

Sample Test 1

Name _____

In the real test you will have 10 questions and the following rules:

You have 75 minutes to complete the test below. The usage of books or notes, or communication with other students is not allowed. Ask me if you have questions.

This is a multiple choice test. You do not have to justify your answer. If, however, you are not sure that your selection is correct, put a star () in front of the question number, and include your calculations on an attached sheet. I will look at an attached calculation only if I see a star in front of the question number.*

-If you mark an incorrect answer but your calculations contain only minor mistakes, you will get up to 75% credit for the problem.

-Beware: if you instruct me to look at a severely incorrect calculation, you will lose at least 50% of the credit, even if by chance you mark the correct answer. (No credit is given for an incorrect answer and totally incorrect calculations.)

You get full credit if you mark the correct answer, and mark no star, or if you mark the correct answer, express doubt by marking a star, but I find your calculations perfectly correct.

Express the number in scientific notation.

1) 613.949

A) 6.13949×10^{-2}

B) 6.13949×10^1

C) 6.13949×10^2

D) 6.13949×10^{-1}

Factor by grouping.

2) $12a^3 - 8a^2b + 15ab^2 - 10b^3$

A) $(4a^2 + 5b)(3a - 2b)$

B) $(4a^2 - 5b^2)(3a + 2b)$

C) $(4a^2 + 5b^2)(3a - 2b)$

D) $(12a^2 + 5b^2)(a - 2b)$

Factor as completely as possible. If unfactorable, indicate that the polynomial is prime.

3) $x^2 + 40x + 400$

A) $(x + 20)(x - 20)$

B) Prime

C) $(x + 20)^2$

D) $(x - 20)^2$

4) $9x^2 + 24x + 16$

A) $(9x + 4)(x + 4)$

B) $(3x + 4)(3x + 4)$

C) $(3x - 4)(3x - 4)$

D) Prime

Multiply. Simplify if possible.

5) $\frac{k^2 + 7k + 10}{k^2 + 13k + 40} \cdot \frac{k^2 + 8k}{k^2 + 7k + 10}$

A) $\frac{1}{k + 5}$

B) $\frac{k^2 + 8k}{k + 5}$

C) $\frac{k}{k^2 + 13k + 40}$

D) $\frac{k}{k + 5}$

Divide. Simplify if possible.

6) $\frac{z^2 + 11z + 18}{z^2 + 12z + 27} \div \frac{z^2 + 2z}{z^2 - 2z - 15}$

A) $z - 5$

B) $\frac{z}{z^2 + 12z + 27}$

C) $\frac{z - 5}{z^2 + 3z}$

D) $\frac{z - 5}{z}$

Perform the indicated operation and simplify.

$$7) \frac{x}{x^2 - 16} - \frac{6}{x^2 + 5x + 4}$$

$$A) \frac{x^2 - 5}{(x - 4)(x + 4)(x + 1)}$$

$$B) \frac{x^2 - 5x + 24}{(x - 4)(x + 4)(x + 1)}$$

$$C) \frac{x^2 - 5x + 24}{(x - 4)(x + 4)}$$

$$D) \frac{x^2 + 5x + 24}{(x - 4)(x + 4)(x + 1)}$$

Rationalize the denominator.

$$8) \frac{7}{8 - \sqrt{3}}$$

$$A) \frac{7}{8} - \frac{7}{\sqrt{3}}$$

$$B) \frac{56 + 7\sqrt{3}}{-5}$$

$$C) \frac{56 + 7\sqrt{3}}{61}$$

$$D) \frac{56 - 7\sqrt{3}}{61}$$

Simplify the radicals and combine any like terms. Assume all variables represent positive real numbers.

$$9) -4\sqrt{7} - 3\sqrt{28}$$

$$A) 6\sqrt{7}$$

$$B) -7\sqrt{7}$$

$$C) 10\sqrt{7}$$

$$D) -10\sqrt{7}$$

Solve the equation.

$$10) 4(y + 8) = 5(y - 4)$$

$$A) -12$$

$$B) 52$$

$$C) 12$$

$$D) -52$$

$$11) 7x + 2 + 9x + 2 = 4x + 12x + 1$$

$$A) 288$$

$$B) 0$$

$$C) \text{All real numbers}$$

$$D) \text{No solution}$$

$$12) 6(x + 3) = (6x + 18)$$

$$A) 36$$

$$B) \text{All real numbers}$$

$$C) 0$$

$$D) \text{No solution}$$

Solve the problem.

13) An airplane flies 430 miles with the wind and 330 against the wind in the same length of time. If the speed of the wind is 30, what is the speed of the airplane in still air?

$$A) 228 \text{ mph}$$

$$B) 233 \text{ mph}$$

$$C) 218 \text{ mph}$$

$$D) 99 \text{ mph}$$

Solve the equation.

$$14) |b + 9| - 3 = 6$$

$$A) \{0, 18\}$$

$$B) \{-18, 0\}$$

$$C) \{0\}$$

$$D) \text{No solution}$$

$$15) |7f + 3| + 7 = -1$$

$$A) \text{No solution}$$

$$B) \left\{\frac{5}{7}, \frac{11}{7}\right\}$$

$$C) \left\{-\frac{11}{7}\right\}$$

$$D) \left\{-\frac{11}{7}, -\frac{5}{7}\right\}$$

Using the variable x , write each interval as an inequality.

$$16) [-6, 4)$$

$$A) -6 < x \leq 4$$

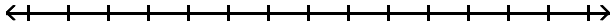
$$B) -6 \leq x \leq 4$$

$$C) -6 \leq x < 4$$

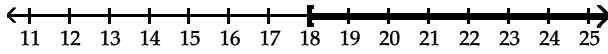
$$D) x < 4$$

Solve the inequality. Graph the solution set.

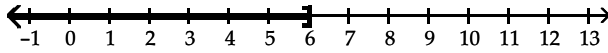
17) $10n + 12 \leq 2(4n + 12)$



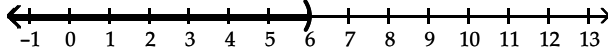
A) $[-\infty, 18)$



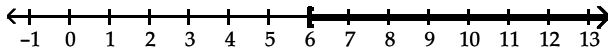
B) $(-\infty, 6]$



C) $(-\infty, 6)$



D) $[6, \infty)$



Solve the inequality.

18) $|g + 9| < 5$

A) $-14 < g < -4$

B) $-14 < g < 4$

C) $-14 > g > -4$

D) No solution

19) $|3y - 8| - 9 > -12$

A) $(\frac{5}{3}, \infty)$

B) No solution

C) $(-\infty, \frac{5}{3}) \cup (\frac{5}{3}, \infty)$

D) $(\frac{5}{3}, \frac{11}{3})$

Solve the equation.

20) $\sqrt{3x + 1} = 3 + \sqrt{x - 4}$

A) $\{-1\}$

B) No solution

C) $\{-5, -8\}$

D) $\{5, 8\}$

Answer Key

Testname: STEST1.TST

- 1) C
- 2) C
- 3) C
- 4) B
- 5) D
- 6) D
- 7) B
- 8) C
- 9) D
- 10) B
- 11) D
- 12) B
- 13) A
- 14) B
- 15) A
- 16) C
- 17) B
- 18) A
- 19) C
- 20) D