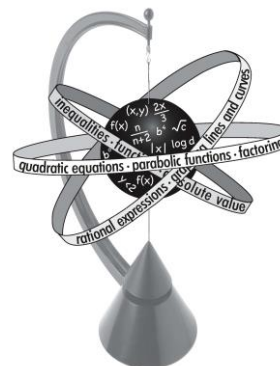


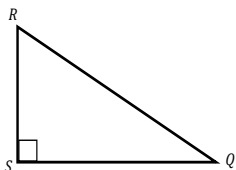
North Carolina Early Mathematics Placement Testing Program

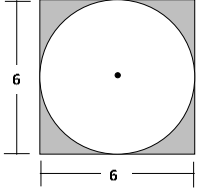
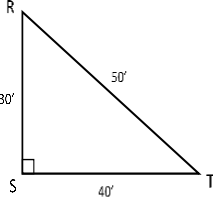
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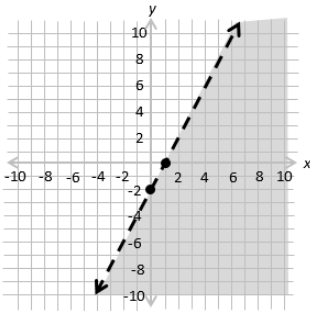
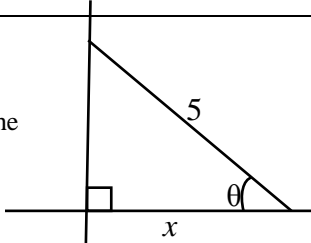
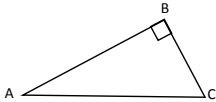
TOP 30 MISSED Questions PUZZLE



These mathematics questions were most often answered incorrectly by high school students across North Carolina on NC EMPT practice placement test versions (2015-2016, 2016-2017, and 2017-2018). The questions are typical of those found on actual college math placement exams throughout UNC institutions and NC community colleges so it is important to practice and avoid the same errors. Pages 1-3 list the 30 questions. The last page contains the scrambled answers. Show all work for each problem on notebook paper and then write the correct answer from the last sheet next to the appropriate problem on pages 1-3.

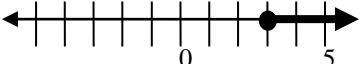
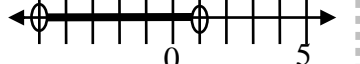

	Question	Answer
1.	Find the reciprocal of $\sqrt{\frac{1}{4}}$.	
2.	Write the prime factors of this polynomial: $x^3 - 10x^2 + 24x$. One of those prime factors is?	
3.	 <p>In right triangle QRS, $m\angle Q = 30^\circ$, $m\angle R = 60^\circ$, and $QS = 6$. What is the measure of \overline{QR}?</p>	
4.	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?	
5.	Solve this quadratic equation by using the quadratic formula: $x^2 - 4x = 1$	
6.	Circle A has a radius of 2 inches. Circle B has a radius of 4 inches. What is the difference between the areas of the two circles in square inches? Write your answer in terms of π .	
7.	If y varies inversely as x and $y = 2$ when $x = -6$, find y when x is -36 .	

8.	When the inequality $2x - y \geq -7$ is graphed, which of the four quadrants is shaded completely?	
9.	An arrow travels at a rate of 5×10^6 feet per hour. It strikes its target in 2×10^{-4} hours. How many feet will the arrow travel?	
10.	Divide these rational expressions and simplify: $\frac{12}{x^2 - x} \div \frac{2x + 2}{x^2 - 1}$ (Note that $x \neq 0, 1, -1$)	
11.	Find the value of c that makes $x^2 - 9x + c$ a perfect square trinomial.	
12.	A circle is inscribed in a square that measures 6 inches on a side as shown. See the diagram. Find the <u>shaded</u> area (in square inches). 	
13.	Multiply these rational expressions and simplify: $\frac{x^2 - 4}{5x} \cdot \frac{30}{3x - 6}$ (Note that $x \neq 0, 2$)	
14.	A diver stands on top of a cliff at point R . Refer to the diagram at right. Which trig equation below would find the angle of elevation from a person standing at point T to the diver at point R ?  $\sin T = \frac{3}{4}$ <u>or</u> $\cos T = \frac{3}{5}$ <u>or</u> $\tan T = \frac{3}{4}$ <u>or</u> $\tan T = \frac{4}{3}$ <u>or</u> $\sin T = \frac{4}{5}$	
15.	On the first day of the semester, Shay scored a 60 on a math pre-test. On the last day of the same semester, Shay scored 75 on the post-test. By what percent did Shay's score improve?	
16.	Given $1 - 3n \leq -8$, graph the solution of this inequality.	
17.	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 ?	
18.	Find the solution set of $ x + 3 = -1$.	
19.	Solve this quadratic equation: $x^2 + 9 = 0$	

