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) 331.756

A) 3.31756×10^{-2} B) 3.31756×10^{1} C) 3.31756×10^{2} D) 3.31756×10^{-1}

Factor by grouping.

2) $15a^3 + 20a^2b - 9ab^2 - 12b^3$

A) $(5a^2 - 3b)(3a + 4b)$ B) $(5a^2 + 3b^2)(3a - 4b)$ C) $(5a^2 - 3b^2)(3a + 4b)$ D) $(15a^2 - 3b^2)(a + 4b)$

Multiply. Simplify if possible.

3) $\dfrac{k^2 + 17k + 72}{k^2 + 18k + 81} \cdot \dfrac{k^2 + 9k}{k^2 + 10k + 16}$

A) $\dfrac{1}{k + 2}$ B) $\dfrac{k^2 + 9k}{k + 2}$ C) $\dfrac{k}{k^2 + 18k + 81}$ D) $\dfrac{k}{k + 2}$

Divide. Simplify if possible.

4) $\dfrac{z^2 + 10z + 16}{z^2 + 12z + 32} \div \dfrac{z^2 + 2z}{z^2 - 5z - 36}$

A) $z - 9$ B) $\dfrac{z}{z^2 + 12z + 32}$ C) $\dfrac{z - 9}{z^2 + 4z}$ D) $\dfrac{z - 9}{z}$

Perform the indicated operation and simplify.

5) $\dfrac{x}{x^2 - 16} - \dfrac{8}{x^2 + 5x + 4}$

A) $\dfrac{x^2 - 7}{(x - 4)(x + 4)(x + 1)}$ B) $\dfrac{x^2 - 7x + 32}{(x - 4)(x + 4)(x + 1)}$ C) $\dfrac{x^2 - 7x + 32}{(x - 4)(x + 4)}$ D) $\dfrac{x^2 + 7x + 32}{(x - 4)(x + 4)(x + 1)}$

Use rational exponents to simplify the radical. Assume that all variables represent positive numbers.

6) $\sqrt[12]{x^{20}y^8}$

A) $\sqrt[3]{xy^2}$ B) $\sqrt[3]{x^5y^2}$ C) $\sqrt[4]{x^5y^2}$ D) $\sqrt[3]{x^5y}$

Solve the equation.

7) $5(y + 3) = 6(y - 2)$

A) -3 B) 27 C) 3 D) -27

8) $8x + 4 + 1x + 7 = 3x + 6x + 8$

A) 32 B) 0 C) All real numbers D) No solution

9) $6(x + 3) = (6x + 18)$

A) 36 B) All real numbers C) 0 D) No solution

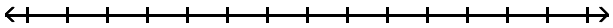
Solve the problem.

10) During a hurricane evacuation from the east coast of Georgia, a family traveled 260 miles west. For part of the trip, they averaged 50 mph, but as the congestion got bad, they had to slow to 10 mph. If the total time of travel was 6 hours, how many miles did they drive at the reduced speed?

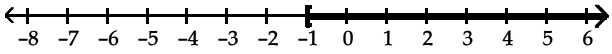
A) 20 miles B) 10 miles C) 15 miles D) 5 miles

Solve the inequality. Graph the solution set.

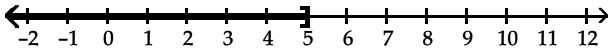
11) $20n - 12 \leq 4(4n + 2)$



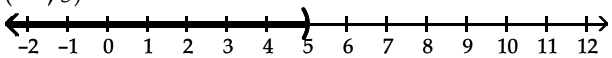
A) $[-\infty, -1)$



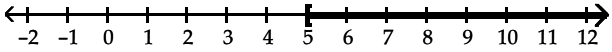
B) $(-\infty, 5]$



C) $(-\infty, 5)$



D) $[5, \infty)$



Solve the equation.

12) $|5m + 4| + 8 = 10$

A) No solution B) $\{-\frac{1}{2}, -\frac{3}{2}\}$ C) $\{\frac{2}{5}, \frac{6}{5}\}$ D) $\{-\frac{2}{5}, -\frac{6}{5}\}$

Solve the inequality.

13) $|h - 2| + 5 \leq 14$

A) $7 \leq h \leq 14$ B) No solution C) $-7 \geq h \geq 11$ D) $-7 \leq h \leq 11$

14) $|3y - 8| - 9 > -12$

A) No solution B) $(-\infty, \frac{5}{3}) \cup (\frac{5}{3}, \infty)$ C) $(\frac{5}{3}, \frac{11}{3})$ D) $(\frac{5}{3}, \infty)$

Solve the equation.

15) $6m^2 - 3m = 0$

A) $\left\{-\frac{1}{2}, 0\right\}$ B) $\left\{\frac{1}{2}, -\frac{1}{2}\right\}$ C) $\{0\}$ D) $\left\{\frac{1}{2}, 0\right\}$

Solve by completing the square.

16) $9b^2 + 36b + 35 = 0$

A) $\left\{-\frac{5}{3}, -\frac{7}{3}\right\}$ B) $\left\{\frac{5}{3}, \frac{7}{3}\right\}$ C) $\left\{-\frac{7}{3}, \frac{14}{3}\right\}$ D) $\left\{-\frac{5}{9}, -\frac{7}{9}\right\}$

Use the quadratic formula to solve the equation.

17) $9r^2 + 24r = -14$

A) $\left\{\frac{-24 \pm \sqrt{2}}{3}\right\}$ B) $\left\{\frac{-4 \pm \sqrt{2}}{18}\right\}$ C) $\left\{\frac{-4 \pm \sqrt{2}}{3}\right\}$ D) $\left\{\frac{-4 \pm \sqrt{30}}{3}\right\}$

Use the discriminant to determine the number of real solutions of the following equation.

18) $s^2 + 4s + 3 = 0$

A) No real solution B) Three real solutions

C) Two different real solutions D) Exactly one real solution

Solve the equation.

19) $2 + \frac{5}{3z - 1} = \frac{-2}{(3z - 1)^2}$

A) $\{-\frac{1}{3}, 0\}$ B) $\{-\frac{1}{3}, -\frac{1}{6}\}$ C) $\{-\frac{1}{3}, \frac{1}{6}\}$ D) $\{-2, -\frac{1}{2}\}$

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

A) No solution B) $\{-1\}$ C) $\{-5, -8\}$ D) $\{5, 8\}$

Answer Key
Testname: STEST1.TST

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