North Carolina Early Mathematics Placement Testing Program –

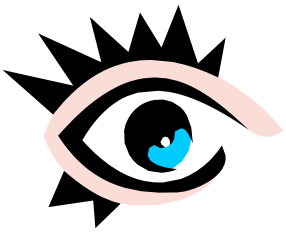
Providing a Timely Reality Check of Readiness for College-Level Mathematics

2019-2020 NC EMPT Test Version

4,724 high school student participants

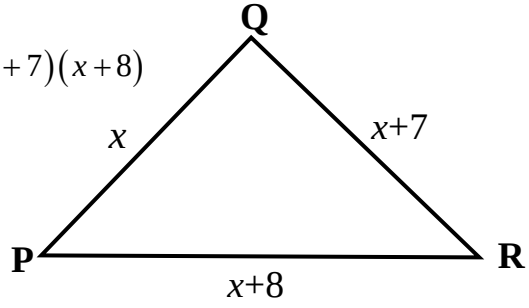
(Due to the COVID-19 pandemic and the closing of high schools statewide, participation declined dramatically during 2019-2020.)

Top 10 MISSED Questions

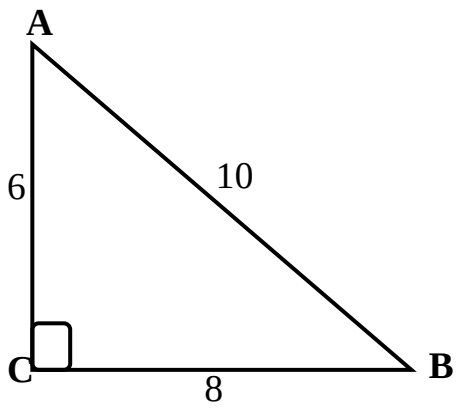


These questions are typical of those found on actual college math placement exams throughout the UNC System, NC community colleges, and other private colleges and universities. The questions are formatted for use with a document camera as a quick review or warm-up exercise for high school students in Algebra II, NC Math 3, NC Math 4, Discrete Math for Computer Science, Precalculus, Statistics, and other upper-level math courses. A pdf of this document can be located at www.ncempt.org.

Practice Makes Perfect!!

Top Ten Missed	Students Answering **INCORRECTLY**	Test Item, 2019-2020 NC EMPT Test Version
1. (#10 in 2019-20 test booklet)	76%	Given right triangle PQR with right angle Q, what is the area of triangle PQR? A. $3x+15$ B. $x^2+(x+7)^2=(x+8)^2$ C. $\frac{1}{2}x(x+8)$ D. $\frac{1}{2}x(x+7)(x+8)$ E. $\frac{1}{2}x(x+7)$ 

Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2019-2020 NC EMPT Test Version
2. (#22 in 2019-20 test booklet)	74%	The equation $x-\frac{3}{x}=\frac{1}{2}$ has two solutions. Find the sum of the two solutions. A. $-\frac{5}{2}$ B. -2 C. $-\frac{1}{2}$ D. $\frac{1}{2}$ E. $1\frac{1}{2}$
3. (#27 in 2019-20 test booklet)	74%	The solution to the quadratic inequality $x^2-14x\le 15$ is equivalent to which interval notation below? A. $[-1, 15]$ B. $[-3, 5]$ C. $[3, 5]$ D. $(-\infty, -1]\cup[15, \infty)$ E. $(-\infty, 3]\cup[5, \infty)$
4. (#9 in 2019-20 test booklet)	73%	The price of propane this year is \$4.10 per gallon. If that represents a 30% increase over last year's price, what was the price of a gallon of propane last year? A. \$1.23 B. \$2.87 C. \$3.15 D. \$3.33 E. \$5.33

Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2019-2020 NC EMPT Test Version
5. (#30 in 2019-20 test booklet)	72%	Multiply these complex numbers and write the answer in $a+bi$ form: $(-3+2i)(-3-7i)$ A. $-5+27i$ B. $-5+15i$ C. $-5-27i$ D. $23-15i$ E. $23+15i$
6. (#31 in 2019-20 test booklet)	69%	Refer to the given right triangle ABC. Find the value of this expression: $5\sin A+10\cos B-8\tan B$ A. 3 B. 4 C. 6 D. 7 E. 9 
7. (#24 in 2019-20 test booklet)	67%	Solve for x: $49x^4=25x^2$ A. $\pm\frac{25}{49}$ B. $\pm\frac{7}{5}, 0$ C. $\pm\frac{49}{25}$ D. $\pm\frac{5}{7}, 0$ E. $\pm\frac{5}{7}$

Top Ten Missed	**Students Answering INCORRECTLY**	Test Item, 2019-2020 NC EMPT Test Version
8. (#32 in 2019-20 test booklet)	66%	Given this system of two equations: $\begin{cases} x+2y=5 \\ 4x-6y=9 \end{cases}$ Find x. A. 0 B. $\frac{11}{14}$ C. 2 D. $\frac{24}{7}$ E. 5
9. (#18 in 2019-20 test booklet)	66%	When the polynomial $4x^4-13x^2-2x+1$ is divided by $x-2$, what is the remainder? A. –23 B. 1 C. 3 D. 9 E. 17
10. (#15 in 2019-20 test booklet)	64%	The graph of which of the following equations is a line that is parallel to the graph of $x-5y=8$? A. $x+5y=8$ B. $5x-y=8$ C. $2x+10y=8$ D. $2x-10y=8$ E. $10x-2y=8$

The average score for the 4,724 high school participants on the 2019-2020 NC EMPT test version was 15.8 out of 32 questions, or 50%.

Correct Answers to the Top Ten Missed Questions, 2019-2020

1. E 2. D 3. A 4. C 5. E 6. C 7. D 8. D 9. D 10. D