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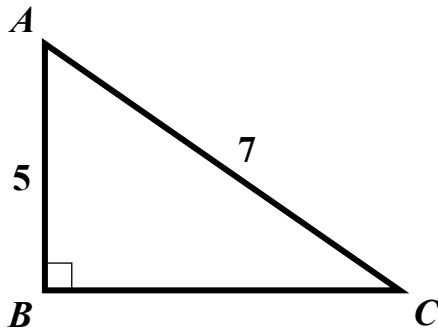
A mentor can change everything.



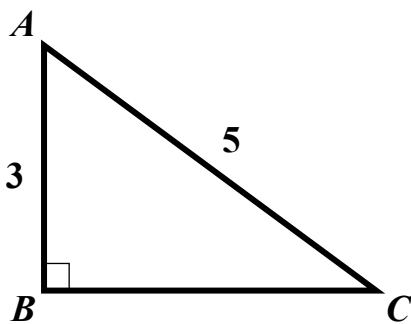
Triangles and Trigonometry

Non-Calculator: Multiple Choice

1. Triangle ABC is a right triangle where B measures 90 degrees. What is the cosine of A ?

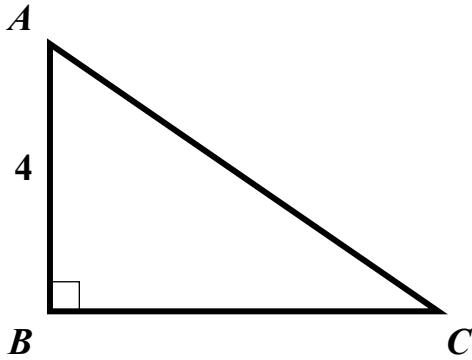


- A) $\frac{7}{5}$
B) $\frac{5}{7}$
C) $\frac{5}{2\sqrt{6}}$
D) $\frac{7}{2\sqrt{6}}$
2. For the triangle below, what is $\sin A$?

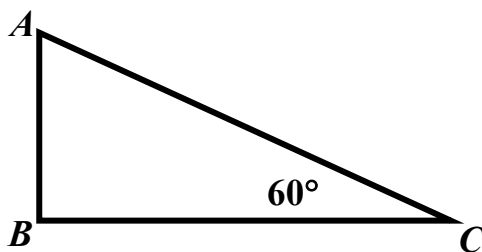


- A) $\frac{3}{5}$
B) $\frac{3}{4}$
C) $\frac{4}{3}$
D) $\frac{4}{5}$

3. Triangle ABC , shown below, has an area of 18 cm^2 . What is $\tan C$?



- A) $\frac{4}{\sqrt{97}}$
 B) $\frac{4}{9}$
 C) $\frac{4}{8}$
 D) $\frac{9}{10}$
4. In triangle BCD , the measure of angle C is 90 degrees. If $BC = 5$ and $CD = 12$. What is the sine of B ?
- A) $\frac{5}{12}$
 B) $\frac{5}{13}$
 C) $\frac{12}{13}$
 D) $\frac{12}{5}$
5. In the triangle ABC below, $AC = 2$. What are the values of AB and BC ?



- A) $AB = 1, BC = \sqrt{3}$
 B) $AB = \sqrt{3}, BC = 1$
 C) $AB = 2\sqrt{3}, C = 1$
 D) $AB = 2, BC = 2$

6. A Demogorgon is standing on top of Big Ben, which is 96 meters tall. Elle is standing 20 meters from Big Ben. At what angle does she have to project her psychic energy to destroy the Demogorgon?
- A) $\tan^{-1}\left(\frac{20}{96}\right)$
- B) $\tan^{-1}\left(\frac{96}{20}\right)$
- C) $\sin^{-1}\left(\frac{20}{96}\right)$
- D) $\cos^{-1}\left(\frac{20}{96}\right)$

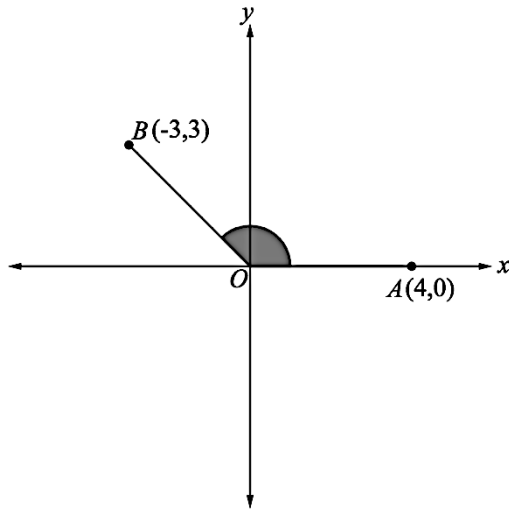
$$\sin(x) = \cos(P - x)$$

7. In the equation above, the angle measures are in radians and P is a constant. What is the value of P , in radians?
- A) 0
- B) $\frac{\pi}{4}$
- C) $\frac{\pi}{2}$
- D) $\frac{3\pi}{4}$

$$\cos x = 5/13$$

8. Which of the following answer choices contains an equivalent solution for x as the equation above?
- A) $\cos x = \frac{12}{13}$
- B) $\sin x = \frac{13}{12}$
- C) $\sin x = \frac{5}{12}$
- D) $\sin x = \frac{12}{13}$

