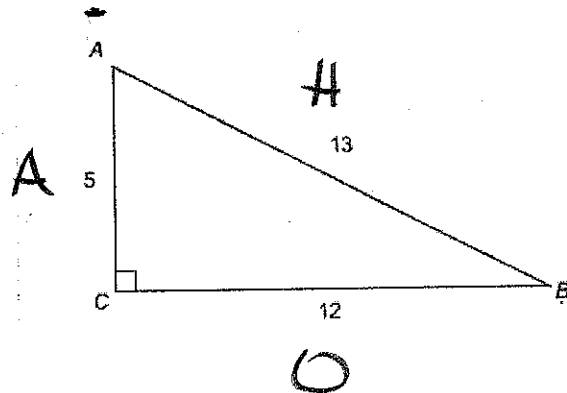
$$\frac{5}{13}$$

c. $\tan A$

$$\frac{12}{5}$$

d. $\sin B$

$$\frac{5}{13}$$



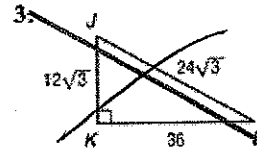
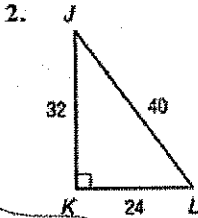
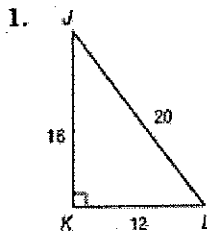
e. $\cos B$

$$\frac{12}{13}$$

f. $\tan B$

$$\frac{5}{12}$$

Find $\sin J$, $\cos J$, $\tan J$, $\sin L$, $\cos L$, and $\tan L$. Express each ratio as a fraction and as a decimal to the nearest hundredth if necessary.



$$\sin J = \frac{12}{20} = \frac{3}{5}$$

$$\sin L = \frac{16}{20} = \frac{4}{5}$$

$$\sin J = \frac{24}{40} = \frac{3}{5}$$

$$\sin L = \frac{32}{40} = \frac{4}{5}$$

$$\cos J = \frac{16}{20} = \frac{4}{5}$$

$$\cos L = \frac{12}{20} = \frac{3}{5}$$

$$\cos J = \frac{32}{40} = \frac{4}{5}$$

$$\cos L = \frac{24}{40} = \frac{3}{5}$$

$$\tan J = \frac{12}{16} = \frac{3}{4}$$

$$\tan L = \frac{16}{12} = \frac{4}{3}$$

$$\tan J = \frac{24}{32} = \frac{3}{4}$$

$$\tan L = \frac{32}{24} = \frac{4}{3}$$

Use a special right triangle to express each trigonometric ratio as a fraction and as a decimal to the nearest hundredth if necessary.

1. $\sin 70^\circ$

$$0.94$$

2. $\tan 80^\circ$

$$5.67$$

3. $\cos 40^\circ$

$$0.77$$

4. $\sin 35^\circ$

$$0.57$$

5. $\tan 65^\circ$

$$2.14$$

6. $\cos 32^\circ$

$$0.85$$