north carolina EARLY mathematics PLACEMENT TESTING

2024-2025

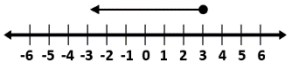
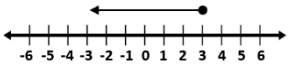
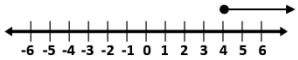
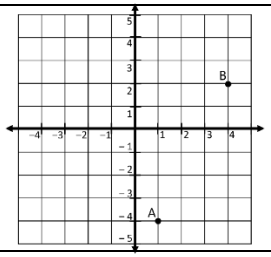
NORTH CAROLINA EARLY MATH PLACEMENT TESTING PROGRAM

Providing a Timely Reality Check of Readiness for Post-Secondary Level Mathematics

NC EMPT 2024-2025 Salmon Test Version
3,095 high school student participants

TOP TEN MISSED QUESTIONS

These questions are typical of those found on college math placement exams throughout the UNC System, NC community colleges, and other private colleges and universities. The questions are formatted for use as a quick review or warm-up exercise for high school students. A printable PDF ***and more*** can be found at **NCEMPT.ORG**.

Top 10 Missed	*% MISSED*	*Test Item, 2024-2025 NC EMPT Salmon Test Version*
1. *#32 in test booklet*	**93%**	Simplify the rational expression: $\frac{3b^2-12}{6b^2+6b-36}$ A. $\frac{(b-2)(b+2)}{2(b^2+b-6)}$ B. $\frac{b^2-4}{2b^2+2b-12}$ C. $\frac{b-2}{2(b+3)}$ D. $\frac{b+2}{2(b+3)}$ E. $\frac{b+2}{2b+6}$
2. *#30 in test booklet*	**82%**	Find the inverse: $f(x) = 4 - \frac{2}{3}x$ A. $f^{-1}(x) = \frac{2}{3}x - 4$ B. $f^{-1}(x) = \frac{1}{4} - \frac{3}{2}x$ C. $f^{-1}(x) = -\frac{2}{3}x +$ D. $f^{-1}(x) = -\frac{3}{2}x + 6$ E. $f^{-1}(x) = -\frac{3}{2}x - 6$
3. *#19 in test booklet*	**78%**	Solve: $4a^2 - 31 \leq 5$ A.  B.  C.  D.  E 
4. *#12 in test booklet*	**70%**	Suppose a 7-foot ladder is leaning against a wall. The bottom of the ladder is a distance of x feet from the wall. Which expression represents the measure of the angle between the ladder and the floor, θ? A. $sin^{-1}\left(\frac{7}{x}\right)$ B. $tan^{-1}\left(\frac{7}{x}\right)$ C. $cos^{-1}\left(\frac{x}{7}\right)$ D. $cos\left(\frac{x}{7}\right)$ E. $tan\left(\frac{7}{x}\right)$
5. *#24 in test booklet*	**69%**	Find the shortest distance between points A and B, illustrated on the graph to the right. A. 2 units B. $3\sqrt{5}$ units C. $\sqrt{21}$ units D. 6.8 units E. 9 units 

Top 10 Missed	% MISSED	Test Item, 2024-2025 NC EMPT Salmon Test Version
6. *#8 in test booklet*	**69%**	Which of the following functions has a range of $[-7, \infty)$? A. $f(x) = 3x - 7$ B. $f(x) = (x-7)^2$ C. $f(x) = \sqrt{x+8} - 7$ D. $f(x) = 20^{x-7}$ E. None of these
7. *#31 in test booklet*	**68%**	A student performed two transformations on the function $f(x) = \|x-2\| + 1$. First, they reflected the graph over the x-axis, and then they shifted it to the left 3 units. Which equation represents the new graph? A. $f(x) = -3\|x-2\| + 1$ B. $f(x) = -\|x-2\| + 4$ C. $f(x) = \|-x-2\| - 2$ D. $f(x) = -\|x-5\| + 1$ E. $f(x) = -\|x+1\| + 1$
8. *#13 in test booklet*	**68%**	What is the remainder when the polynomial $4x^4 - 13x^2 - 2x + 1$ is divided by $x - 2$? A. -23 B. -1 C. 9 D. $-2x + 1$ E. $4x^4 - 13x^2 - 3$
9. *#15 in test booklet*	**64%**	A basketball team scored the following point totals during the first five games of the season: $\{50, 65, 40, 40, 60\}$ During the sixth game, the team scored 63 points. Which statistic would be most affected by the score in the sixth game? A. Mean B. Median C. Mode D. Range E. Maximum
10. *#22 in test booklet*	**62%**	Assume that $a \neq 0, x \neq 0$, and $y \neq 0$. Solve the equation $y = \frac{aH}{x}$ for H. A. $H = xy - a$ B. $H = \frac{y-x}{a}$ C. $H = \frac{xa}{y}$ D. $H = \frac{xy}{a}$ E. $H = \frac{ay}{x}$

Correct Answers to the Top Ten Missed Questions, 2024-2025

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

The average score for the 3,095 high school participants on the 2024-2025 NC EMPT test version was 15.7 out of 32 questions, or 49.1%.