9. What is the measure, in radians, of angle AOB ?



- A) $\frac{\pi}{4}$
- B) $\frac{\pi}{2}$
- C) $\frac{3\pi}{4}$
- D) $\frac{5\pi}{4}$

Non-Calculator: Grid In

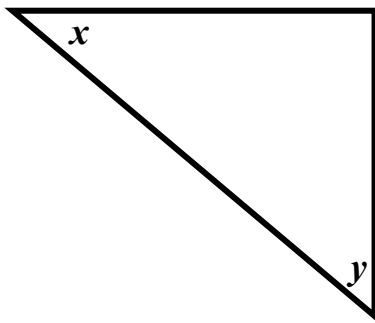
10. Sally has had a bad day, so she goes to her local cemetery for a cathartic walk. Starting at the gate, she walks forwards for 175 meters before turning left. She then walks for 75 meters, but sees a massive spider so turns right onto another path and walks for 125 meters to make sure she's away from the spider. A fan of repetition, Sally turns right again and walks for another 125 meters before having to stop and tie her lace. She then continues walking straight for another 350 meters before deciding she is ready to head back to the cemetery entrance. If she walks in a straight line, how many meters must she walk to get back to the gate?

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1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○

11. In a right triangle, one angle measures y degrees, and $\sin y = \frac{1}{2}$. What is $\cos(90 - y)$?

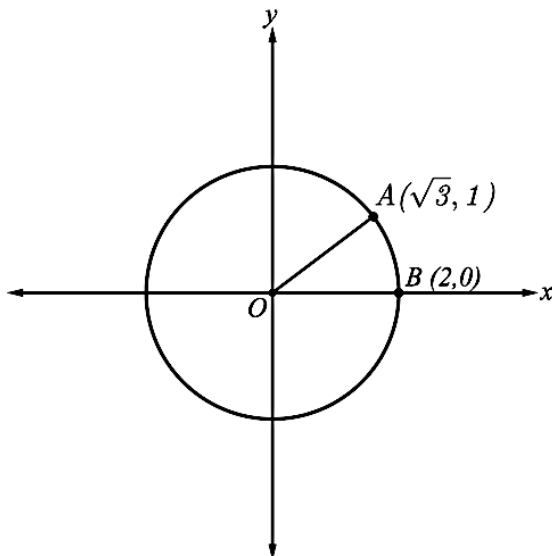
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12. In the right triangle below, $\sin x = .7$. What is the value of $\cos y$?



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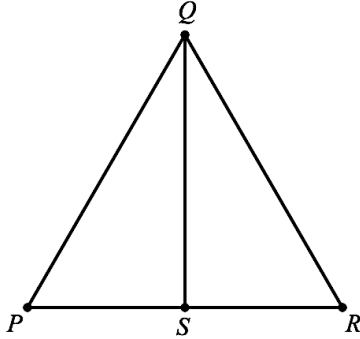
13. In the xy -plane below, O is the center of the circle and the angle AOB measures $\frac{\pi}{a}$ radians. What is the value of a ?



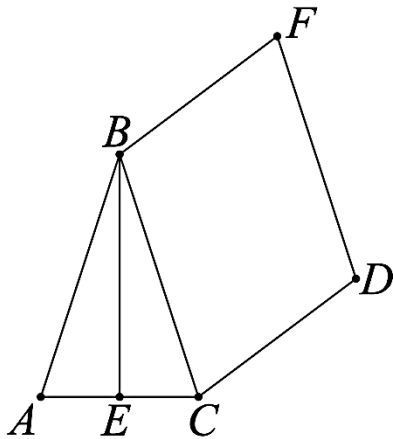
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Calculator: Multiple Choice

14. In $\triangle PQR$ below, $\angle RPQ$ measures 60° and $\angle SQR$ measures 30° , and \overline{QR} measures 6 centimeters. What is the length of \overline{SR} ?

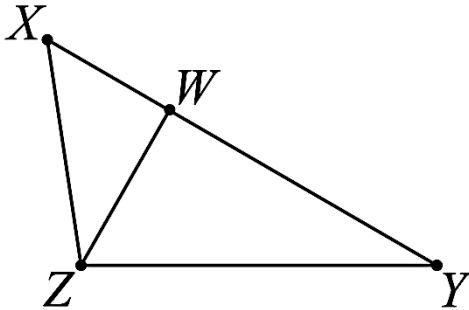


- A) 2
 B) 3
 C) 4
 D) 6
15. Kylie decides to go camping at Yosemite. The tent that she builds sits flat on the ground and has a triangular entrance made of three sides, \overline{AB} , \overline{BC} , and \overline{AC} . Sides \overline{AB} and \overline{BC} are equivalent, and $\angle BCE$ measures 72° . What is the measure of $\angle ABC$?



- A) 36°
 B) 72°
 C) 90°
 D) 108°

16. In $\triangle XYZ$ below, $\angle ZYW$ measures 30° and $\angle XWZ$ is a right angle. \overline{ZW} is equal to \overline{XW} . What is the measure of $\angle XZY$?



- A) 45°
- B) 60°
- C) 105°
- D) 110°

Calculator: Grid In

17. In a right triangle, $\cos x = \frac{6}{10}$. What is the value of $\tan x$?

/	○	○		
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2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○

18. The angle of elevation to the top of a spire from a spot on level ground 54 feet away from the base of the spire is 20° . To the nearest foot, what is the height of the spire?

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1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○