

OAKLAND CUSD #5

HS ALGEBRA

APRIL 13-17, 2020

NICHOLE EPPERSON

Week of April 13-17, 2020

HS Algebra

Mrs. Epperson

I sure miss seeing each and everyone of you. If you are able, please connect with us through our google classroom. We have weekly calls on Thursdays if you are able to join us. They are NOT required, but it's nice to catch up and see your faces. The time we meet on Thursdays is from 2:15-2:45, you can find the link to connect with us in your student email (same email and password you use to log into chromebooks; remember, the ending of your email address is @oakland5.org)

You may use your math folder to help you. You have to complete 2 worksheets, but may complete all 5. I am available at nichole.epperson@oakland5.org or 708-517-0534 for any questions. You may call or text.

All worksheets have the appropriate grade level/subject at the top.

Class	Choice 1	Choice 2	Choice 3	Choice 4	Choice 5
HS Algebra	1-6	1-7	1-8	1-9	8-3



1-6 Additional Practice

Week of 4/13-4/17

Leveled Practice In 1–4, use the properties of exponents to write an equivalent expression for each given expression.

1. $5^3 \cdot 5^4 = 5^3 \cdot 5^4$

=

2. $\frac{4^9}{4^3} = 4^9 \cdot 4^3$

=

3. $(7^2)^6 = 7^2 \cdot 7^6$

=

4. $2^4 \cdot 6^4 = (\quad \cdot \quad)^4$

=

5. Simplify the expression $(x^{12})^3$.

6. Simplify the expression $(-12c^5)(3c^4)$.

7. Use the properties of exponents to simplify the expression $\frac{5^{22}}{5^{13}}$.

8. Use the properties of exponents to write an equivalent expression for $(3 \cdot 6)^2$.

9. Make Sense and Persevere Compare the two expressions.

a. Is the expression $a^{12} \cdot a^4$ equivalent to $a^8 \cdot a^8$? Explain.

b. Does $a^{12} \cdot a^4 = a^8 \cdot a^8$ for all values of a ? Explain.

Algebra- Epperson, week of 4/113-4/17

10. A company manufactures photo cells. It uses the expression $(2x^3)^3$ millimeters per second to calculate the maximum capacity of a photo cell with area x^3 square millimeters. Use a property of exponents to simplify this expression.
11. a. Use a property of exponents to write $(2m)^4$ as a product of powers.
- b. **Generalize** Describe the property of exponents that you used.
12. **Higher Order Thinking** Find the two integers, m and n , that make the equation $(2x^n y^2)^m = 4x^6 y^4$ true.



Assessment Practice

13. Select all the expressions equivalent to $(4x^5)(5x^6)$.

$(2x^5)(10x^6)$

$(4x^5)(6x^5)$

$(4x^6)(5x^5)$

$20x^{11}$

$20x^{30}$

14. You are given the expression $\frac{12^8}{12^4}$ to simplify.

PART A

Which equation shows the correct property of exponents to use?

Ⓐ $\frac{a^m}{a^n} = a^{m+n}$

Ⓑ $\frac{a^m}{a^n} = a^{m-n}$

Ⓒ $\frac{a^m}{a^n} = a^{m-a}$

Ⓓ $\frac{a^m}{a^n} = a^{n-m}$

PART B

Simplify the expression. Write your answer using exponential notation.

Name: _____



PRACTICE



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1-7 Additional Practice

Week of 4/13-4/17

1. Leveled Practice Complete the table to simplify the expression.

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Given	Positive Exponent Form	Expanded Form	Simplified Form
5^{-4}	$\frac{1}{}$	$\frac{1}{ \times \times }$	$\frac{1}{}$

In 2-5, simplify each expression.

2. $135(z^0)$

3. $\frac{8}{9^0}$

4. $7^{-2}(-3)^2$

5. $\frac{a^{-3}}{b^{-2}}$, for $a = 5$ and $b = 6$.

In 6 and 7, compare the values using $>$, $<$, or $=$.

6. $\left(\frac{12}{65}\right)^0$ 1

7. 52^{-4} 1

In 8 and 9, simplify each expression.

8. $9x^2y^{-3}$, for $x = 5$ and $y = 3$.

9. $14x^{-2}$, for $x = 7$.

10. Julia has to evaluate the expression 4^{-3} before she can join her classmates outside. She decides to use the value of the expression to help choose which activity to do. If the value is greater than 1, she will play basketball. If the value is equal to 1, she will play soccer. If the value is less than 1, she will play tennis. Which activity is Julia going to do today? Explain.

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11. You are given the expression -6^{-4} .

a. Rewrite the expression using a positive exponent.

b. **Reasoning** Simplify the expression -6^{-4} . Is the result the same as simplifying the expression $(-6)^{-4}$? Explain.

