## North Carolina Early Mathematics Placement Testing Program –

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

2017-2018 NC EMPT Test Version



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 on an overhead projector or document camera as a quick review or warm-up exercise for high school students in Algebra II, NC Math 3, Essentials for College Math, Advanced Functions and Modeling, Precalculus, Discrete Math, Statistics, and other upper-level math courses. A pdf of this document can be located at <a href="https://www.ncempt.org">www.ncempt.org</a>. **Practice Makes Perfect!!** 

Top Ten Missed	Students Answering INCORRECTLY	Test Item, 2	2017-2018 N	C EMPT Test Version	
(#26 in 2017-18 test booklet)	53%	If y varies invers when x is $-36$ .  A. $-\frac{1}{6}$ D. 3	ely as $x$ and $y$ B. $-\frac{1}{3}$ E. 12	y = 2 when $x = -6$ , find $y = 2$	

Top Ten Missed	Students Answering INCORRECTLY	Test Item, 2017-2018 NC EMPT Test Version
(#27 in 2017-18 test booklet)	48%	The inequality $ 6+3x  < 9$ is equivalent to:  A. $\phi$ $-5$ B. $\phi$ $-5$ C. $\phi$ $-5$ D. $\phi$ $-5$ D. $\phi$ $-5$ D. $\phi$ $-5$ E. $\phi$ $-5$ D. $\phi$ $-5$ $-5$ D. $\phi$ $\phi$ $-5$ D. $\phi$
(#30 in 2017-18 test booklet)	48%	Find the value of $c$ that makes $x^2-9x+c$ a perfect square trinomial.  A. 81  B. $\frac{81}{4}$ C. $\frac{9}{2}$ D. $-\frac{9}{2}$ E. $-\frac{81}{4}$
4.  (#11 in 2017-18 test booklet)	48%	Which equation below does NOT represent a function of $x$ ?  A. $x = y^2$ B. $y = x$ C. $y =  x $ D. $y = x^2$ E. $y = 1$

Top Ten Missed	Students Answering INCORRECTLY	Test Item, 2017-2018 NC EMPT Test Version
(#32 in 2017-18 test booklet)	47%	Suppose a 5 - foot ladder is leaning against a vertical wall as shown below. The bottom of the ladder is a distance of $x$ feet from the wall. Which expression represents the measure of angle $\theta$ ?  A. $\frac{x}{5}$ B. $\cos\left(\frac{x}{5}\right)$ C. $\frac{1}{\cos\left(\frac{x}{5}\right)}$ D. $\cos^{-1}\left(\frac{5}{x}\right)$ E. $\cos^{-1}\left(\frac{x}{5}\right)$
6.  (#6 in 2017-18 test booklet)	45%	If the inequality $2x - y \ge -7$ were graphed, which of the four quadrants would be shaded completely?  A. 1st  B. 2nd  C. 3rd  D. 4th  E. none
7.  (#13 in 2017-18 test booklet)	41%	Simplify this rational expression: $\frac{x^2-4}{5x} \cdot \frac{30}{3x-6}$ $(x \neq 0,2)$ A. $2(x+2)$ B. 4 C. $\frac{2(x-2)}{x}$ D. $\frac{4}{3}$ E. $\frac{2(x+2)}{x}$

EVERYONE benefits: high school students, teachers, administrators, and parents:

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for a wealth of information about college mathematics placement testing!

Top Ten Missed	Students Answering INCORRECTLY	Test Item, 2017-2018 NC EMPT Test Version	
8. (#23 in 2017-18 test booklet)	40%	An arrow travels at a rate of $5 \times 10^6$ feet per hour. It strikes its target in $2 \times 10^{-4}$ hours. How far did the arrow travel?  A. 25 ft  B. 50 ft  C. 100 ft  D. 200 ft  E. 1,000 ft	
9. (#20 in 2017-18 test booklet)	40%	Right triangle $ABC$ shown below has $AC = 13$ and $AB = 12$ . Find the area of the triangle in square units.  A. 30 B. 60 C. 65  D. 78 E. none of these	
10. (#28 in 2017-18 test booklet)	39%	Solve this quadratic equation: $x^2+9=0$ A. $-3$ B. $\pm 3$ C. $\pm 3i$ D. $3i$ E. $3+i$	

The average score for the 22,714 high school participants on the 2017-2018 NC EMPT test version was 15.5 out of 32 questions, or 48%.

## **Correct Answers to the Top Ten Missed Questions, 2017-2018:**

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