Unit 02 Outcomes

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LPT

Identify the exponent and base in a given expression.

For X^{y}
Base = X
Exponent = y

Describe the function of a positive exponent of base 10 as a multiplying factor.

For $A = 10^{y}$
Value of A = 10 x 10 x 10 (y times)
10^{2} = 10 x 10 = 100

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Describe the function of a negative exponent of base 10 as a dividing factor.

For $A = 10^{-y}$

Value of A = 1/10 x 1/10 x 1/10 (y times)

10^{-2} = 1/10 x 1/10 = 0.01

Recognize that the notation 10° is equal to one.

$$10^0 = 1$$

Identify in a measured quantity expressed in exponential form: coefficient, exponential, and unit label.

Coefficient x exponential units

where exponential = 10^x

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Convert any number in ordinary decimal form to exponential form, or any number in exponential form to ordinary decimal form.

Any number has a variety of exponentials:

Number	=	Coefficient x	exponential
n	=	C	x 10^{exponent}
33,700.	=	337,000.	x 10^{-1}
33,700.	=	33,700.	x 10^{0}
33,700.	=	3,370.	x 10^{1}

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Express any quantity in scientific notation

Number = C x $10^{exponent}$

where coefficient (C) is $1 \leq C < 10$

Add and subtract quantities in exponential notation and express results in standard exponential notation.

Calculator → do calculation

Manually → exponents must be equal to +/- coefficients

Recognize that to be added or subtracted numbers in exponential form must have the same exponent.

Multiply & divide quantities in exponential notation and express results in standard exponential notation.

This requires practice on personal calculator

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Express the following in scientific notation

0.0004589	4.5889×10^{-4}
12334	1.2334×10^{4}
56.7	5.67×10^{1}
337	3.37×10^{2}
56789	5.6789×10^{4}
0.0020	2.0×10^{-3}

Express the following in decimal notation

$8.532 \times 10^{-4} = 0.0008532$

$8.532 \times 10^{4} = 85320$

$8.532 \times 10^{0} = 8.532$

Calculate the following

$3.45 \times 10^{-4} \times 2.67 \times 10^{10} = 9.21 \times 10^{6}$

$(15.9 \times 10^{-3}) / (4.47 \times 10^{-3}) = 3.557$

$(7.24 \times 10^{-2}) \times [(2.68 \times 10^{7}) / (25.6 \times 10^{-4})] = 7.58 \times 10^{8}$

$[(125) / (4.2 \times 10^{-6})] \times [(458 \times 10^{-9})(345) / 10.3] = 4.57 \times 10^{2}$

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