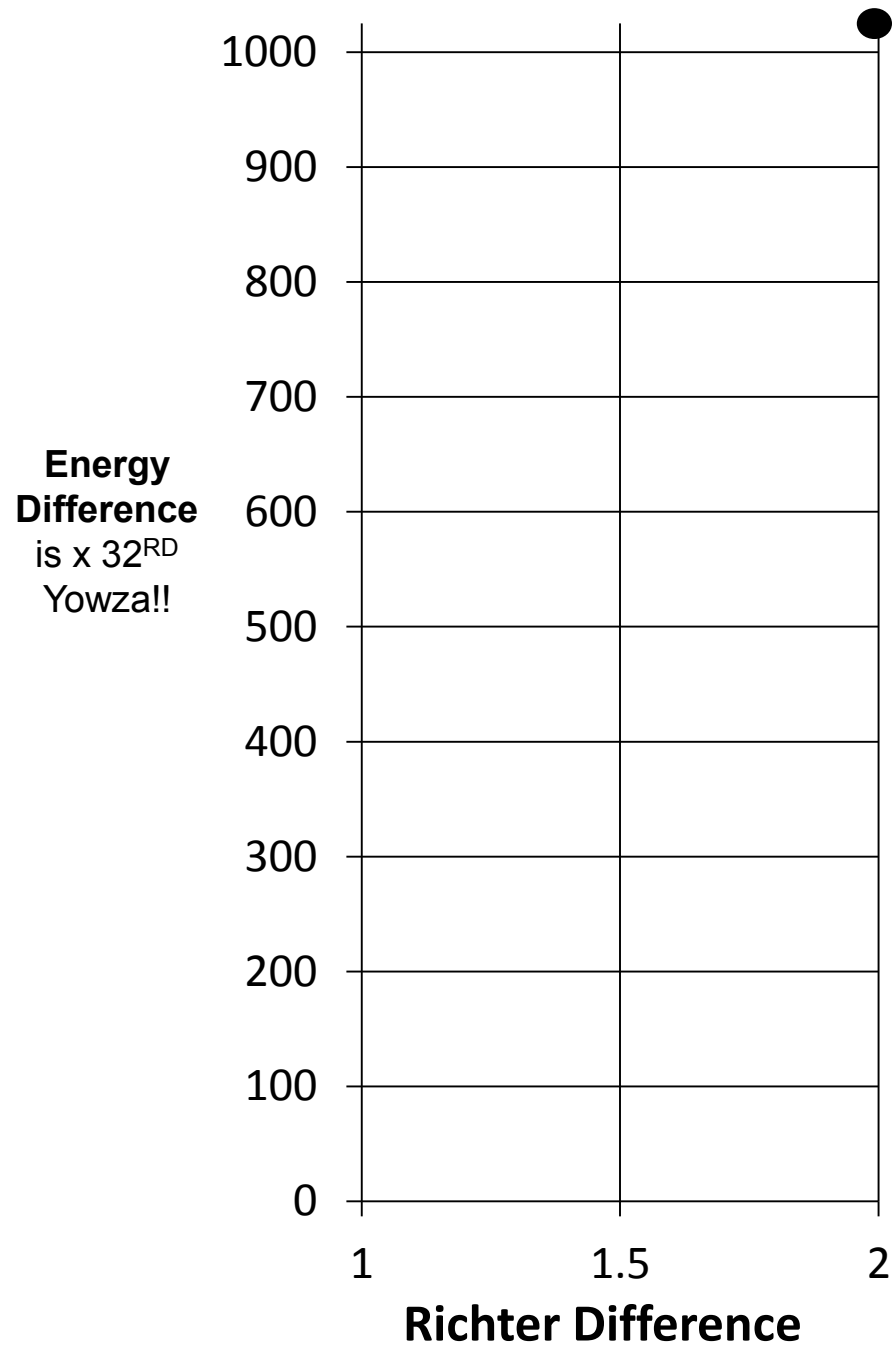
