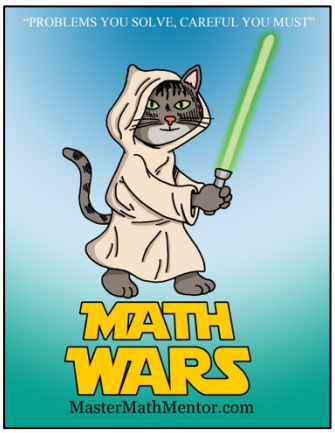
Math Wars – SAT/ACT
Topic 520 – Trigonometry



Maximum Time: 6.5 Minutes

Directions: To start, you need to download the Math Wars application on your cell phone: Use the QR code or the url: https://mastermathmentor.com/mmm/mathwars.ashx?key=520

When ready, start the timer and then solve the problems below, entering your choice, A, B, C, D and pressing Submit for each problem when you are sure of your answer. When complete, stop the timer. You will see problems you got correct in green and incorrect in red. You will receive a score based on how many problems you got right and your time. A perfect score is all problems correct using half the maximum time or less. You can text or email your friends with your results.

1. (1 pt) Given a right triangle ACB with right angle C and AC = 8 and AB = 17, find $\cos B$.

A. $\frac{15}{17}$ B. $\frac{8}{15}$ C. $\frac{8}{17}$ D. $\frac{17}{15}$

2. (3 pts) Jack is standing on a street and sees a man on top of an 85-foot high building. The angle of elevation is $37°$. Which of the following can be used to find Jack's distance (j) to the base of the building?

I. $\tan 37° = \frac{85}{j}$ II. $\tan 53° = \frac{j}{85}$ III. $j = \sqrt{37^2 + 53^2}$

A. I only B. I and II only C. II and III only D. I, II and III

3. (5 pts) $\sin\theta = \frac{-\sqrt{3}}{4}$, find the value of $\frac{\tan\theta}{\cot\theta}$.

A. $\frac{3}{7}$ B. $\pm\frac{3}{7}$ C. $\frac{3}{13}$ D. $\pm\frac{3}{13}$

4. (7 pts) In triangle ABC, sin A = cos B with A = 3c + 17 and B = 5c + 57, both measured in degrees. Find the value of B – A.

A. $25°$ B. $54°$ C. $80°$ D. $44°$

5. (9 pts) Find the range of $y = 2\sin A - 3\cos\left(B - \frac{\pi}{2}\right)$.

A. 1 B. 6 C. 5 D. 10