

Test Outline: 3 pages long, test will be worth 100 points, all short answer - so show thinking for maximum credit, The focus will be on GGG Investigations 5, scientific notation, and solving a linear equation with variable on both sides and applying the distributive property.

page 1.) Solve linear equation with variables on both sides using the distributive property

page 1.) Find the units digit of a large number in exponential form by first finding the pattern cycle and then applying it

page 2.) write numbers in standard form in scientific notation

page 2-3.) write in another form using one base, identify as true or false, and simplify exponential expressions using factored form and properties of exponents

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

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

$$(a^m)^n = a^{mn}$$

$$a^0 = 1$$

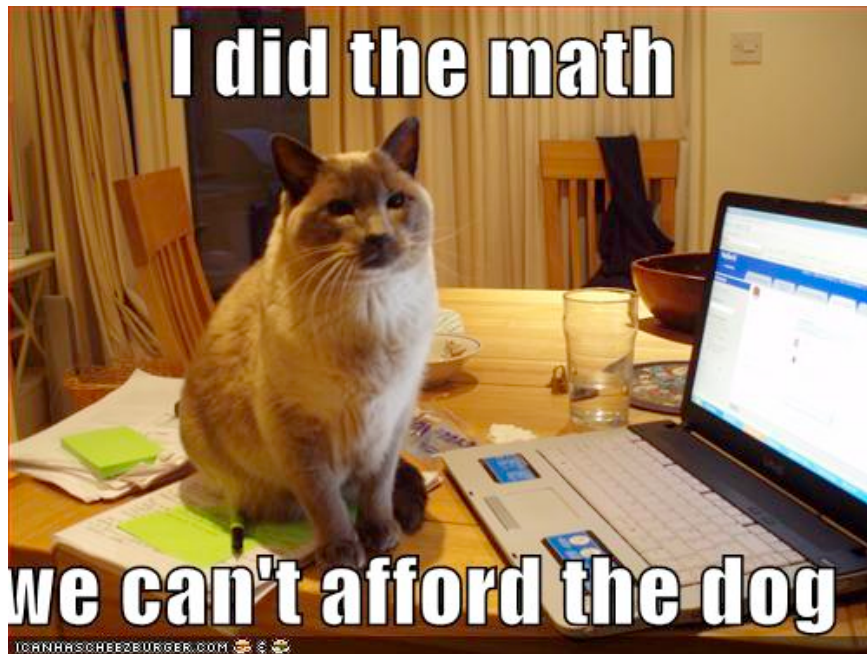
$$(ab)^m = a^m b^m$$

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

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

1.) Solve this linear equation with variable on both sides using the distributive property

$$34 - (45 - 4k) = 14 - 3(3K - 23)$$



Predict the ones digit for the standard form of the number.

1. 7^{100}

2. 6^{200}

3. 17^{100}

4. 31^{10}

5. 12^{100}



For Exercises 22–27, tell whether the statement is *true* or *false*. Explain.

22. $6^3 \times 6^5 = 6^8$

23. $2^3 \times 3^2 = 6^5$

24. $3^8 = 9^4$

25. $4^3 + 5^3 = 9^3$

26. $2^3 + 2^5 = 2^3(1 + 2^2)$

27. $\frac{5^{12}}{5^4} = 5^3$



Use the properties of exponents to write each expression as a single power. Check your answers.

19. $5^6 \times 8^6$

20. $(7^5)^3$

21. $\frac{8^{15}}{8^{10}}$



c. Write each number in scientific notation.

2,000,000

28,000,000

19,900,000,000

0.12489

0.0058421998

0.0010201



$$5.) (-4c^3f^2)^2(-ce^2f)^3$$

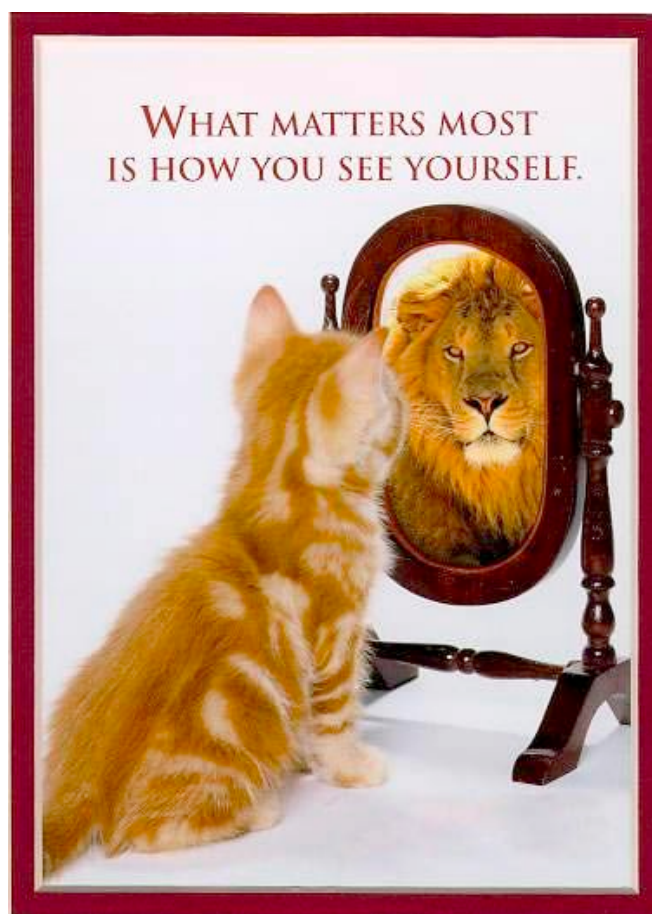
$$6.) (-3xyz^2)^3(-2x^2yz)^2$$



5.) $(-3c^3f^2)^{-2}(c^{-2}e^2f)^3$

6.) $(-3xyz^2)^3(6x^2yz)^{-2}$

F



$$3.) \frac{3xy}{2x} \cdot \frac{6xy^3}{3yz^3}$$

$$4.) \frac{-4a^3bc}{a^2bc} \cdot \frac{(3abc^3)^2}{-2abc^2}$$



$$5.) \left(\frac{2xy^{-2}z}{3x^{-2}yz^2} \right)^{-3}$$

$$6.) \left(\frac{3w^2xy}{2wx^{-2}y^3} \right)^{-3}$$



Answer Key from test outline questions:

Solve for $k = \frac{94}{13}$

Predict the ones digit: 1, 6, 1, 1, 6

True or false: T, F, T, F, T, F

Express as a single power:, 40^6 7^{15} , 8^5

Scientific notation: 2.0×10^6 ; 2.8×10^7 ;; 1.99×10^{10}
 1.25×10^{-1} ; 5.84×10^{-3} ; 1.02×10^{-3}

Simplify expressions:

5.) $-16c^9e^6f^7$

6.) $-108x^7y^5z^8$

5.) $\frac{e^6}{9c^{12}f}$

6.) $\frac{-3yz^4}{4x}$

3.) $\frac{3xy^3}{z^3}$

4.) $18a^2bc^4$

5.) $\frac{27y^9z^3}{8x^9}$

6.) $\frac{8y^6}{27w^3x^9}$