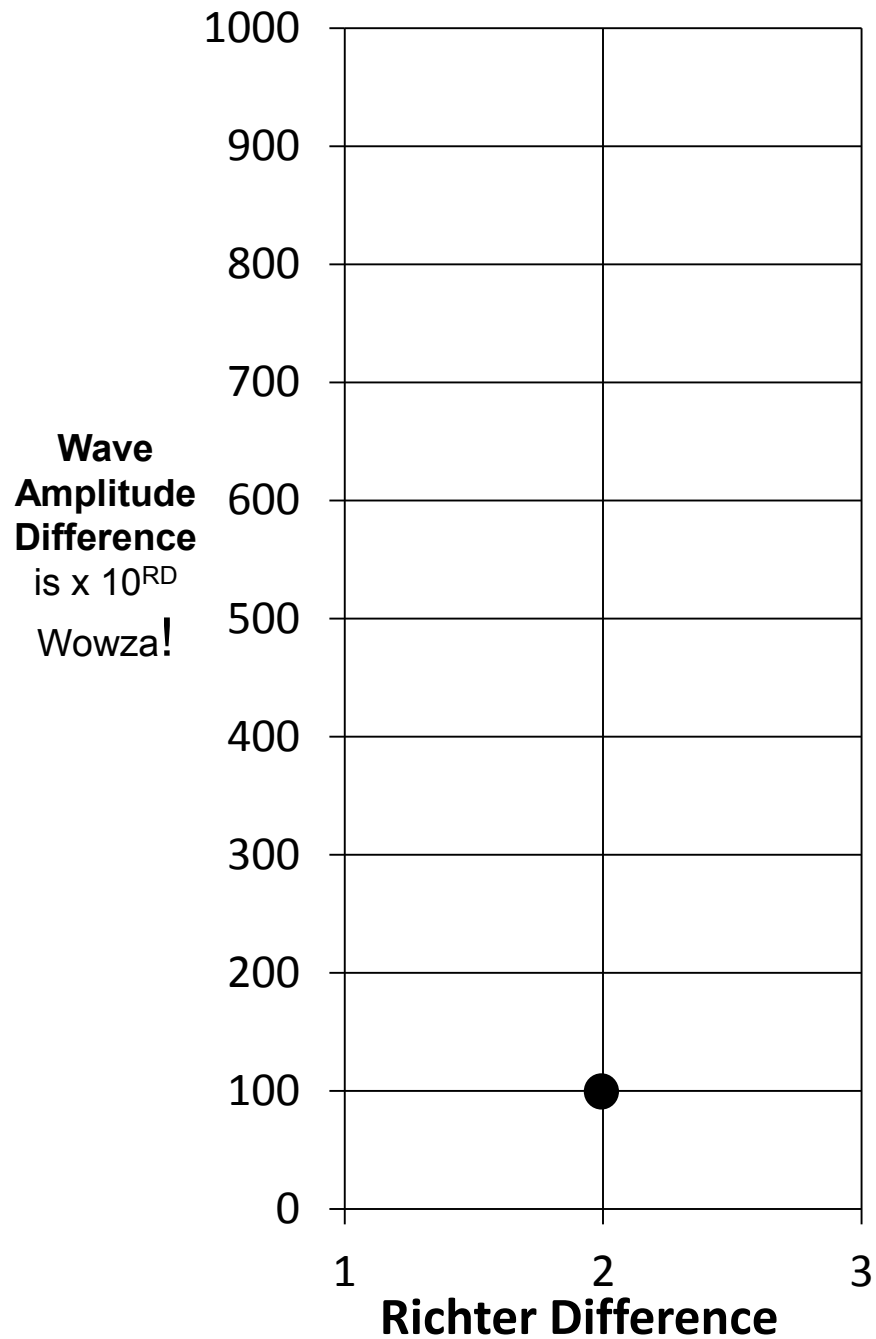


