April 6th

Name Date

Practice by Objective

8.2.1 PA.N.1.2

1 A hydrogen molecule is 0.00000000015 meters in length. What is this number in scientific notation?

A 1.5×10^{-8}
B 1.5×10^{-9}
C 1.5×10^{-10}
D 1.5×10^{-11}

2 In 2008, the population of Oklahoma was about 3.6 million people. What is the population in scientific notation?

A 36×10^{6}
B 3.6×10^{5}
C 0.36×10^{6}
D 3.6×10^{6}

3 People have about 25,000,000,000,000 red blood cells in their bodies at any one time. What is this number in scientific notation?

A 2.5×10^{10}
B 2.5×10^{11}
C 2.5×10^{12}
D 2.5×10^{13}

4 If $\frac{1}{5} = 5^{-1}$ and $\frac{1}{25} = 5^{-2}$, what is the value of $\frac{1}{625}$?

A 5^{-4}
B 5^{-3}
C 5^{4}
D 5^{5}

5 The Arbuckle Mountains in south-central Oklahoma comprise an area of about 1000 square miles. What is this number expressed in exponential form?

A 10^{5}
B 10^{4}
C 10^{3}
D 10^{2}

6 A nanosecond is one billionth of a second. What is this amount in exponential form?

A 10^{-9}
B 10^{-8}
C 10^{9}
D 10^{8}

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Scientific Notation is used to represent really large & small #'s.

____ × 10 ___ ← exponent tells:

① (+) represents large #
(−) represents small #

② how many times to move the decimal

between 1–10

In class we used the TI-30XS Multiview calculator as our standards required use of technology. Any scientific calculator would be helpful to use on these problems.

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D 10^{8}

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8.2.2.a PA.N.1o1

1 What is the value of the expression below?

$3^8 \cdot 3^{-5}$

A 27
B 9
C 3
D $\frac{1}{27}$

2 What is the value of the expression below?

$\frac{4^8}{4^4}$

A 256
B 16
C 4
D 1

3 What is the simplified form of the expression?

$p^{-5} \cdot p^{-2}$

A $2p^{-7}$
B $2p^{10}$
C p^{10}
D p^{-7}

4 What is the simplified form of the expression?

$\frac{h^{10}}{h^{-5}}$, where $h \neq 0$

A h^{-15}
B h^{-5}
C h^5
D h^{15}

5 Which of the following is the simplified form of the expression?

$\frac{y^3 \cdot y^5}{y^2 \cdot y^{-6}}$, where $y \neq 0$

A y^3
B y^4
C y^{12}
D y^{27}

6 Which expression has the greatest value?

A $2^{10} \cdot 2^8$
B $3^2 \cdot 3$
C $2^1 \cdot 2^4$
D $3^4 \cdot 3^5$

Exponent rules

Product rule with same base:

$a^n \cdot a^m = a^{n+m}$

Product rule with same exponent:

$a^n \cdot b^n = (a \cdot b)^n$

Quotient rule:

$\frac{a^n}{a^m} = a^{n-m}$

Power Rules:

$(a^n)^m = a^{n \cdot m}$

Negative Exponent:

$a^{-n} = \frac{1}{a^n}$

Zero Exponent:

$b^0 = 1$

mathantics has a good video – "Algebra Basics: Laws of Exponents"

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8.2.2.a PA.N.I.1

1 What is the value of the expression below?

$3^8 \cdot 3^{-5}$

A 27
B 9
C 3
D $\frac{1}{27}$

$3^{8+-5} = 3^3$

$3 \cdot 3 \cdot 3 = 27$

2 What is the value of the expression below?

$\frac{4^8}{4^4}$

A 256
B 16
C 4
D 1

4^{8-4}

4^4

$4 \cdot 4 \cdot 4 \cdot 4 = 256$

3 What is the simplified form of the expression?

$p^{-5} \cdot p^{-2}$

A $2p^{-7}$
B $2p^{10}$
C p^{10}
D p^{-7}

$-5 + -2$

p

p^{-7}

4 What is the simplified form of the expression?

$\frac{h^{10}}{h^{-5}}$, where $h \neq 0$

A h^{-15}
B h^{-5}
C h^5
D h^{15}

h^{10--5}

5 Which of the following is the simplified form of the expression?

$\frac{y^3 \cdot y^5}{y^2 \cdot y^{-6}}$, where $y \neq 0$

A y^3
B y^4
C y^{12}
D y^{27}

$\frac{y^{3+5}}{y^{2+-6}} = \frac{y^8}{y^{-4}}$

$= y^{8--4}$

$= y^{12}$

6 Which expression has the greatest value?

A $2^{10} \cdot 2^8$
B $3^2 \cdot 3$
C $2^1 \cdot 2^4$
D $3^4 \cdot 3^5$