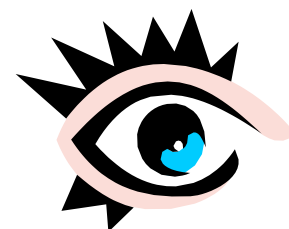# North Carolina Early Mathematics Placement Testing Program –

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

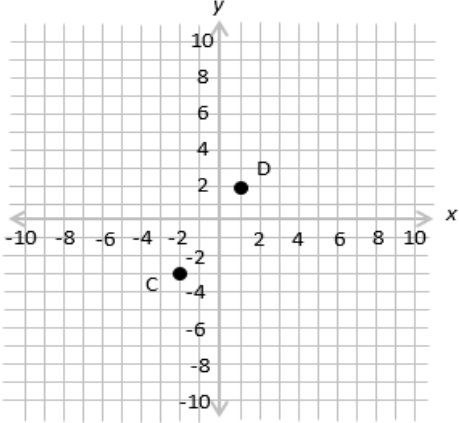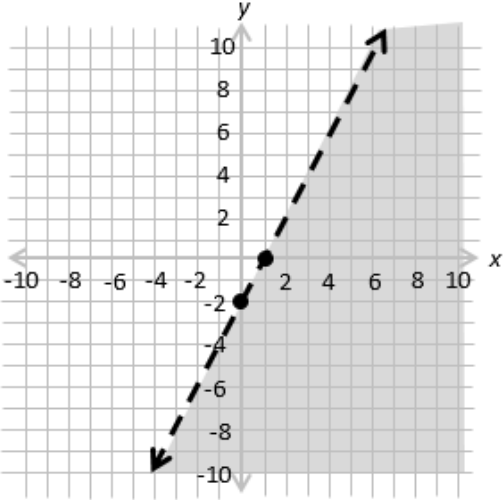**2016-2017 NC EMPT Test Version**

26,212 high school student participants
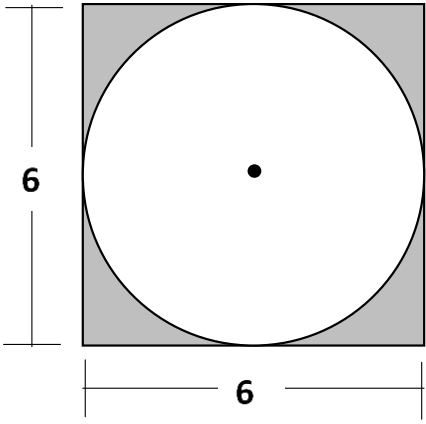
Top 10 MISSED Questions

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 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 www.ncempt.org. **Practice Makes Perfect!!**

Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2016-2017 NC EMPT Test Version
1. (#32 in 2016-17 test booklet)	44%	Divide these rational expressions and simplify: $\dfrac{12}{x^2-x} \div \dfrac{2x+2}{x^2-1}$ (Note that $x \neq 0,\ 1, -1$) A. $\dfrac{6}{x}$ B. $\dfrac{6(x-1)}{x(x+1)}$ C. $\dfrac{3}{x}$ D. $\dfrac{24}{x(x-1)^2}$ E. $\dfrac{3}{x^2}$

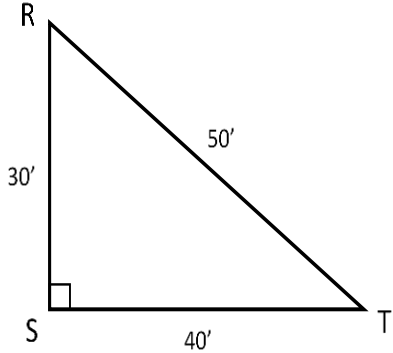| Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2016-2017 NC EMPT Test Version
2. (#27 in 2016-17 test booklet)	42%	Find the distance between the points C and D illustrated on the graph below. A. $\sqrt{2}$ B. $2\sqrt{2}$ C. $\sqrt{19}$ D. $\sqrt{26}$ E. $\sqrt{34}$
3. (#28)	39%	Solve this quadratic equation by using the quadratic formula: $x^2 - 4x = 1$ A. $4 \pm \sqrt{5}$ B. $2 \pm \sqrt{3}$ C. $2 \pm \sqrt{5}$ D. $2 \pm \sqrt{20}$ E. $2 \pm 2\sqrt{5}$
4. (#30)	38%	The graph below is best represented by which inequality? A. $y < 2x - 2$ B. $y < \dfrac{1}{2}x - 2$ C. $y > 2x - 2$ D. $y \geq \dfrac{1}{2}x - 2$ E. $y \leq 2x - 2$

Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2016-2017 NC EMPT Test Version
5. (#16 in 2016-17 test booklet)	38%	Solve this equation for h: $\dfrac{r}{h-2}=\dfrac{3}{4}$ A. $\dfrac{3r+8}{4}$ B. $\dfrac{3r+2}{4}$ C. $\dfrac{4r-6}{3}$ D. $\dfrac{4r+6}{3}$ E. $4r+2$
6. (#31)	37%	A group of 3 children and 2 grandparents pays \$120 to attend the zoo for the day. A second group of 5 children and 1 grandparent pays \$95 to visit the same zoo for the day. What is the total cost for 1 child and 1 grandparent? A. \$45 B. \$48 C. \$51 D. \$55 E. \$60
7. (#25)	36%	A circle is inscribed in a square that measures 6 inches on a side as shown. What is the shaded area (in square inches)? A. $36-9\pi$ B. $12-36\pi$ C. $24-9\pi$ D. $36-6\pi$ E. $24-6\pi$

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

Visit us at: www.ncempt.org

for a wealth of information about college mathematics placement testing!

Top Ten Missed	Students Answering **IN**CORRECTLY	Test Item, 2016-2017 NC EMPT Test Version
8. (#24 in 2016-17 test booklet)	36%	The parabola $y_1 = x^2$ is transformed by a translation and a reflection. The equation of the new parabola is $y_2 = -x^2 + 1$. What is the range of y_2? A. $y < 1$ B. $y \leq 1$ C. $y \geq 1$ D. $-1 \leq y \leq 1$ E. all real numbers
9. (#18)	34%	A diver stands on top of a cliff at point R. Refer to the diagram below. Which equation would correctly find the angle of elevation from a person standing at point T to the diver at point R? A. $\sin T = \dfrac{3}{4}$ B. $\cos T = \dfrac{3}{5}$ C. $\tan T = \dfrac{3}{4}$ D. $\tan T = \dfrac{4}{3}$ E. $\sin T = \dfrac{4}{5}$ R, 50′, 30′, S, 40′, T
10. (#21)	33%	Kyle paid $25.50 for sandals that had been reduced in price by 25%. What was the original price of the sandals? A. $19.13 B. $31.88 C. $34.00 D. $34.99 E. $44.50

The average score for the 26,212 high school participants on the 2016-2017 NC EMPT test version was 16.7 out of 32 questions, or 52%.

Correct Answers to the Top Ten Missed Questions, 2016-2017:

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