ALBERT

Name _____ Date _____

Sine and Cosine of Complementary Angles Worksheet

Geometry · Common Core HSG-SRT.C.7

> Explain and use the relationship between the sine and cosine of complementary angles.

Practice

Builds the skill step by step.

1. $\sin 30° = \cos x°$. What is x, if x is acute?

2. $\cos 20° = \sin x°$. What is x, if x is acute?

3. In right $\triangle ABC$ with right angle C, $\sin A = 0.6$. What is $\cos B$?

4. Which identity is true for every acute angle A?

   A. $\sin A = 1 - \cos A$

   B. $\sin A = \cos(180° - A)$

   C. $\sin A = \cos A$

   D. $\sin A = \cos(90° - A)$

5. $\sin 50° \approx 0.7660$. What is $\cos 40°$?

6. $\cos x° = \sin 35°$. What is x, if x is acute?

7. For an acute angle x, $\sin x = \cos x$. What is x?

8. $\cos 72° \approx 0.3090$. What is $\sin 18°$?

9. $\sin x° = \cos 25°$. What is x, if x is acute?

10. Which is equal to $\cos 10°$?

    A. $\sin 80°$

    B. $\sin 10°$

    C. $\cos 80°$

    D. $\sin 100° - 1$

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On Level

Grade-level practice.

1. $\sin(2x)° = \cos(x + 30)°$, and both angles are acute. What is x?

2. $\cos(x + 10)° = \sin(2x - 10)°$, and both angles are acute. What is x?

3. $\sin(3x)° = \cos(x + 10)°$, and both angles are acute. What is x?

4. In right $\triangle ABC$ with right angle C, explain why $\sin A = \cos B$.

5. In right $\triangle ABC$ with right angle C, $\sin A = \frac{5}{13}$. What is $\cos B$?

6. $\sin A = 0.28$ for an acute angle A. What is $\cos(90° - A)$?

7. Which pair has equal values?

   A. sin 15° and cos 75°

   B. sin 15° and cos 15°

   C. sin 15° and sin 75°

   D. cos 15° and cos 75°

8. $\cos(x - 5)° = \sin(x + 15)°$, and both angles are acute. What is x?

9. $\sin 1° = \cos x°$. What is x, if x is acute?

10. In right $\triangle ABC$ with right angle C, $\cos A = 0.8$. What is $\sin B$?

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Challenge

Multi-step and word problems that stretch it.

1. $\sin(4x - 10)° = \cos(2x + 40)°$, and both angles are acute. What is x?

2. In right $\triangle ABC$ with right angle C, $\cos A = \sin B$. $m\angle A = (2x + 5)°$ and $m\angle B = 3x°$. What is x?

3. In right $\triangle ABC$ with right angle C, which is NOT always true?

   A. $\sin A = \cos B$

   B. $\sin A = \sin B$

   C. $\cos A = \sin B$

   D. $m\angle A + m\angle B = 90°$

4. $\sin 37° \approx 0.6018$. What is $\cos 53°$?

5. In right $\triangle ABC$ with right angle C, $\sin A = 0.3$. What is $\sin A + \cos B$?

6. $\sin(x + 12)° = \cos(2x)°$, and both angles are acute. What is x?

7. Use a right triangle to explain why $\sin A = \cos(90° - A)$.

8. $\cos(3x)° = \sin(3x)°$, and $3x$ is an acute angle. What is x?

9. $\sin(2x)° = \cos(3x)°$, and both angles are acute. What is x?

10. For an acute angle A, what is $\tan A \times \tan(90° - A)$?

    A. 1

    B. 0

    C. $\tan^2 A$

    D. It depends on A.