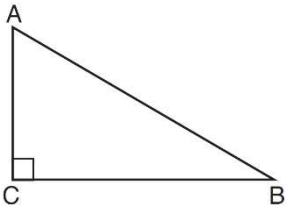
Name _____ Date _____
Mr. Schlansky Geometry

Acute Angles in a Right Triangle

1. In scalene triangle ABC shown in the diagram below, $m\angle C = 90°$.

Which equation is always true?

1) $\sin A = \sin B$
2) $\cos A = \cos B$
3) $\cos A = \sin C$
4) $\sin A = \cos B$



2. In a right triangle ABC, where $m\angle C = 90°$, which of the following statements is always true?

(1) $\sin A = \tan B$
(2) $\sin A = \cos B$
(3) $\cos A = \tan B$
(4) $\tan A = \tan B$

3. In ΔXYZ, the complement of $\angle Y$ is $\angle Z$. Which statement is always true?

1) $\cos X = \cos Z$
2) $\sin Y = \cos Z$
3) $\cos X = \sin Z$
4) $\tan Y = \tan Z$

4. In right triangle XYZ with the right angle at Y, sin X = 2x + 5 and cos Z = 4x + 1. Determine and state the value of x. Explain your answer.

5. In right triangle NBC with the right angle at B, cos N = 6x + 5 and sin C = 4x + 20. Determine and state the value of x. Explain your answer.

6. In right triangle ABC with the right angle at C, $\sin A = 2x + 0.1$ and $\cos B = 4x - 0.7$. Determine and state the value of x. Explain your answer.

7. Given: Right triangle ABC with right angle at C. If $\sin A$ increases, does $\cos B$ increase or decrease? Explain why.

8. In right triangle ABC, $m\angle C = 90°$. If $\cos B = \frac{5}{13}$, which function also equals $\frac{5}{13}$?

1) $\tan A$
2) $\tan B$
3) $\sin A$
4) $\sin B$

9. If $\sin 2x = \cos(x + 15)$, determine the value of x.

10. If $\cos(x + 8) = \sin(2x + 7)$, determine the value of x.

11. If $\cos(x-47) = \sin(3x-11)$, determine the value of x.

12. Find the value of R that will make the equation $\sin 73° = \cos R$ true when $0° < R < 90°$. Explain your answer.

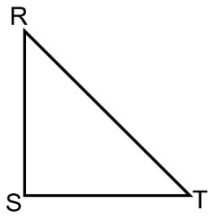
13. Which expression is always equivalent to $\sin x$ when $0° < x < 90°$?

1) $\cos(90° - x)$
2) $\cos(45° - x)$
3) $\cos(2x)$
4) $\cos x$

14. Explain why $\cos(x) = \sin(90 - x)$ for x such that $0 < x < 90$.

15. In right triangle RST shown below, which of the following must be true?

I: $\sin R = \cos S$
II: $\cos T = \sin R$
III: $\sin T = \cos R$
IV: $\tan R = \tan S$



1) I and IV
2) II and III
3) I, II, and III
4) III only

16. If $\sin(3x + 2)° = \cos(4x - 10)°$, what is the value of x to the *nearest tenth*?

(1) 7.6 (2) 12.0 (3) 14.0 (4) 26.9

17. In right triangle SBR, the measure of angle B is 90 degrees. If $\sin S = 3x + 2$ and $\cos R = 4x - 10$, what is the value of x?

18. If $\sin(x + 15) = \cos 45$, determine the value of x.

19. If $\sin(2x + 7)° = \cos(4x - 7)°$, what is the value of x?

20. In right triangle ARF with the right angle at A, $\cos A = 10x + 80$, $\cos F = 3x - 1$, and $\sin R = 2x$. Determine and state the value of x. Explain your answer.