Name _____ Date _____

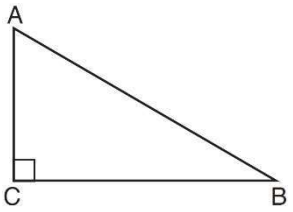
Mr. Schlansky Geometry

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. Right triangle TMR is a scalene triangle with the right angle at M. Which equation is true?

1) $\sin M = \cos T$
2) $\sin R = \cos R$
3) $\sin T = \cos R$
4) $\sin T = \cos M$

3. Right triangle ACT has $m\angle A = 90°$. Which expression is always equivalent to $\cos T$?

1) $\cos C$
2) $\sin C$
3) $\tan T$
4) $\sin T$

4. 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) $\sin B$

5. In right triangle ABC, $m\angle C = 90°$ and $AC \neq BC$. Which trigonometric ratio is equivalent to $\sin B$?

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

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. 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

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

1) 7
2) 15
3) 21
4) 30

9. In a right triangle, $\sin(40 - x)° = \cos(3x)°$. What is the value of x?

1) 10
2) 15
3) 20
4) 25

10. In a right triangle, the acute angles have the relationship $\sin(2x + 4) = \cos(46)$. What is the value of x?

1) 20
2) 21
3) 24
4) 25

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

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

12. Which of the following is equivalent to $\sin 40$?

1) $\sin 50$ 2) $\cos 50$ 3) $\cos 40$ 4) $\tan 50$

13. Which of the following is equivalent to $\cos 57$?

1) $\sin 57$ 2) $\sin 33$ 3) $\cos 33$ 4) $\cos 123$

14. Which expression is equal to $\sin 30°$?

1) $\tan 30°$
2) $\sin 60°$
3) $\cos 60°$
4) $\cos 30°$

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

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

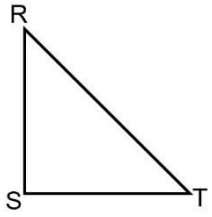
17. If $\cos(x+8) = \sin(2x+7)$, determine the value of x.

18. In right triangle DAN, $m\angle A = 90°$. Which statement must always be true?

1) $\cos D = \cos N$
2) $\cos D = \sin N$
3) $\sin A = \cos N$
4) $\cos A = \tan N$

19. 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