

## Geometry Pretest

**Directions:** This test is to assess your knowledge of Algebra I material. There is not a passing grade, the final decision regarding placement will be left to the parent. Students are not permitted to use a calculator on any part of the test. Work all of the following problems *on a separate piece of paper*. **Show ALL work.** Express all answers in simplest form, leaving radicals where necessary. Write a “?” next to any question which covers unfamiliar material. Answers are available to parents on request or tests may be mailed to the tutor for grading and input.

Time limit: One hour.

### DO NOT WRITE ON THIS TEST.

1. Fill in the blank with a less than, equal to, or greater than symbol:  $-8.2$  \_\_\_\_\_  $-8.02$ .
2. True or false: The number  $\sqrt{121}$  is irrational.
3. Solve:
$$\begin{aligned}5a + b &= 2 \\ a &= b - 8\end{aligned}$$
4. Find the product:  $-3(-2)(-7)$
5. Write as a quotient without a square root in the denominator:  $\sqrt{\frac{3}{x}}$
6. Find the quotient:  $x-1 \overline{)2x^3 - 3x^2 - 3x + 4}$
7. Divide and simplify:  $\frac{\sqrt{126}}{\sqrt{7}}$
8. Simplify:  $\frac{4}{\frac{1}{2} - \frac{1}{3}}$
9. The formulas for the circumference and area of a circle are  $C = 2\pi r$  and  $A = \pi r^2$ . Find the exact area of a circle whose circumference is  $10\pi$ .
10. Write as a fraction in simplest terms:  $\frac{x^5}{5} \cdot \frac{x^2}{2}$
11. Simplify:  $(-k)(-k^2n)(3kn^2)$
12. The cube root of 17 is approximately 2.5713. Round this number to the nearest hundredth.
13. If there is a 7% tax on clothing, find the final cost on a suit that costs \$175.
14. Write in scientific notation: 793,000.
15. Simplify:  $(x^3)^4$

This test was originally written by Amy Jenkins and Patricia Bloomberg for Cornerstone Tutorial, Inc., Severna Park, MD. It may be used freely but may NOT be sold.

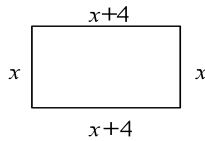
16. Solve for  $x$ :  $x^2 - 14x + 24 = 0$

17. Reduce to lowest terms:  $\frac{3x}{9xy}$

18. Factor:  $3x^2 + 7x + 4$

19. A collection of dimes and quarters is worth \$6.75. The number of dimes is four less than three times the number of quarters. How many of each are there? (*Only an algebraic solution will be accepted.*)

20. Express the perimeter of this rectangle in simplest form:



21. Find the value of the polynomial  $4x^2 - 3x + 2$  if  $x = -3$

22. Write as a fraction in simplest terms:  $\frac{a}{2} - \frac{b}{6}$

23. Find the greatest common factor of 70 and 42.

24. Factor  $9x^2 - y^2$

25. Express as an integer:  $\sqrt{(-7)^2}$

26. Find the value of  $2x - 3y$  if  $x = -4$  and  $y = -2$ .

27. Factor 126 into a product of primes.

28. Find the product:  $(x - 1)(x^2 + 2x + 2)$

29. Simplify:  $\sqrt{3} + \sqrt{48}$

30. Write as a fraction in simplest terms:  $\frac{2}{x} + \frac{2}{y}$

31. Simplify:  $(5x)^3$

32. Jane walks from a pond to the top of a mountain at the rate of 2 miles per hour and down again at the rate of 3 miles per hour. The entire hike takes five hours. How far is it from the pond to the top of the mountain?

33. Simplify:  $7\sqrt{2} - \sqrt{2}$

34. Factor  $3x^4 + 6x^3$  .
35. Reduce to lowest terms:  $\frac{x+2}{3x+6}$
36. Which of the following four fractions is not equal to the others?  $\frac{2}{7}$ ,  $-\frac{2}{7}$ ,  $\frac{-2}{-7}$ , or  $-\frac{-2}{7}$ ?
37. Solve for  $x$ :  $3(2x+1) = 4(3-x)$
38. Find four consecutive even integers whose sum is 124. (*Only an algebraic solution will be accepted.*)
39. Solve for  $x$ :  $(x-1)(x+2) = x^2 + 9$
40. Solve for  $x$ :  $\frac{x}{4} - 1 = \frac{x}{12}$
41. Solve for  $x$ :  $5x - 8 = -2x + 6$
42. Write  $4^{-3}$  without using any exponents.
43. What value(s) of  $x$  would make the denominator of the fraction  $\frac{x-9}{x^2-4}$  equal to zero?
44. What is the slope of the line having the equation  $y = x + 5$ ?
45. Simplify:  $x \div \frac{1}{x^3}$
46. Simplify:  $\frac{x^2}{x-y} - \frac{y^2}{x-y}$
47. Simplify:  $x^2 \cdot \frac{2}{x}$
48. Multiply:  $(3x+7)(3x-7)$
49. What is the degree of the polynomial  $6x^2 - x^3 + 5$ ?
50. Write in simple radical form:  $\sqrt{75}$
51. Between what two consecutive integers does  $\frac{22}{7}$  lie?
52. What values of  $x$  will make the product  $6x(x+5)$  equal to zero?