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 the binomial completely.

3) $x^3 - 343$

     A) $(x + 7)(x^2 - 7x + 49)$ B) $(x + 343)(x^2 - 1)$
     C) $(x - 7)(x^2 + 7x + 49)$ D) $(x - 7)(x^2 + 49)$

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

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

     A) $(x + 20)(x - 20)$ B) Prime   C) $(x + 20)^2$ D) $(x - 20)^2$

5) $9x^2 + 24x + 16$

     A) $(9x + 4)(x + 4)$ B) $(3x + 4)(3x + 4)$ C) $(3x - 4)(3x - 4)$ D) Prime

Multiply. Simplify if possible.

6) $\dfrac{k^2 + 7k + 10}{k^2 + 13k + 40} \cdot \dfrac{k^2 + 8k}{k^2 + 7k + 10}$

     A) $\dfrac{1}{k + 5}$ B) $\dfrac{k^2 + 8k}{k + 5}$ C) $\dfrac{k}{k^2 + 13k + 40}$ D) $\dfrac{k}{k + 5}$

Divide. Simplify if possible.

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

A) $z - 5$ 　　　B) $\dfrac{z}{z^2 + 12z + 27}$ 　　　C) $\dfrac{z - 5}{z^2 + 3z}$ 　　　D) $\dfrac{z - 5}{z}$

Perform the indicated operation and simplify.

8) $\dfrac{x}{x^2 - 16} - \dfrac{6}{x^2 + 5x + 4}$

A) $\dfrac{x^2 - 5}{(x - 4)(x + 4)(x + 1)}$ 　　　B) $\dfrac{x^2 - 5x + 24}{(x - 4)(x + 4)(x + 1)}$ 　　　C) $\dfrac{x^2 - 5x + 24}{(x - 4)(x + 4)}$ 　　　D) $\dfrac{x^2 + 5x + 24}{(x - 4)(x + 4)(x + 1)}$

Simplify the complex fraction.

9)

$$\dfrac{4 + \dfrac{2}{x}}{\dfrac{x}{3} + \dfrac{1}{6}}$$

A) 1 　　　B) $\dfrac{12}{x}$ 　　　C) $\dfrac{x}{12}$ 　　　D) 12

Rationalize the denominator.

10) $\dfrac{7}{8 - \sqrt{3}}$

A) $\dfrac{7}{8} - \dfrac{7}{\sqrt{3}}$ 　　　B) $\dfrac{56 + 7\sqrt{3}}{-5}$ 　　　C) $\dfrac{56 + 7\sqrt{3}}{61}$ 　　　D) $\dfrac{56 - 7\sqrt{3}}{61}$

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

11) $-4\sqrt{7} - 3\sqrt{28}$

A) $6\sqrt{7}$ 　　　B) $-7\sqrt{7}$ 　　　C) $10\sqrt{7}$ 　　　D) $-10\sqrt{7}$

Solve the equation.

12) $4(y + 8) = 5(y - 4)$

A) -12 　　　B) 52 　　　C) 12 　　　D) -52

13) $7x + 2 + 9x + 2 = 4x + 12x + 1$

A) 288 　　　B) 0 　　　C) All real numbers 　　　D) No solution

14) $6(x + 3) = (6x + 18)$

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

Solve the problem.

15) During a hurricane evacuation from the east coast of Georgia, a family traveled 290 miles west. For part of the trip, they averaged 70 mph, but as the congestion got bad, they had to slow to 30 mph. If the total time of travel was 7 hours, how many miles did they drive at the reduced speed?

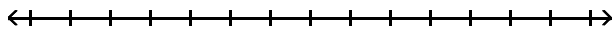A) 160 miles 　　　B) 150 miles 　　　C) 155 miles 　　　D) 145 miles

16) A bank loaned out $67,000, part of it at the rate of 12% per year and the rest at a rate of 5% per year. If the interest received was $5730, how much was loaned at 12%?

    A) $33,000   B) $34,000   C) $32,000   D) $35,000

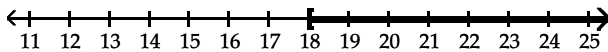**Using the variable x, write each interval as an inequality.**

17) $[-6, 4)$

    A) $-6 < x \le 4$ B) $-6 \le x \le 4$ C) $-6 \le x < 4$ D) $x < 4$
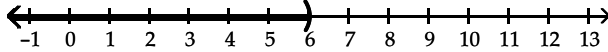
Solve the inequality. Graph the solution set.

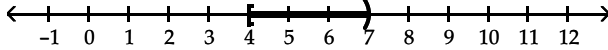18) $10n + 12 \le 2(4n + 12)$

A) $[-\infty, 18)$

B) $(-\infty, 6]$
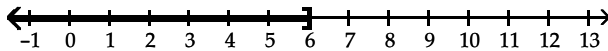
C) $(-\infty, 6)$

D) $[6, \infty)$
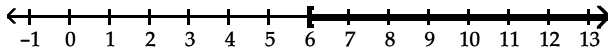
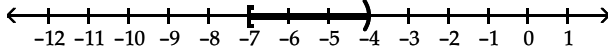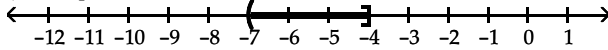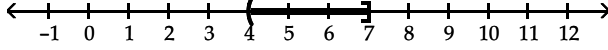19) $16 < 4x \le 28$
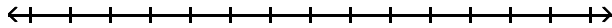
A) $[4, 7)$

B) $[-7, -4)$

C) $(-7, -4]$

D) $(4, 7]$

Solve the problem.

20) In one city, the local cable TV company charges $1.05 for each pay–per–view movie watched. In addition, each monthly bill contains a basic customer charge of $22.50. If last month's bills ranged from a low of $28.80 to a high of $31.95, over what range did customers watch pay–per–view movies?

    A) movies watched varied from 7 to 10 inclusive   B) movies watched varied from 6 to 9 inclusive

    C) movies watched varied from 5 to 10 inclusive   D) movies watched varied from 5 to 8 inclusive

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