Base 10 Powers & the Richter Scale

Power Base # is Big # Exponent in the attic	Expanded Multiplication	Power Value = Product
10^1	10	10
10^2		
10^3	$10 \times 10 \times 10$	
10^4		
10^5		
10^6	$10 \times 10 \times 10 \times 10 \times 10 \times 10$	$1,000,000$
10^7		
10^8		
10^9		
10^{10}	$10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$	$10,000,000,000$

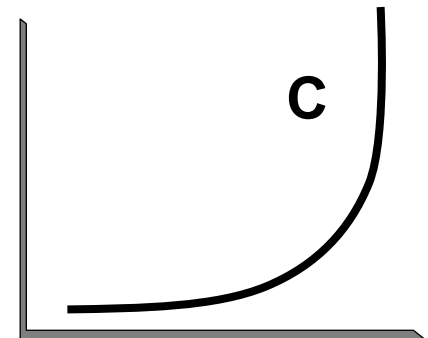
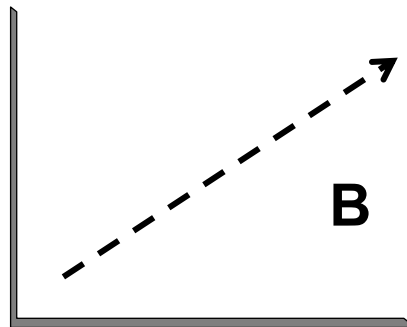
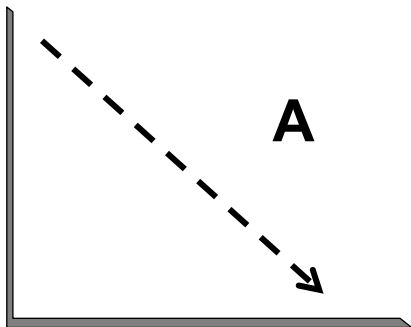
Earthquakes' Richter		Richter Difference (RD) = Bigger minus Smaller	Wave Amplitude Difference Power Expression	Wave Amplitude Difference Value	Energy Difference Power Expression	Energy Difference Value
Bigger	Smaller		= 10^(RD)		= 32^(RD)	
2	1					
5	3		10²		32²	
7	4					
9	5	4	10⁴			
8	3					
7	1				32⁶	1,073,741,824



D Analysis: Base 10 & the Richter Scale Last _____ first _____ Copyright © by Chris Brocci

1. 10^1 is 10. 10^2 is 100. 10^3 is 1,000. For Base10, the Exponent is the same as the # of: a) 1's b) 0's
2. 1 million is a 1 followed by **6** zeroes. So 1 million can be written as: a) 10^6 b) 10^9
3. 1 **Million** bytes in a Computer is called a **Megabyte**. This is the same as: a) 10^9 b) 10^6 bytes
4. 1 Billion is a 1 followed by **9** zeroes. So 1 billion can be written as: a) 10^9 b) 10^6
5. 1 **Billion** bytes in a Computer is called a **Gigabyte**. This is the same as: a) 10^6 b) 10^9 bytes
6. Earth's Population is more than 7 **Billion**. This is equal to: a) Pop $> 7 \times 10^9$ b) Pop $> 7 \times 10^6$
7. The Richter Difference between a Richter **6** and Richter **4** is just: a)0 b)1 c)2
8. But a Richter Difference of just 2 means the bigger Quake has: a)2x b)100x the Amplitude of the smaller one
9. And this also means that the bigger Quake has: a)32 b)1,024 times the Energy of the smaller quake!
10. What Richter Difference means the Bigger Quake has 1 Million (1,000,000) times the Amplitude? _____
11. What tiny Richter Difference means the Bigger Quake has 32 times the Energy of the Smaller one: _____
12. What Richter Difference means the Bigger Quake has between 1 & 2 million times the Energy? _____

