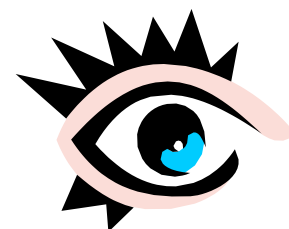# North Carolina Early Mathematics Placement Testing Program –

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

2018-2019 NC EMPT Test Version

18,728 high school student participants

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, Advanced Functions and Modeling, Precalculus, Discrete Math, Statistics, and other upper-level math courses. A pdf of this document can be located at www.ncempt.org. **Practice Makes Perfect!!**

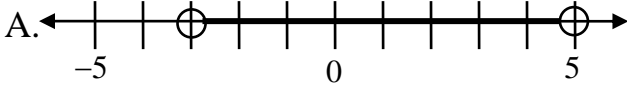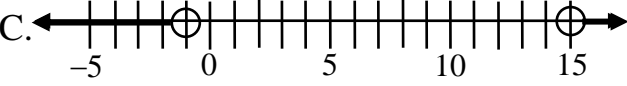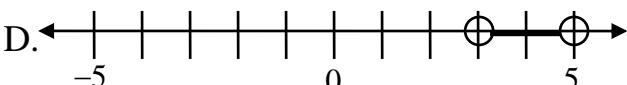| Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2018-2019 NC EMPT Test Version
1. (#30 in 2018-19 test booklet)	57%	The quadratic equation $x^2 - 8x = 20$ is to be solved by completing the square. Which equation below would be a step in that solution? A. $(x-4)^2 = 20$ B. $(x+4)^2 = 36$ C. $x-4 = \pm 6$ D. $(x+4)^2 = 24$ E. $x-4 = \pm 2\sqrt{5}$
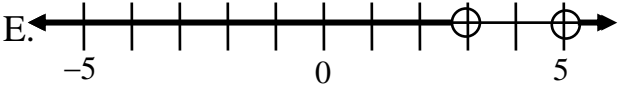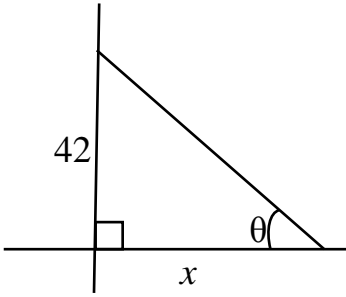
Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2018-2019 NC EMPT Test Version
2. (#11 in 2018-19 test booklet)	54%	Which equation below represents a function with a domain of $x \geq 0$? A. $x=1$ B. $y=x$ C. $y=0$ D. $y=|x|$ E. $y=\sqrt{x}$
3. (#28 in 2018-19 test booklet)	52%	Find the <u>sum</u> of the solutions of this absolute value equation: $|x+4|=2$ A. 6 B. 2 C. -2 D. -6 E. -8
4. (#15 in 2018-19 test booklet)	49%	What is the equation of the line passing through $(-2,5)$ and perpendicular to $y-3x=8$? A. $y-5=\dfrac{1}{3}(x-2)$ B. $y-5=\dfrac{1}{3}(x+2)$ C. $y-5=-3(x+2)$ D. $y-5=-\dfrac{1}{3}(x+2)$ E. $y-2=3(x+5)$

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 **IN**CORRECTLY	Test Item, 2018-2019 NC EMPT Test Version
5. (#29 in 2018-19 test booklet)	44%	A cable on a bridge is modeled by: $g(x) = -x^2 + 40x - 175$. For what value of x is the value of $g(x)$ the greatest? A. 225 B. 35 C. 30 D. 20 E. 5
6. (#24 in 2018-19 test booklet)	43%	Solve for x: $4x^2 + 1 = 12x$ A. $12 \pm \sqrt{2}$ B. $3, -2$ C. $-3 \pm 2\sqrt{2}$ D. $\dfrac{-3 \pm 2\sqrt{2}}{2}$ E. $\dfrac{3 \pm 2\sqrt{2}}{2}$
7. (#13 in 2018-19 test booklet)	40%	Write in lowest terms: $\dfrac{2x^2 - 8}{x^2 + 2x}$ $(x \neq 0, -2)$ A. $\dfrac{2(x-2)}{x}$ B. $\dfrac{x^3 - 8}{2x}$ C. $\dfrac{2x-3}{2x}$ D. $2 - \dfrac{4}{x}$ E. $\dfrac{-8}{x+1}$
8. (#25 in 2018-19 test booklet)	40%	A rectangular patio is 30 ft wide and is enclosed by 230 ft of fencing. What is the area of the patio in square feet? A. $1,275 \text{ ft}^2$ B. $2,550 \text{ ft}^2$ C. $2,650 \text{ ft}^2$ D. $3,450 \text{ ft}^2$ E. $6,900 \text{ ft}^2$

Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2018-2019 NC EMPT Test Version
9. (#27 in 2018-19 test booklet)	38%	Which graph below represents the solutions of the inequality $x^2 - 14x > 15$? A. B. C. D. E.
10. (#32 in 2018-19 test booklet)	37%	The angle of elevation, θ, from a ship to the top of a 42 meter lighthouse on the shore is $33°$. Let x represent the horizontal distance in meters from the ship to the base of the lighthouse. Which equation would correctly find the value of x? A. $\tan 33° = \dfrac{42}{x}$ B. $\sin 33° = \dfrac{42}{x}$ C. $\tan 57° = \dfrac{42}{x}$ D. $\tan 33° = \dfrac{x}{42}$ E. $\cos 33° = \dfrac{x}{42}$

The average score for the 18,728 high school participants on the 2018-2019 NC EMPT test version was 16.3 out of 32 questions, or 51%.

Correct Answers to the Top Ten Missed Questions, 2018-2019:

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