Name: Key Hour: ____ Date: _____

Reference Angles and Reference Triangles Notes

What is a reference angle?

an angle formed by an angle's terminal side and the x-axis. $0 \leq RA < 90°$

Why do we use reference angles?

to find reference triangles so we can find exact trig ratios / solve trig equations.

How to Calculate Reference Angles:

First determine what quadrant the terminal side lies in...

- Quadrant I: nothing! The angle is the reference angle
- Quadrant II: 180° − given angle
- Quadrant III: given angle − 180°
- Quadrant IV: 360° − given angle

Reference Angles Examples:
Find the reference angles of the given angles.

1) 150° QII

180° − 150° = 30°

2) 330° QIV

360° − 330° = 30°

3) 225° QIII

225° − 180° = 45°

4) 60° QI

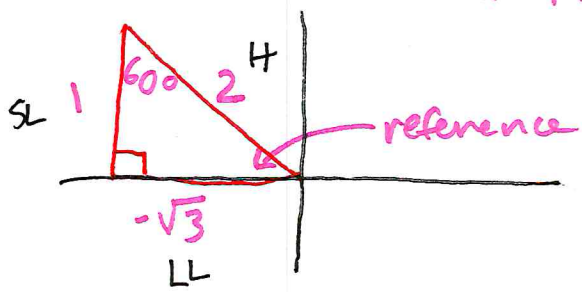
Do nothing!

Finding Reference Triangles Examples: Sketch the reference triangles that correspond with the following angle measures. Identify the reference angle and label all sides of the reference triangle.

1) 150°

QII

$180° - 150° = 30°$



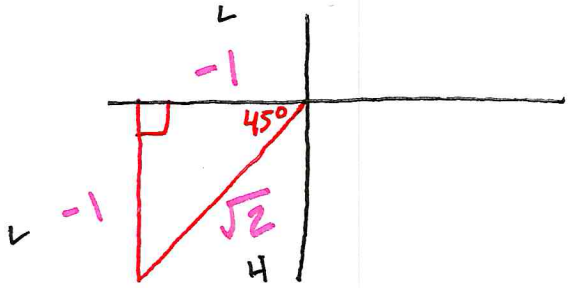
reference angle = 30°

* Hyp will always be positive!

2) 225°

QIII

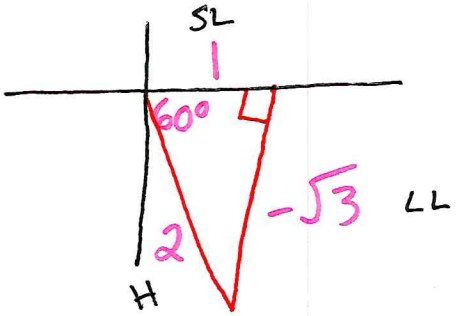
$225° - 180° = 45°$



3) 300°

QIV

$360° - 300° = 60°$



4) 30°

QI

30°