

W1 – Special Angles

MCR3U

Jensen

- 1) a) Draw a right triangle that has one angle measuring 30° . Label the sides using lengths $\sqrt{3}$, 2, and 1.
b) Identify the adjacent and opposite sides relative to the 30° angle.

c) Redraw the triangle and identify the adjacent and opposite sides relative to the 60° angle.

- 2) a) Draw a right triangle that has one angle measuring 45° . Label the sides using the lengths 1, 1, and $\sqrt{2}$.
b) Identify the adjacent and opposite sides relative to one of the 45° angles.

3) State the exact values

a) $\sin 60^\circ$

b) $\cos 30^\circ$

c) $\tan 45^\circ$

d) $\cos 45^\circ$

4) Determine the exact value of each trig expression.

a) $\sin 30^\circ \times \tan 60^\circ - \cos 30^\circ$

b) $1 - \frac{\sin 45^\circ}{\cos 45^\circ}$

5) Using exact values, show that $\sin^2 \theta + \cos^2 \theta = 1$ for each angle

a) $\theta = 30^\circ$

b) $\theta = 45^\circ$

c) $\theta = 60^\circ$

6) Using the appropriate special triangle, determine θ if $0^\circ \leq \theta \leq 90^\circ$

a) $\sin \theta = \frac{\sqrt{3}}{2}$

b) $\sqrt{3} \tan \theta = 1$

c) $2\sqrt{2} \cos \theta = 2$

d) $2 \cos \theta = \sqrt{3}$

7) A 5 meter stepladder propped against a classroom wall forms an angle of 30° with the wall. Exactly how far is the top of the ladder from the floor? Express your answer in radical form.

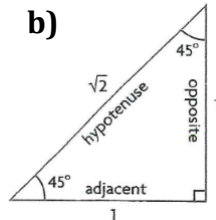
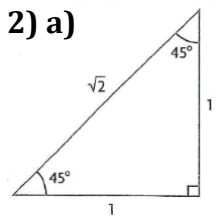
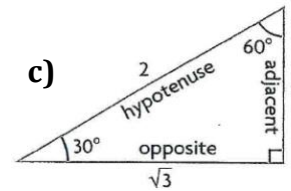
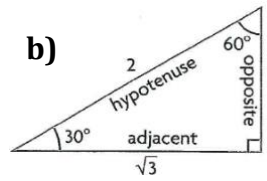
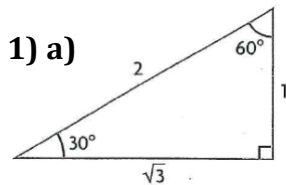
8) Simplify the following expressions by rationalizing the denominator

a) $\frac{3\sqrt{2}}{\sqrt{5}}$

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

c) $\frac{4-5\sqrt{3}}{1+\sqrt{2}}$

Answers



3) a) $\frac{\sqrt{3}}{2}$ b) $\frac{\sqrt{3}}{2}$ c) 1 d) $\frac{\sqrt{2}}{2}$

4) a) 0 d) 0

5) a) $\left(\frac{1}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 = 1$ b) $\left(\frac{\sqrt{2}}{2}\right)^2 + \left(\frac{\sqrt{2}}{2}\right)^2 = 1$ c) $\left(\frac{\sqrt{3}}{2}\right)^2 + \left(\frac{1}{2}\right)^2 = 1$

6) a) 60° b) 30° c) 45° d) 30°

7) $\frac{5\sqrt{3}}{2}$ m

8) a) $\frac{3\sqrt{10}}{5}$ b) $2\sqrt{15}$ c) $-4 + 4\sqrt{2} + 5\sqrt{3} - 5\sqrt{6}$