

- 1) Evaluate the algebraic expression below for  $3 + 2(x-1)^2 - 3y$   
if  $x = -4$  and  $y = 2$ .

- A -53
- B -23
- C 119
- D 47
- E None of the Above.

- 2) Which statement(s) is(are) true?

- A I, II, and III
- B I only
- C I and III only
- D II and III only
- E I and II only

- I  $-\frac{2}{3}$  is a rational number.
- II  $-5 > -3$
- III  $|\pi - 7| = \pi - 7$

- 3) Simplify this algebraic expression:  $2(a - 3b) + 4[8 - 2(3a + b)]$

- A  $-22a - 2b + 32$
- B  $74a + 18b$
- C  $-22a - 8b + 32$
- D  $-4a - 5b + 32$
- E  $-22a - 14b + 32$

4) Use the order of operations to simplify this expression.

$$\frac{4|2-8|-(3-4)^3}{45-2(5)^2}$$

A  $-\frac{5}{11}$

B  $\frac{23}{5}$

C 1

D -5

E  $-\frac{23}{5}$

5) Which statement is false?

A  $(x^{-2})(x^2) = 1$

B  $3^{-3} = -27$

C  $-(2^2)^3 = -64$

D  $\frac{m^{11}}{m^{-4}} = m^{15}$

E  $(4x^2y^3)^2 = 16x^4y^6$

6) Simplify using the rules of exponents.

$$\left(\frac{-12a^7b^{-2}}{3a^9b^4}\right)^3$$

A  $\frac{-64}{a^6b^{18}}$

B  $\frac{-64a^6}{b^{18}}$

C  $\frac{-4b^6}{a^6}$

D  $\frac{-64}{a^5b^9}$

E  $\frac{-12}{a^6b^{18}}$

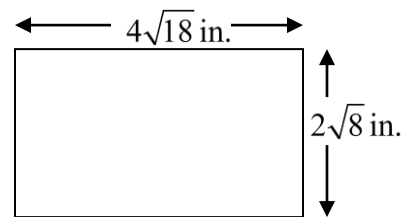
7) Use scientific notation to perform the indicated operations.  $\frac{66,000 \times 0.002}{0.004 \times 0.01}$

- A  $3.3 \times 10^6$
- B  $3.3 \times 10^4$
- C  $3.3 \times 10^{-4}$
- D  $3.3 \times 10^{-6}$
- E  $3.3 \times 10^{-18}$

8) Add/Subtract where possible (simplify).  $2\sqrt{32} - 4\sqrt{72} - 3\sqrt{50} + 9\sqrt{2}$

- A  $-70\sqrt{2} - 12\sqrt{8}$
- B  $2\sqrt{2}$
- C  $-10\sqrt{2}$
- D  $-74\sqrt{2}$
- E  $-22\sqrt{2}$

9) Find the perimeter **and** the area of the rectangle below.



- A  $p = 32\sqrt{2}$  in.,  $A = 96$  in.<sup>2</sup>
- B  $p = 16\sqrt{2}$  in.,  $A = 24\sqrt{2}$  in.<sup>2</sup>
- C  $p = 88\sqrt{2}$  in.,  $A = 576$  in.<sup>2</sup>
- D  $p = 12\sqrt{26}$  in.,  $A = 96$  in.<sup>2</sup>
- E  $p = 32\sqrt{2}$  in.,  $A = 72$  in.<sup>2</sup>

10) Simplify:  $(a+3)^3$  Examine answers carefully.

A  $a^3 + 6a^2 + 18a + 27$

B  $a^3 + 9a^2 + 27a + 27$

C  $a^3 + 3a^2 + 18a + 27$

D  $a^3 + 27$

E  $a^3 + 3a^2 + 9a + 27$

11) Multiply:  $(7ay-2)(3ay+5)$  Examine answers carefully.

A  $21a^2y + 29ay - 10$

B  $21ay^2 + 29ay - 10$

C  $50ay - 10$

D  $21a^2y^2 + 41ay - 10$

E None of the above.

12) Multiply:  $\frac{x^2 - 3x - 10}{x^2 + 3x} \bullet \frac{x^4 - 9x^2}{x^2 - 10x + 25}$  Examine answers carefully.

A  $\frac{(x+2)(x-3)^2}{(x+3)(x+5)}$

B  $\frac{x(x-2)(x+3)}{x+5}$

C  $\frac{x(x-2)(x-3)}{x-5}$

D  $\frac{x(x+2)(x-3)}{x-5}$

E  $\frac{x(x+2)(x-3)}{x+5}$

13) Which is a factor of  $6x^2 - 11x - 10$ ?

- A  $3x - 2$
- B  $6x + 2$
- C  $3x + 5$
- D  $2x - 5$
- E  $2x - 1$

14) Which is a prime factor of the polynomial  $12ax - 8x + 6ay - 4y$ ?

- A  $2x - y$
- B  $3a + 2y$
- C  $3a - 2$
- D  $4x + y$
- E None of the Above.

15) Simplify this complex rational expression.

$$\frac{2 + \frac{1}{a}}{2 - \frac{2}{a}}$$

- A  $-\frac{2}{a^2}$
- B  $\frac{a+1}{a-1}$
- C  $-\frac{1}{2}$
- D  $\frac{2a+1}{2(a-1)}$
- E  $\frac{2(2a+1)(a-1)}{a^2}$