

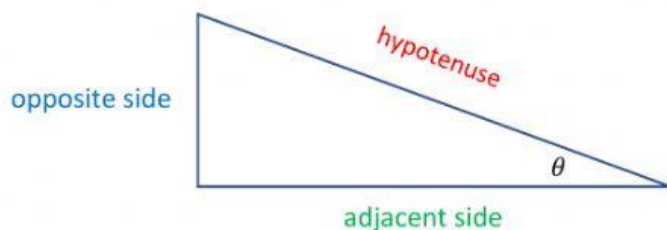


Name:.....

Class:.....

No. ....

### Evaluating Trigonometric Expressions (การประเมินนิพจน์ตรีโกณมิติ)



SOH – CAH – TOA

CHO – SHA – CAO

1.  $\sin \theta = \frac{\text{opp}}{\text{hyp}}$

4.  $\text{cosec } \theta = \frac{\text{hyp}}{\text{opp}}$

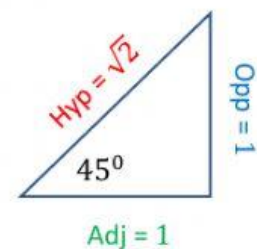
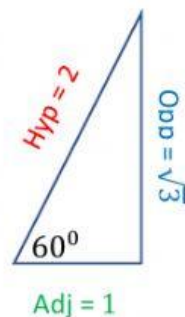
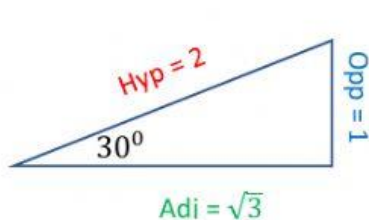
2.  $\cos \theta = \frac{\text{adj}}{\text{hyp}}$

5.  $\sec \theta = \frac{\text{hyp}}{\text{adj}}$

3.  $\tan \theta = \frac{\text{opp}}{\text{adj}}$

6.  $\tan \theta = \frac{\text{adj}}{\text{opp}}$

Example 1: Find the  $\sin \theta$ ,  $\cos \theta$  and  $\tan \theta$  of the triangle below.



Example 1: Evaluate the expression.

$$\tan 45^{\circ} - \sin 30^{\circ}$$

Solution:

$$\tan 45^{\circ} - \sin 30^{\circ} = 1 - \frac{1}{2} = \frac{1}{2} \leftarrow \text{answer}$$

Example 2: Evaluate the expression.

$$\sec 30^{\circ} \times \operatorname{cosec} 60^{\circ}$$

Solution:

$$\sec 30^{\circ} \times \operatorname{cosec} 60^{\circ} = \frac{2}{\sqrt{3}} \times \frac{2}{\sqrt{3}} = \frac{4}{\sqrt{9}} = \frac{4}{3} \leftarrow \text{answer}$$

Example 3: Evaluate the expression.

$$2\sin 45^{\circ} \times \cos 45^{\circ}$$

Solution:

$$2\sin 45^{\circ} \times \cos 45^{\circ} = 2 \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = 2 \times \frac{1}{\sqrt{4}} = 2 \times \frac{1}{2} = 1 \leftarrow \text{answer}$$

Example 4: Evaluate the expression.

$$\frac{2\tan 60^{\circ}}{1 - \tan^2 60^{\circ}}$$

Solution:

$$\frac{2\tan 60^{\circ}}{1 - \tan^2 60^{\circ}} = \frac{2 \times \frac{\sqrt{3}}{1}}{1 - \left(\frac{\sqrt{3}}{1}\right)^2} = \frac{2\sqrt{3}}{1 - 3} = \frac{2\sqrt{3}}{-2} = -\sqrt{3} \leftarrow \text{answer}$$

Example 5: Evaluate the expression.

$$3\sin^2 45^{\circ} - \cos^2 45^{\circ}$$

Solution:

$$3\sin^2 45^{\circ} - \cos^2 45^{\circ} = 3\left(\frac{1}{\sqrt{2}}\right)^2 - \left(\frac{1}{\sqrt{2}}\right)^2 = 3\left(\frac{1}{2}\right) - \left(\frac{1}{2}\right) = \frac{3}{2} - \frac{1}{2} = \frac{3-1}{2} = \frac{2}{2} = 1 \leftarrow \text{answer}$$

**Direction: Evaluate the following trigonometric expressions.**

1.  $\sin 45^\circ + \cos 45^\circ$

a. 1

b.  $\sqrt{2}$

c.  $\frac{1}{\sqrt{2}}$

2.  $\sin 60^\circ \times \tan 30^\circ$

a.  $\frac{1}{2}$

b.  $\frac{\sqrt{3}}{2}$

c.  $\frac{2}{\sqrt{3}}$

3.  $3\sin 30^\circ \times \sin 60^\circ$

a.  $\frac{4\sqrt{3}}{3}$

b.  $\frac{3}{4\sqrt{3}}$

c.  $\frac{3\sqrt{3}}{4}$

4.  $\tan 30^\circ + \sin 60^\circ$

a.  $\frac{6\sqrt{3}}{5}$

b.  $\frac{5\sqrt{3}}{6}$

c.  $\frac{5}{6\sqrt{3}}$

5.  $\frac{\cot 60^\circ \times \sec 30^\circ}{2}$

a.  $\frac{1}{3}$

b.  $\frac{2}{3}$

c.  $\frac{4}{3}$

6.  $\cot 45^\circ + \sec 45^\circ - \operatorname{cosec} 30^\circ$

a.  $1 - \sqrt{3}$

b.  $1 - \sqrt{2}$

c.  $-1 + \sqrt{2}$

7.  $\tan^2 60^\circ - 2\tan^2 45^\circ$

a.  $\sqrt{2}$

b. 1

c. -1

8.  $\cot^2 30^\circ + 2\sin^2 30^\circ$

a.  $\frac{7}{2}$

b.  $\frac{5}{2}$

c.  $\frac{3}{2}$

9.  $\sin^2 60^\circ + \cos^2 60^\circ$

a.  $\frac{1}{3}$

b.  $\frac{1}{2}$

c. 1

10.  $\frac{\tan 45^\circ}{\tan 30^\circ + \tan 60^\circ}$

a.  $\frac{\sqrt{3}}{2}$

b.  $\frac{\sqrt{3}}{4}$

c.  $\frac{\sqrt{3}}{3}$

ONLY THOSE WHO DARE TO FAIL GREATLY CAN EVER ACHIEVE GREATLY.

เฉพาะผู้ที่กล้าที่จะล้มเหลวอย่างยิ่งใหญ่เท่านั้นที่จะประสบความสำเร็จได้อย่างมาก

- Robert F. Kennedy