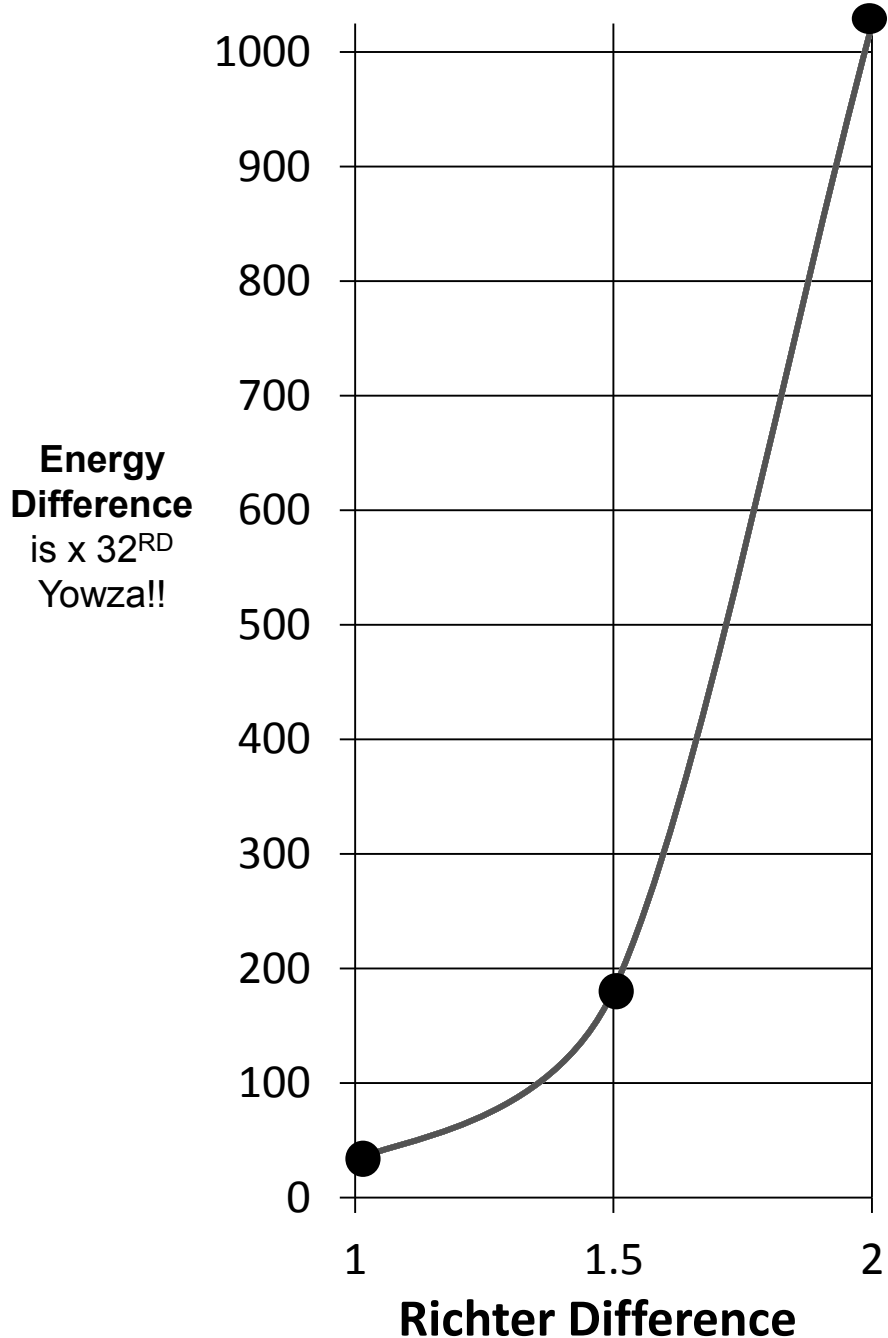
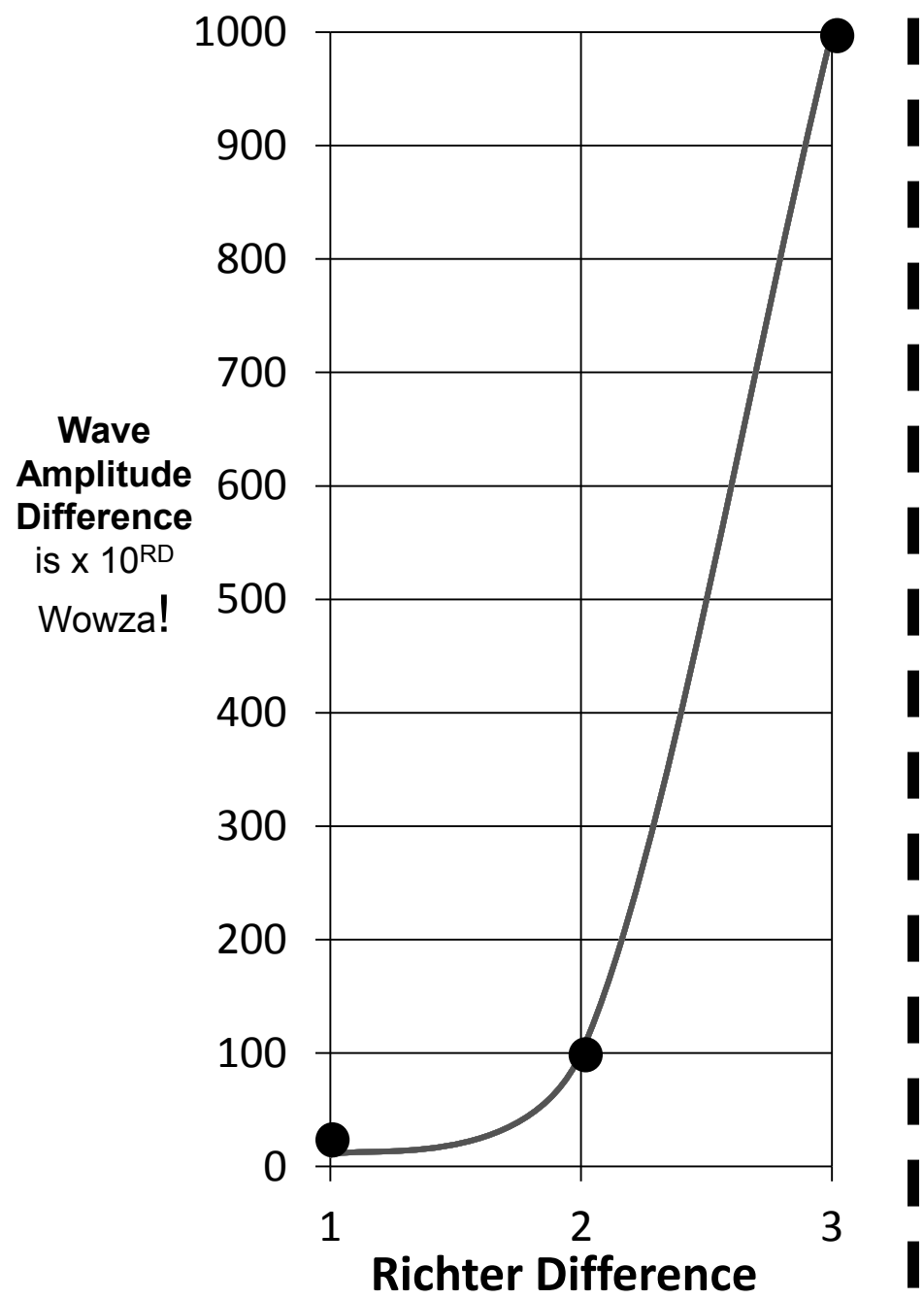
-
13. Which Graph shows something **increasing**, but at the same, **flat**, **Constant** rate? A B C
 14. Graphs that slope upwards like a **flat** ramp are: a)Accelerating b)Increasing, but at a constant/same rate
 15. Graphs that **CURVE UP** are: a)Accelerating faster & faster b)Increasing but at a constant/same rate
 16. Which Graph shows something **increasing** faster & faster (**Accelerating**)? A B C



