

Welcome to Math

The function $a(n) = 3n - 7$ represents the value of the n th term in a sequence. What is the sum of the 1st and 5th terms of the sequence?

The width of a rectangle is $\frac{3}{4}$ its length. The perimeter of the rectangle is 420 ft. What is the length, in feet, of the rectangle?

Assignments:

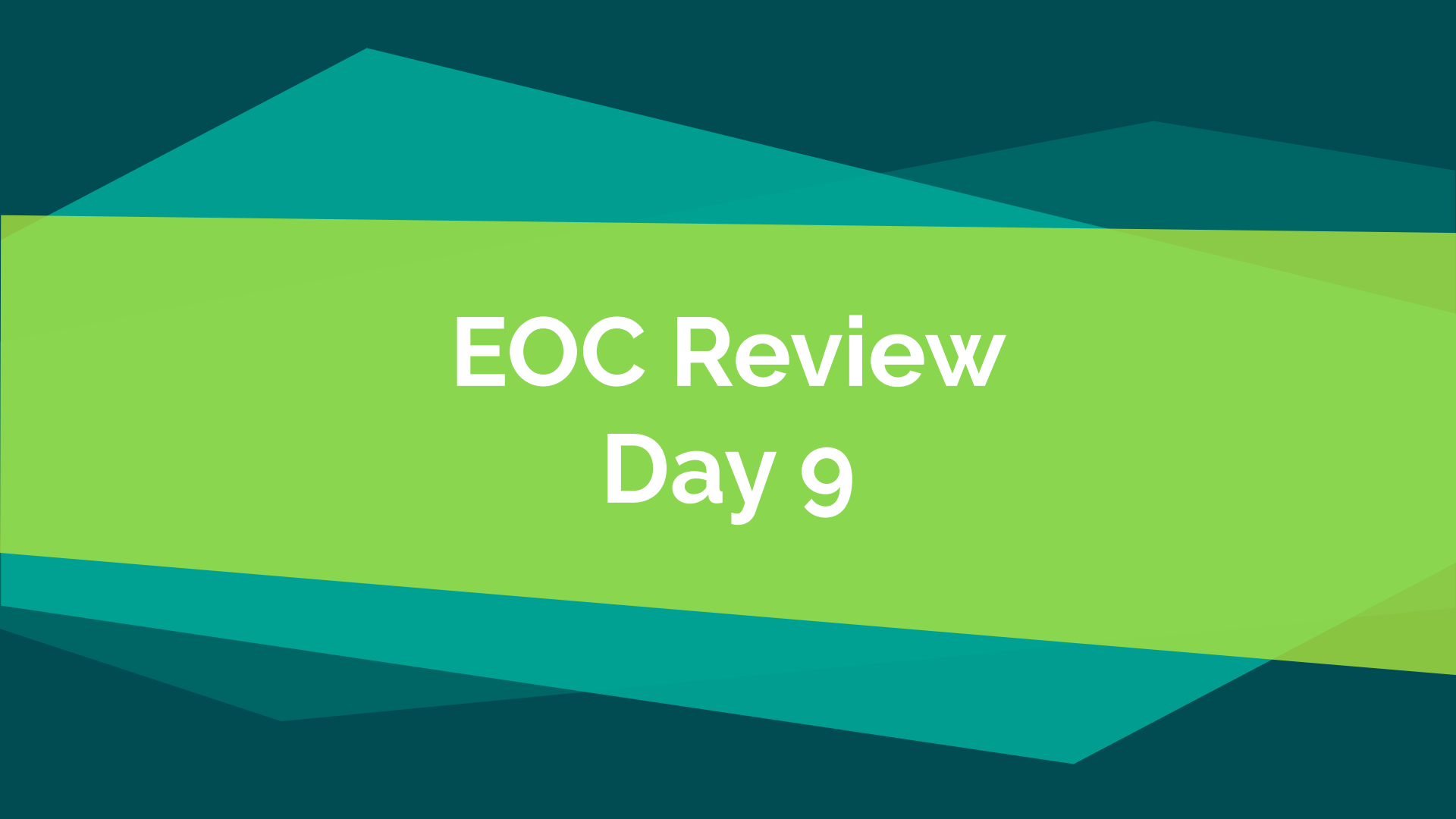
- ◆ Geometry test corrections due tomorrow!
- ◆ Math One-Pagers are due on Monday
 - ◆ Four required for everyone for a formal grade
 - ◆ Seven will exempt your lowest FBF
 - ◆ Ten will replace your lowest FBF with a 10/10
- ◆ Last FBF is on Friday
- ◆ EOC on May 30th

Announcements

- ◆ All grades are up to date - if you think there is an error, talk to me or send me an email!
- ◆ May 20th - Chromebooks stay at school
- ◆ May 22nd - NO HOMEWORK
- ◆ Textbooks due Friday, May 24
- ◆ Hidden Figures books due Friday, May 24
- ◆ Calculator collection on Friday, May 24
- ◆ *Anything forgotten on Friday, May 24th can be turned in on Tuesday, May 28th*

Your final formal / extra credit opportunity

Math One- Pagers!

