

Working with Exponents

Part A

Complete the following table:

Power	Standard Form
2^0	
2^1	
2^2	
2^3	
2^4	
2^5	
2^6	
2^7	

Power	Standard Form
2^8	
2^9	
2^{10}	
2^{11}	
2^{12}	
2^{13}	
2^{14}	
2^{15}	

Part B

Use your calculator to complete the following calculations – then convert the solution back to power form using the table above.

Calculate	Standard Form	Power Form
$2^3 \times 2^5$		
$2^6 \times 2^9$		
$2^4 \times 2^3 \times 2^2$		
$2^0 \times 2^{10} \times 2$		

$2^1 \times 2^0$		
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Part C

Did you notice any patterns as you completed the exercises in part B? Explain.

Use the patterns you noticed to complete the table below.

Calculate	Power Form
$2^4 \times 2^9 \times 2^7$	
$2^{14} \times 2^3$	
$5^4 \times 5^3 \times 5$	
$7^2 \times 7^5$	
$3 \times 3^5 \times 1$	

Do you think it would be easier to do the calculations in the table above with or without a calculator? Explain.

Part D

Use your calculator to complete the following calculations – then convert the solution back to power form using the table from part A.

Calculate	Standard Form	Power Form
$2^5 \div 2^3$		
$\frac{2^{15}}{2^9}$		
$2^{14} \div 2^7 \div 2^2$		
$2^{10} \div 2^3 \div 2$		
$2^1 \div 2^0$		

Part E

Did you notice any patterns as you completed the exercises in part B? Explain.

Use the patterns you noticed to complete the table below.

Calculate	Power Form
$2^{30} \div 2^5 \div 2^2$	
$2^{34} \div 2^{23}$	
$5^{14} \div 5^3 \div 5$	
$\frac{7^5}{7^2}$	

$3^9 \div 3^5 \div 1$	
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Do you think it would be easier to do the calculations in the previous table with or without a calculator? Explain.

Part F

Can you use any of the patterns you noticed before to complete the following?

Calculate	Standard Form	Power Form
$2^3 \times 3^2$		
$4^6 \times 5^6$		
$2^4 \times 3^4 \times 5^4$		
$2^5 \times 5^2 \times 2$		
$0^2 \times 2^0$		

Why or Why Not?

Part G

Explain WHY this pattern occurs when you are multiplying or dividing powers.