-
17. Your Amplitude & Energy graphs: a)Increase slowly & steadily b)Increase Exponentially & Curve up sharply
 18. So, small Richter changes lead to: a)Small or steady changes b)HUGE changes in Amplitude & Energy

Power Base # is Big # Exponent in the attic	Expanded Multiplication	Power Value = Product
10^1	10	10
10^2	10 x 10	100
10^3	10 x 10 x 10	1,000
10^4	10 x 10 x 10 x 10	10,000
10^5	10 x 10 x 10 x 10 x 10	100,000
10^6	10 x 10 x 10 x 10 x 10 x 10	1,000,000
10^7	10 x 10 x 10 x 10 x 10 x 10 x 10	10,000,000
10^8	10 x 10 x 10 x 10 x 10 x 10 x 10 x 10	100,000,000
10^9	10 x 10 x 10 x 10 x 10 x 10 x 10 x 10 x 10	1,000,000,000
10^{10}	10 x 10 x 10 x 10 x 10 x 10 x 10 x 10 x 10 x 10	10,000,000,000

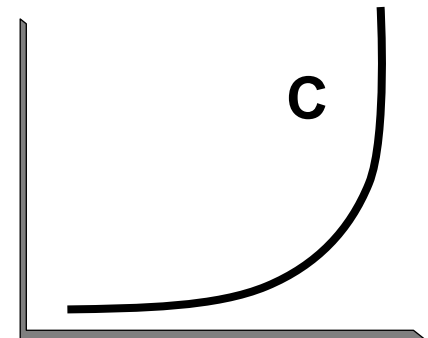
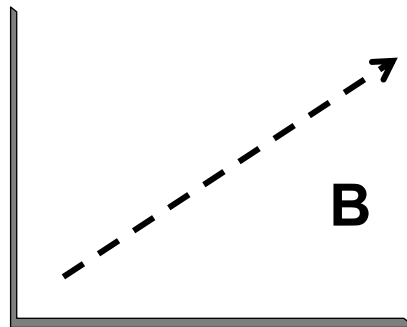
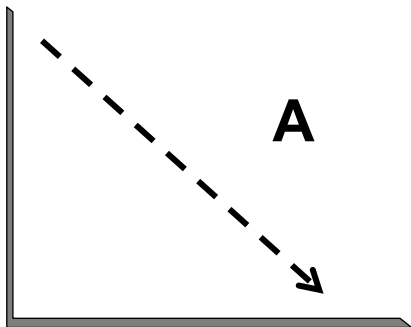
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Bigger	Smaller		= 10^(RD)		= 32^(RD)	
2	1	1	10 ¹	10	32 ¹	32
5	3	2	10 ²	100	32 ²	1,024
7	4	3	10 ³	1,000	32 ³	32,768
9	5	4	10 ⁴	10,000	32 ⁴	1,048,576
8	3	5	10 ⁵	100,000	32 ⁵	33,554,432
7	1	6	10 ⁶	1,000,000	32 ⁶	1,073,741,824



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9. And this also means that the bigger Quake has: a)32 **b)1,024** times the Energy of the smaller quake!
10. What Richter Difference means the Bigger Quake has 1 Million (1,000,000) times the Amplitude? 6
11. What tiny Richter Difference means the Bigger Quake has 32 times the Energy of the Smaller one: 1
12. What Richter Difference means the Bigger Quake has between 1 & 2 million times the Energy? 4

-
13. Which Graph shows something **increasing**, but at the same, **flat**, **Constant** rate? A **B** C
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