12. Higher Order Thinking

a. Is the value of the expression $\left(\frac{1}{4^{-2}}\right)^3$ greater than 1, equal to 1 or less than 1?

b. If the value of the expression is greater than 1, show how you can change one sign to make the value less than 1. If the value is less than 1, show how you can change one sign to make the value greater than 1. If the value is equal to 1, show how you can make one change to make the value not equal to 1.

13. **Construct Arguments** Simplify the expression $18p^0$, assuming that p is nonzero. Will the value of the expression change with different values for p ?

 Assessment Practice

14. Which expressions are equal to 10^{-5} ? Select all that apply.

$$10^5$$

$$10,000$$

$$10,000^{-5}$$

$$\frac{1}{10^5}$$

$$\frac{1}{10,000}$$

15. Which expressions have a value less than 1 when $x = 3$?
Select all that apply.

$$\left(\frac{3}{x^2}\right)^0$$

$$\frac{x^0}{3^2}$$

$$\frac{1}{6^{-x}}$$

$$\frac{1}{x^{-3}}$$

$$3x^{-4}$$



1-8 Additional Practice

Week of 4/13-4/17

Leveled Practice In 1–3, use powers of 10 to estimate quantities.

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1. Use a single digit times a power of 10 to estimate the number 0.000007328.

Rounded to the nearest millionth, the number is about _____.

Written as the product of a single digit and a power of ten, this number is _____ $\times 10$ _____.

2. A city has a population of 38,802,500 people. Estimate this population to the nearest ten million.

Rounded to the nearest ten million, the population is about _____.

Written as the product of a single digit and a power of ten, this number is _____ $\times 10$ _____.

3. The mass of Planet X is 8.46×10^{22} kilograms. The mass of Planet Y is 5,028,000,000,000,000,000 kilograms. How many times greater is the mass of Planet X than the mass of Planet Y?

The mass of Planet Y is about _____ \times _____ kilograms.

The mass of Planet X is about _____ \times _____ kilograms.

The mass of Planet X is about _____ times greater than that of Planet Y.

4. According to a survey, the residents of Country A have approximately 179,300,000 dogs and cats as pets. The same survey reports there are about 5.01×10^7 dogs and cats as pets in Country B. About how many times greater is the number of dogs and cats in Country A than Country B?

5. Estimate 0.00792398 to the nearest thousandth. Express your answer as a single digit times a power of ten.

6. Which number has the greater value, 7×10^{-9} or 6×10^{-4} ?

7. On a certain planet, Continent X has an area of 6.23×10^6 square miles and Continent Y has an area of 63,600,000 square miles. How many times larger is Continent Y than Continent X?

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8. Dion made \$67,785 last year. Express this number as a single digit times a power of ten rounded to the nearest ten thousand.
9. A rectangle has length 8×10^4 millimeters and width 4×10^4 millimeters. How many times greater is the rectangle's length than width?
10. **Construct Arguments** Tara incorrectly estimates 36,591,000,000 meters as 4×10^6 meters. Is she correct? Explain.
11. **Higher Order Thinking** An astronomical unit (AU) is equal to the average distance from the Sun to Earth.
- a. An astronomical unit is about 92,955,807 miles. Use a single digit times a power of ten to estimate this value to the nearest ten million miles.
- b. Venus is about 7.2×10^{-1} AU from the Sun. Mars is about 1.5 AU from the Sun. Which planet is closest to Earth?

Assessment Practice

12. The oldest rocks on Earth are about 4×10^9 years old. For which of these ages could this be an approximation?
- Ⓐ 0.000000004 years
- Ⓑ 3.45×10^9 years
- Ⓒ 3.349999999×10^9 years
- Ⓓ 4,149,000,000 years
13. Express 0.000000648 as a single digit times a power of ten rounded to the nearest ten millionth.



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Choice 24

1-9 Additional Practice

Week of 4/13-4/17

Leveled Practice In 1 and 2, complete the sentences.

1. Express the number 7.901×10^{12} in standard form.

a. To change this number to standard form, move the decimal
point _____ places to the _____.

b. 7.901×10^{12} is written as _____ in standard form.

2. You want to express 437,000 in scientific notation. What is the first step?

a. To change this number to scientific notation, move the
decimal point _____ places to the _____.

b. 437,000 is written as _____ $\times 10$ _____ in scientific notation.

3. Is 23×10^{-6} written in scientific notation?
Justify your response.

4. Is 1.75×10^6 written in scientific notation?
Justify your response.

5. Your calculator display shows $5.3E - 9$. Express the number in standard form.

6. Express the number 621,000 in scientific notation.

7. Express the number 0.0000001073 in scientific notation.

8. Express the number 5.2×10^6 in standard form.

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9. Express the number 8.5×10^5 in standard form.
10. Express the number 3.91×10^{-2} in standard form.
11. Express the number 0.0000005864 in scientific notation.
12. Express the number 3.92×10^{-6} in standard form.
13. **Higher Order Thinking** Express the mass 6,200,000 kilograms using scientific notation in kilograms, and then in grams.