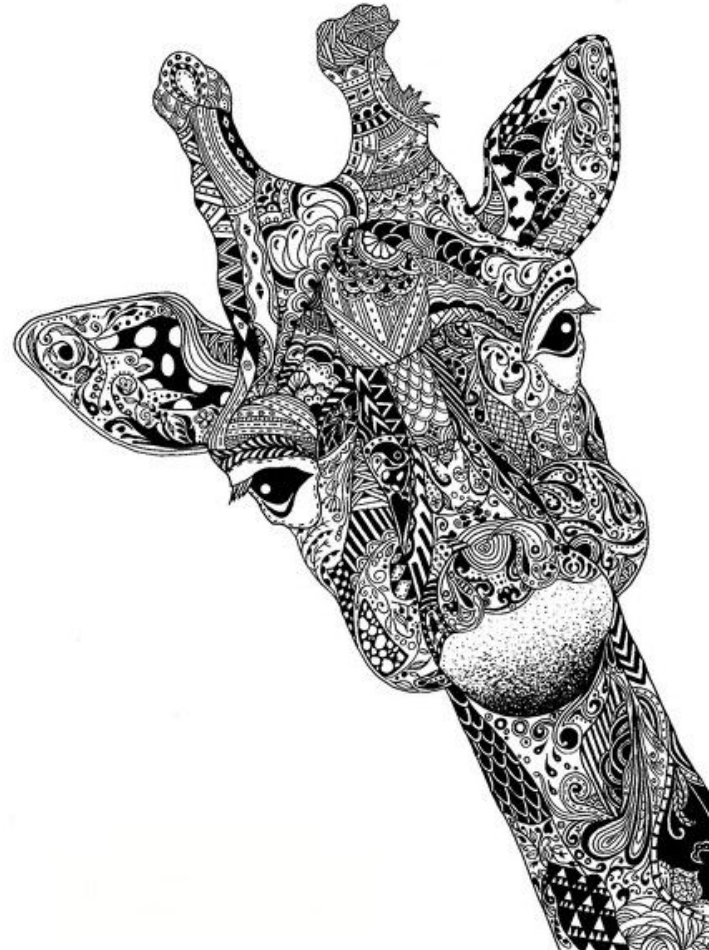
The slide features a dark teal background with a central horizontal band of light green. The text 'EOC Review' and 'Day 9' is centered in white. The background is decorated with several overlapping, semi-transparent teal shapes that resemble stylized mountains or abstract geometric forms.

EOC Review

Day 9

Unit 10 Review

5/16/2019



Unit 10

Exponent Rules

Exponential Form and Simplifying Powers

$12x^4$ → exponent

↳ Base

↳ coefficient

$$\text{EX1) } 5 \cdot 5 \cdot 5 \cdot 5 = 5^4$$

$$\text{EX2) } (-4)(-4)(-4) = (-4)^3$$

$$\text{EX3) } 3 \cdot 3 \cdot 3 \cdot z \cdot z = 3^3 z^2$$

Simplifying

$$\text{EX4) } 3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = \boxed{81}$$

$$\text{EX5) } \left(\frac{1}{4}\right)^2 = \frac{1}{4} \cdot \frac{1}{4} = \boxed{\frac{1}{16}}$$

$$\text{EX6) } (-8)^2 = -8 \cdot -8 = \boxed{64}$$

$$\text{EX7) } -2^4 = -2 \cdot 2 \cdot 2 \cdot 2$$

$$\begin{aligned} \text{EX8) } 3^2 u^6 &= 3 \cdot 3 \cdot u \cdot u \cdot u \cdot u \cdot u \cdot u \\ &= 9u^6 \end{aligned}$$

Evaluating Expressions

Step 1: Plug in all given values using parentheses
Step 2: Simplify using order of operations

EX 1) find b^a , for $b = -7$

$$(-7)^2$$

$$-7 \cdot -7 = \boxed{49}$$

EX 2) $x \div y^z$ for $x = 9$, $y = 3$, $z = 2$

$$9 \div 3^2 \rightarrow 9 \div 9 \rightarrow \boxed{1}$$

EX 3) $x - y(z \cdot y^z)$

$$x = 20, y = 4, z = 2$$

$$20 - 4(2 \cdot 4^2)$$

$$20 - 4(2 \cdot 16)$$

$$20 - 4(32)$$

$$20 - 128 = \boxed{-108}$$

Evaluating Expressions

Zero and Negative Exponents

* Any nonzero number a , $a^0 = 1$ (any # to the zero power = 1)

