PRETEST

1. Which of the following numbers is irrational?

   A) 3

   B) –5

   C) $\sqrt{7}$

   D) $\sqrt{25}$

2. Which of the following numbers is rational?

   A) $\sqrt{15}$

   B) π

   C) 1.2345...

   D) $\dfrac{3}{5}$

3. Which of the following is the reciprocal of $\dfrac{a}{b}$?

   A) $\dfrac{a}{b}$

   B) $\dfrac{b}{a}$

   C) $-\dfrac{a}{b}$

   D) $-\dfrac{b}{a}$

4. Which of the following equations matches the following sentence: Subtract 36 from 48 and then in divide by 3

   A) $(48 - 36) - 3$

   B) $(48 - 36) + 3$

   C) $(48 - 36) \div 3$

   D) $(36 - 48) \div 3$

5. Which of the following is equal to $4 \times 5 - (6 + 3) - 63 \div 7$?

   A) 0

   B) 2

   C) –4

   D) –6

6. Which of following algebraic equations correctly represents this sentence: Thirty four is four times a number, inceased by nine.

   A) $43 = 4x - 9$

   B) $34 = 4x + 9$

   C) $4 = 9x + 34$

   D) $9 = 34x + 4$

7. Which expression is equivalent to $(5x^4 + 12x^2) - (12x^3 - 9x)$?

A) $5x^4 + 12x^2 - 12x^3 - 9x$

B) $5x^4 - 12x^3 + 12x^2 + 9x$

C) $5x^4 + 12x^2 - 12x^3$

D) $5x^4 - 12x^3 - 12x^2 - 9x$

8. If x is the greatest prime factor of 21 and y is the greatest prime factor of 57, what is the value of x + y?

A) 12

B) 15

C) 26

D) 30

E) 36

9. A school hired 30 teachers. This is 40% of the number of teachers it expects to have at the end of the next academic year. How many teachers does it expect to have next academic year?

A) 25

B) 35

C) 45

D) 75

10. Simplify $\dfrac{x^2 - 8x + 15}{x^2 - 9} \div \dfrac{x^2 - 4x - 5}{x^2 + 3x}$

A) $x - 1$

B) $\dfrac{x}{x+1}$

C) $x + 1$

D) $\dfrac{x+1}{x-1}$

11. In college, next year's tuition will increase by 15% per credit. If this year's tuition is $660 per credit, what will tuition be next year?

A) $650

B) $688

C) $745

D) $759

12. If $\begin{matrix} a = 3^n \\ b = 2^n \end{matrix}$, then find 18^n in terms of a and b.

A) $a \cdot b$

B) $a^2 \cdot b$

C) $a \cdot b^2$

D) $a^2 \cdot b^2$

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13. $(81x^8)^{\frac{1}{4}}$

Which of the following equations is equivalent to the expression above?

A) x^2

B) $3x^2$

C) $\frac{1}{2}x^2$

D) $5x^2$

14. Simplify $\dfrac{\sqrt{a}}{2-\sqrt{a}}$

A) $\dfrac{2\sqrt{a}+a}{4-a}$

B) $\dfrac{\sqrt{a}-a}{4-a}$

C) $\dfrac{\sqrt{a}-a}{a}$

D) $\dfrac{2}{4-a}$

15. In a school, the ratio of the number of student in science class to the number of students in math class is 4:9. If the number of students in math class is 27, then what is the number of students in science class?

A) 6

B) 9

C) 12

D) 15

16. Two numbers have a ratio of 5 to 7. The larger number is 20 more than $\frac{3}{5}$ of the smaller number. Find the larger number.

A) 15

B) 20

C) 25

D) 35

17. Simplify $\left(\dfrac{a}{b}\right)\cdot\left(\dfrac{ab}{cd}\right)\cdot\left(\dfrac{cd}{a^2}\right)$?

A) a^2

B) $a^2\cdot b$

C) $a\cdot b\cdot c\cdot d$

D) 1

18. If x is a positive number and $x^2 + x - 12 = 0$, what is the value of x?

A) 2

B) 3

C) 4

D) 6