Assessment Practice

14. Which of the following numbers are written in scientific notation? Select all that apply.

$$34.2 \times 10^9$$

$$5.99 \times 10^{-9}$$

$$1.80 \times 10^9$$

$$3.42 \times 10^{-9}$$

$$19.9 \times 10^9$$

$$18.0 \times 10^{-9}$$

15. After evaluating an expression, your calculator display shows the result $4.5E-11$.

PART A

Express this number in scientific notation.

PART B

Express this number in standard form.

Name: _____



PRACTICE



TUTORIAL

8-3 Additional Practice

Week of 4/13-4/17

Levelled Practice In 1 and 2, find the volume of each cone.

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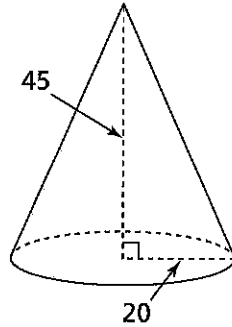
1. What is the volume of the cone? Use 3.14 for π .

$$V \approx \frac{1}{3}(3.14)(\quad)^2(\quad)$$

$$V = \frac{1}{3}(3.14)(\quad)(\quad)$$

$$V = \frac{1}{3}(\quad)$$

$$V = \quad \text{units}^3$$



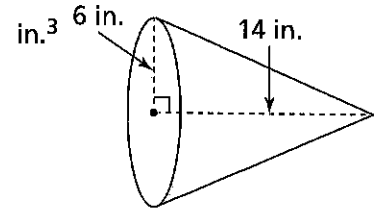
2. Find the volume of the cone. Use $\frac{22}{7}$ for π .

$$V \approx \frac{1}{3}\left(\frac{22}{7}\right)(\quad)^2(\quad)$$

$$V = \frac{1}{3}\left(\frac{22}{7}\right)(\quad)(\quad)$$

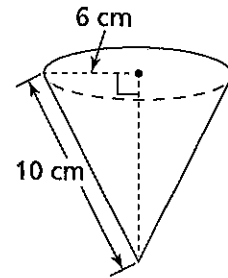
$$V = \frac{1}{3}\left(\frac{22}{7}\right)(\quad)$$

$$V =$$



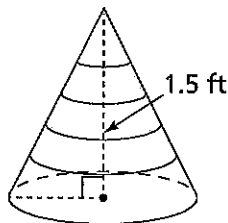
3. A trap to catch fruit flies uses a cone in a jar. The cone is shown.

- a. What is the volume of the cone? Write your answer in terms of π .

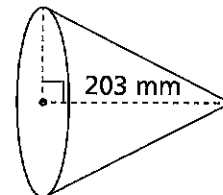


- b. **Reasoning** Explain why an answer in terms of π is more accurate than an answer that uses 3.14 for π .

4. An artist makes a small cone-shaped sculpture for his class. The circumference of the sculpture is 3.14 feet. What is the volume of the sculpture? Use 3.14 for π .



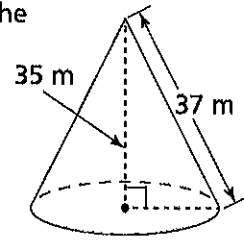
5. The cone has a volume of $15,225\pi$ cubic millimeters. What is the radius of the base?



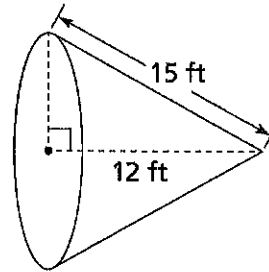
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6. The volume of a cone is 763.02 cubic inches. The radius and height of the cone are equal. What is the radius of the cone? Use 3.14 for π .

7. What is the volume of the cone? Use 3.14 for π .



8. a. What is the volume of the cone? Use 3.14 for π .



- b. Reasoning Mario says that the volume of the cone is 1,271.7 cubic feet. What error did he likely make?

9. A cone has a height of 14 centimeters and a base with a circumference of 8.4π centimeters. What is the volume of the cone in terms of π ?

10. Higher Order Thinking A cone has a radius of 39 centimeters and a slant height of 65 centimeters.

- a. What is the volume of the cone in terms of π ?

- b. Reasoning If the radius is now half the size and the height is the same, how has the volume of the cone changed?

Assessment Practice

11. List the cones described below in order from least volume to greatest volume.

- Cone 1: radius 16 cm and height 12 cm
- Cone 2: radius 12 cm and height 16 cm
- Cone 3: radius 8 cm and height 24 cm

- Ⓐ Cone 1, Cone 2, Cone 3
- Ⓑ Cone 2, Cone 1, Cone 3
- Ⓒ Cone 3, Cone 2, Cone 1
- Ⓓ Cone 3, Cone 1, Cone 2

12. What is the volume, in cubic inches, of a cone that has a radius of 9 inches and a height of 16 inches? Use 3.14 for π , and round to the nearest hundredth.