20.	 <p>Write an inequality that represents this graph.</p>																	
21.	Subtract these rational expressions and simplify: $\frac{2}{x} - \frac{3}{5}$ (Note that $x \neq 0$)																	
22.	Given the relation $\{(1,2), (2,3), (3,4)\}$, what is the inverse of this relation?																	
23.	Find the distance between the points: $C(-2, -3)$ and $D(1, 2)$																	
24.	<p>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. Write an expression that represents the measure of angle θ?</p> 																	
25.	Kyle paid \$25.50 for sandals that had been reduced in price by 25%. What was the original price of the sandals?																	
26.	<p>Which equation below does NOT represent a function of x?</p> <p>$x = y^2$ <u>or</u> $y = x$ <u>or</u> $y = x$ <u>or</u> $y = x^2$ <u>or</u> $y = 1$</p>																	
27.	Solve this equation for h : $\frac{x}{h-2} = \frac{3}{4}$																	
28.	<p>Right triangle ABC has $AC = 13$ and $AB = 12$. Find the area of the triangle in square units.</p> 																	
29.	Graph the solution to the inequality $ 6 + 3x < 9$.																	
30.	<p>What kind of function would best model the data below, where x is the independent variable and y is the dependent variable?</p> <table border="1" data-bbox="233 1780 1149 1856"> <tbody> <tr> <td>x</td> <td>-4</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>4</td> <td>9</td> </tr> <tr> <td>y</td> <td>undefined</td> <td>undefined</td> <td>0</td> <td>1</td> <td>1.4</td> <td>2</td> <td>3</td> </tr> </tbody> </table> <p>exponential <u>or</u> absolute value <u>or</u> square root <u>or</u> linear <u>or</u> quadratic</p>	x	-4	-1	0	1	2	4	9	y	undefined	undefined	0	1	1.4	2	3	
x	-4	-1	0	1	2	4	9											
y	undefined	undefined	0	1	1.4	2	3											

Scrambled Answers for the Top 30 Missed Questions Puzzle

NOTE: There are more possible answers than questions, so choose carefully!

\$55.00	{ }	$\frac{6}{x}$
$\cos T = \frac{3}{5}$	$36 - 6\pi$	$-\frac{1}{x-5}$
$\sqrt{34}$	$x - 2$	\$34.00
Quadrant 3	$2 \pm \sqrt{5}$	200
$y = 1$	$\frac{4x+6}{3}$	$\{(2,1), (3,2), (4,3)\}$
$\frac{1}{3}$	12π	2π
30	± 3	$36 - 9\pi$
$6\sqrt{3}$	$\frac{81}{4}$	$x = y^2$
Quadrant 4	exponential	2
$y \geq 1$	$x - 4$	$\{(-1,-2), (-2,-3), (-3,-4)\}$
\$31.88	1,000	$y \leq 1$
$2 \pm \sqrt{3}$	25%	$\cos^{-1}\left(\frac{x}{5}\right)$
$\tan T = \frac{3}{4}$	15%	$\frac{6(x-1)}{x(x+1)}$
12	$\frac{2(x-2)}{x}$	square root
$y < 2x - 2$	$\pm 3i$	$y > 2x - 2$
$\frac{10-3x}{5x}$	\$48.00	$4\sqrt{3}$
$\frac{9}{2}$	{-4}	$\frac{2(x+2)}{x}$
		

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