

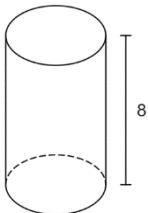
NORTH CAROLINA EARLY MATH PLACEMENT TESTING PROGRAM

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

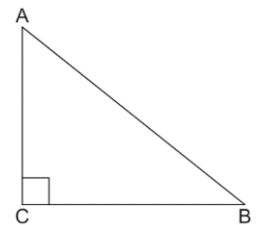
NC EMPT 2022-2023 Blue Test Version
3,636 high school student participants

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 of this document **and more** can be found at NCEMPT.ORG.

Top 10 Missed	% MISSED	Test Item, 2022-2023 NC EMPT Blue Test Version
1. #30 in test booklet	89%	Consider the graph of the inequality $y > x + 2 $. What is the range of this inequality? A. $y < -2$ B. $y > 2$ C. $y \geq 0$ D. $y > 0$ E. all real numbers
2. #24 in test booklet	86%	If t varies directly as the square of u , and $t = 6$ when $u = 3$, find t when $u = 6$. A. $\frac{3}{2}$ B. 12 C. 4 D. 24 E. 8
3. #31 in test booklet	81%	Given two complex numbers, $A = (4 - 2i)$ and $B = (2i)$. Find the quotient $\frac{A}{B}$ A. $-1 + 2i$ B. 4 C. $2i - 1$ D. $1 - 2i$ E. $-1 - 2i$
4. #21 in test booklet	74%	The volume of a circular cylinder can be calculated using the formula $V = \pi r^2 h$. The volume of the given cylinder is 72π cubic inches and the height is 8 inches. What is the circumference of the base? A. 12π inches B. 9π inches C. 6π inches D. 4π inches E. 3π inches 

Top 10 Missed	% MISSED	Test Item, 2022-2023 NC EMPT Blue Test Version
5. #25 in test booklet	71%	A result of multiplying $\frac{x^2-1}{x}$ and $\frac{4x^2}{x+1}$ is: A. $\frac{x-1}{4x^3}$ B. $\frac{(x^2-1)(x+1)}{4x^3}$ C. $\frac{(x+1)^2(x-1)}{4x^3}$ D. $4x(x+1)$ E. $4x(x-1)$
6. #20 in test booklet	70%	Factor completely: $a^3 + 2a^2 - 4a - 8$. Which of the following is a factor of this polynomial? A. $(a+2)^2$ B. $(a-2)^2$ C. $(a+4)$ D. $(a-4)$ E. This polynomial cannot be factored.
7. #11 in test booklet	67%	Simplify: $(c^2d)^{-2}(cd^2)^2$ A. $\frac{c^2}{d^2}$ B. c^2d^2 C. c^3d^3 D. $\frac{c}{d}$ E. $\frac{d^2}{c^2}$
8. #28 in test booklet	67%	Describe the roots of this quadratic equation: $x - 1 = x^2 - 2x + 1$ A. rational and unequal B. rational and equal C. irrational and unequal D. irrational and equal E. imaginary
9. #32 in test booklet	66%	In right $\triangle ABC$, $a = \text{length of } \overline{CB}$, $b = \text{length of } \overline{AC}$, and $c = \text{length of } \overline{AB}$. Let $a = 3, b = 4, c = 5$. What is the value of: $\cos A + \sin B$? A. $\frac{8}{5}$ B. $\frac{7}{5}$ C. $\frac{25}{12}$ D. $\frac{6}{5}$ E. $\frac{8}{10}$
10. #2 in test booklet	63%	The perimeter of a rectangle is 30 feet and its width is 5 feet. Find the ratio of the length of the rectangle to its width. A. 2:1 B. 6:5 C. 5:6 D. 6:1 E. 10:1



Correct Answers to the Top Ten Missed Questions, 2022-2023

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

The average score for the 3,636 high school participants on the 2022-2023 NC EMPT test version was 15.9 out of 32 questions, or 49.6%.