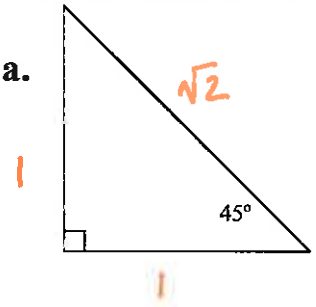
Name Minc Date

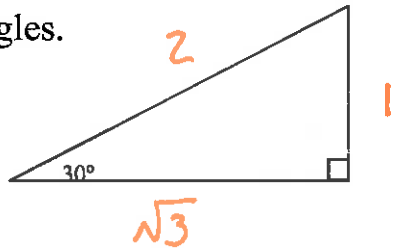
Practice 7.3X: Trig Functions of Common angles

1. Find the sides of the right triangles.

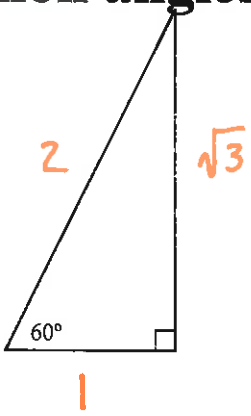
a.



b.



c.



2. Write the definitions of the trig functions.

a. $\sin\theta =$ $\frac{O}{H}$ or y

b. $\csc\theta =$ $\frac{H}{O}$ or $\frac{1}{y}$

c. $\cos\theta =$ $\frac{A}{H}$ or x

d. $\sec\theta =$ $\frac{H}{A}$ or $\frac{1}{x}$

e. $\tan\theta =$ $\frac{O}{A}$ or $\frac{y}{x}$

f. $\cot\theta =$ $\frac{A}{O}$ or $\frac{x}{y}$

3. Fill in the table. Values should be in exact form.

	30° or $\frac{\pi}{6}$	45° or $\frac{\pi}{4}$	60° or $\frac{\pi}{3}$
sin θ	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
cos θ	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
tan θ	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$

4. Find the following trig values.

a. $\sin(30°) =$ $\frac{1}{2}$

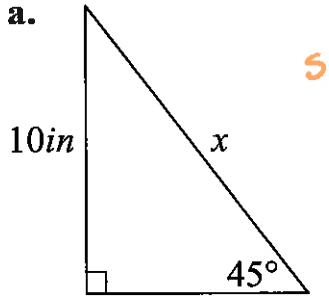
b. $\cos(\frac{\pi}{4}) =$ $\frac{\sqrt{2}}{2}$

c. $\tan(60°) =$ $\sqrt{3}$

d. $\csc(\frac{\pi}{3}) =$ $\frac{1}{\sin \pi/3} = \frac{1}{\sqrt{3}/2} = \frac{2}{\sqrt{3}} \cdot \frac{2\sqrt{3}}{3}$

5. Find x. Show your work & include units.

a.



$\sin 45° = \frac{10}{x}$

$x = \frac{10}{\sin 45°}$

$x = \frac{10}{\sqrt{2}/2} = \frac{20}{\sqrt{2}} = \frac{20\sqrt{2}}{2}$

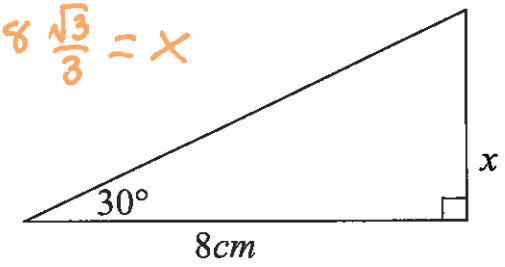
$= 10\sqrt{2}$

b.

$\tan 30° = \frac{x}{8}$

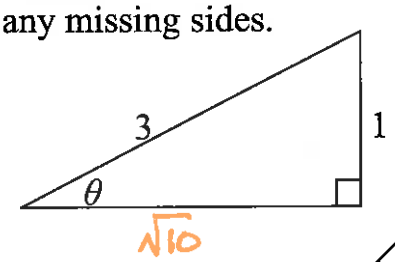
$8 \tan 30° = x$

$8 \frac{\sqrt{3}}{3} = x$



6. Find the ***exact*** value of the six trig functions of the angle θ. Use the Pythagorean thm to find any missing sides.

a.

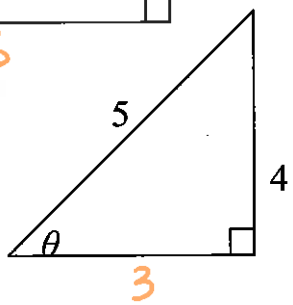


$\sin\theta = \frac{1}{3}$ $\quad \csc\theta = 3$

$\cos\theta = \sqrt{10}/3$ $\quad \sec\theta = \frac{3\sqrt{10}}{10}$

$\tan\theta = \frac{\sqrt{10}}{10}$ $\quad \cot\theta = \sqrt{10}$

b.

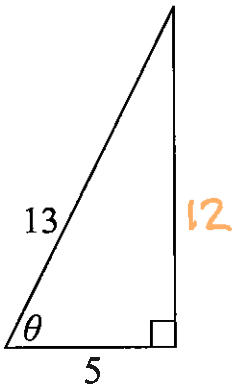


$\sin\theta = 4/5$ $\quad \csc\theta = 5/4$

$\cos\theta = 3/5$ $\quad \sec\theta = 5/3$

$\tan\theta = 4/3$ $\quad \cot\theta = 3/4$

c.



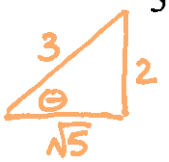
$\sin\theta = 12/13$ $\quad \csc\theta = 13/12$

$\cos\theta = 5/13$ $\quad \sec\theta = 13/5$

$\tan\theta = 12/5$ $\quad \cot\theta = 5/12$

7. Sketch a right triangle corresponding to the trig function of the angle θ. Use the Pythagorean thm to find the missing side and then find the indicated trig functions.

a. $\sin\theta = \frac{2}{3}$



$\cos\theta = \sqrt{5}/3$

$\tan\theta = 2\sqrt{5}/5$

$\csc\theta = 3/2$

b. $\tan\theta = 3/1$

$\sin\theta = \frac{3\sqrt{10}}{10}$

$\cos\theta = \sqrt{10}/10$

$\csc\theta = \sqrt{10}/3$

8. Use a calculator to evaluate the trig functions.

a. $\sin 20° = 0.342$ **b.** $\tan 70° = 2.747$ **c.** $\sec 27° = 1.122$ **d.** $\sin\frac{3\pi}{14} = 0.623$

e. $\cos 70° = 0.342$ **f.** $\cot 20° = 2.747$ **g.** $\csc 63° = 1.122$ **h.** $\cos\frac{4\pi}{14} = 0.623$