* For any nonzero number a and integer n , $a^{-n} = \frac{1}{a^n}$ (switch the position to make exponent positive)

* Simplest form has only positive exponents

$$\text{EX1) } (-5x)^0 = 1$$

$$\text{EX2) } -a^0 = -1$$

$$\text{EX3) } 3b^0 = 3 \cdot 1 = 3$$

$$\text{EX4) } 0^0 = \text{not real (undefined)}$$

$$\text{EX5) } 10^{-4} = \frac{10^{-4}}{1} = \frac{1}{10^4} = \frac{1}{10,000}$$

$$\text{EX6) } a^{-2}b^4 = \frac{a^{-2}b^4}{1} = \frac{b^4}{a^2}$$

$$\text{EX7) } \frac{a^3b^{-1}}{d^{-4}} = \frac{a^3d^4}{b}$$

$$\text{EX8) } \frac{2^{-2}b^2}{c^{-4}} = \frac{b^2c^4}{4}$$

$$\text{EX9) } \left(\frac{2a}{5}\right)^{-2} = \left(\frac{5}{2a}\right)^2 = \frac{5}{2a} \cdot \frac{5}{2a} = \frac{25}{4a^2}$$

Zero and Negative Exponents

Multiplying and Dividing Powers

* You can always use the basic definition instead of the rules to simplify powers *

Multiplying powers with the same base, ADD the exponents

Dividing powers with the same base, SUBTRACT the exponents

$$\text{Ex 1) } 5^4 \cdot 5^3 = 5^{4+3} = 5^7$$

$$\text{Ex 2) } 16^{-1} \cdot 16^7 = 16^{-1+7} = 16^6$$

$$\begin{aligned} \text{Ex 3) } 5hy^{-3} \cdot 7h^{-5}y^3 &= 5 \cdot 7 \cdot h^{1-5} \cdot y^{-3+3} \\ &= 35h^{-4}y^0 = \left(\frac{35}{h^4}\right) \end{aligned}$$

$$\text{Ex 4) } 4^2 \cdot 3^2 = 16 \cdot 9 = 144$$

$$\text{Ex 5) } \frac{6^9}{6^4} = 6^{9-4} = 6^5$$

$$\text{Ex 6) } \frac{10^8}{10^5} = 10^{8-5} = 10^3$$

$$\text{Ex 7) } \frac{x^4}{x^9} = x^{4-9} = x^{-5} = \frac{1}{x^5}$$

$$\begin{aligned} \text{Ex 8) } \frac{4d^{-2}g^5}{2d^6g^{-4}} &= 2d^{-2-6}g^{5+4} = \\ &= 2d^{-8}g^9 = \frac{2g^9}{d^8} \end{aligned}$$

Multiplying and Dividing Powers

Power of a Power

Power to a power you multiply the exponents

$$\text{EX1) } (9^4)^5 = 9^{4 \cdot 5} = 9^{20}$$

$$\text{EX2) } (b^m)^n = b^{mn}$$

$$\text{EX3) } (3m^4)^3 = 3^{1 \cdot 3} \cdot m^{4 \cdot 3} = 3^3 m^{12} = 27m^{12}$$

by definition: $3m^4 \cdot 3m^4 \cdot 3m^4 = 27m^{12}$

$$\text{EX4) } (4a^2b^3)^2 = 4^{1 \cdot 2} \cdot a^{2 \cdot 2} \cdot b^{3 \cdot 2} = 4^2 a^4 b^6 = 16a^4b^6$$

$$\text{EX5) } \left(\frac{3a^{-2}}{4b^3}\right)^{-3} = \frac{(3^{-3})a^6}{(4^{-3})b^{-9}} = \frac{4^3 a^6 b^9}{3^3} = \frac{64a^6b^9}{27}$$

$$\text{EX6) } \left(\frac{6a^2b^6c^{-2}}{a^4}\right)^3 = \frac{6^3 a^6 c^{-6}}{a^{12}} = \frac{6^3 a^6}{a^{12} c^6} = \frac{6^3}{a^6 c^6} = \frac{216}{a^6 c^6}$$

Power of a Power

3. What is the simplified form of $\left(\frac{t^2}{3}\right)^5$?

4. What is the simplified form of $\left(\frac{2b^4}{c^3}\right)^{-3}$?