Event C

Problem #1 ("Quickie"; 1 point)

Try to solve each problem within one minute.

1. If $\frac{\pi}{2} < B < \pi$ and $\sin B = \frac{5}{13}$, determine exactly $\sin(2B)$.

   (MSHSML 2019-20 2C #1)

1. Determine exactly the smallest possible positive degree measure for θ, given that $\tan 9\theta = 1$. (MSHSML 2018-19 2C #1)

Problem #2 ("Textbook"; 2 points)

Try to solve each problem within two minutes.

2. If $\pi < A < \dfrac{3\pi}{2}$ and $\sin A = -\dfrac{7}{25}$, determine exactly $\cos\dfrac{A}{2}$.

(MSHSML 2019-20 2C #2)

2. Determine exactly the value of $\tan\dfrac{5\pi}{12}$. (MSHSML 2018-19 2C #2)

Event D

Problem #1 ("Quickie"; 1 point)

Try to solve each problem within one minute.

1. Determine exactly the point of intersection of the line defined by $f(x) = \dfrac{3x+2}{6}$ and the line defined by $f^{-1}(x)$.

   [calculator allowed] (MSHSML 2019-20 2D #1)

1. Calculate the slope of the line $8x + 11y - 13 = 0$. [calculator allowed] (MSHSML 2018-19 2D #1)

Problem #2 ("Textbook"; 2 points)
Try to solve each problem within two minutes.

2. Let l_1 be the line $5x - 4y = 9$ and l_2 be the line $10x - Ay = 2$, where A is a constant. There is one value for A such that $l_1 \parallel l_2$ and another value for A such that $l_1 \perp l_2$. Determine exactly the product of these two values of A.

[calculator allowed] (MSHSML 2019-20 2D #2)

2. Determine exactly, in the form $Ax + By = C$, the equation of the line with a negative slope that contains the center and the y-intercept of the circle $(x - 4)^2 + (y - 5)^2 = 65$. [calculator allowed] (MSHSML 2018-19 2D #2)