

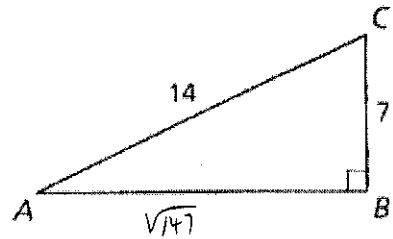
Complementary Trig Ratios

Using the figure at the right, answer the following questions:

1. What do you need to find in order to "solve the right triangle"?

find AB using Pythagorean Theorem

2. What is the length of AB? $\sqrt{147}$



We can use trigonometric ratios to find the $m\angle A$ and $m\angle B$

3. Find the sine, cosine, and tangent of $m\angle A$?

$$\sin A = \frac{7}{14} = \frac{1}{2}$$

$$\cos A = \frac{\sqrt{147}}{14}$$

$$\tan A = \frac{7}{\sqrt{147}}$$

How do they compare?

$$\sin A = \cos C, \quad \cos A = \sin C, \quad \tan A = \frac{1}{\tan C}$$

4. Find the sine, cosine, and tangent of $m\angle C$?

$$\sin C = \frac{\sqrt{147}}{14}$$

$$\cos C = \frac{7}{14} = \frac{1}{2}$$

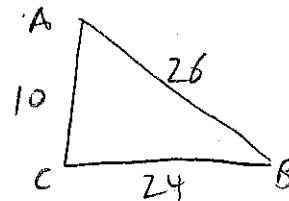
$$\tan C = \frac{\sqrt{147}}{7}$$

Draw $\triangle ABC$ where $\angle ACB = 90^\circ$, $AC = 10$, and $CB = 24$

5. What is the length of AB? $10^2 + 24^2 = c^2$
 $c = 26$

6. What is $\cos A$? $10/26 = 5/13$

7. What is $\sin B$? $10/26 = 5/13$



Write each trig function in terms of its co-function.

8. $\sin 64 = \underline{\cos 26^\circ}$

9. $\cos 84 = \underline{\sin 6^\circ}$

10. $\cos 38 = \underline{\sin 52^\circ}$

11. $\sin 24 = \underline{\cos 66}$

12. $\cos 72 = \underline{\sin 18^\circ}$

13. $\sin 45 = \underline{\cos 45}$

14. $\sin x = \underline{\cos(90-x)}$

15. $\cos x = \underline{\sin(90-x)}$

Multiple Choice:

16. In right triangle $\triangle ABC$ $\sin A = 0.8$. What is the $\cos B$?

- A. 0.8
- B. 0.6
- C. 1.0
- D. 0.5

17. Identify the **two equal** trigonometric ratios from the options given:

- A. $\sin 30$
- B. $\cos 30$
- C. $\cos 60$
- D. $\tan 30$

18. Select the **two** possible simplifications of: $\sin 31 + \cos 59$

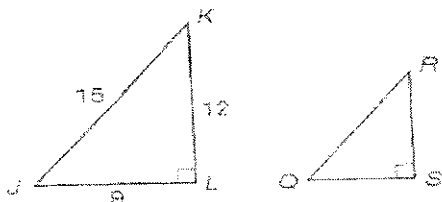
- A. $2 \sin 31$
 B. $\sin 31 \times \cos 59$
 C. $2 \cos 59$
 D. $\cos 118$

$$\sin 31 + \sin 31 = 2 \cdot \sin 31$$

or

$$\cos 59 + \cos 59 = 2 \cdot \cos 59$$

19. Triangle JKL is similar to triangle QRS.

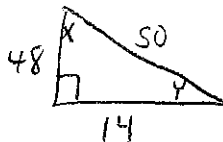


Which of the following must be true?

- A. $\sin J = \sin R = 4/5$
 B. $\sin J = \sin S = 4/5$
 C. $\cos K = \cos Q = 4/5$
 D. $\cos K = \cos R = 4/5$

20. Angle X and Angle Y are complementary angles in a right triangle. The value of $\tan x$ is $14/48$. What is the value of $\sin Y$?

- A. $14/48$
 B. $14/50$
 C. $48/50$
 D. $50/48$



21. If the $\sin A = 3/5$, the $\cos (90 - A) = \underline{\quad}$?

- A. $5/3$
 B. $3/5$
 C. $4/3$
 D. $3/4$

22. In the triangle, $\sin y = 5/8$, which of the following is true?

- A. $\tan y = 5/8$
 B. $\cos y = 5/8$
 C. $\sin (90 - y) = 5/8$
 D. $\cos (90 - y) = 5/8$

