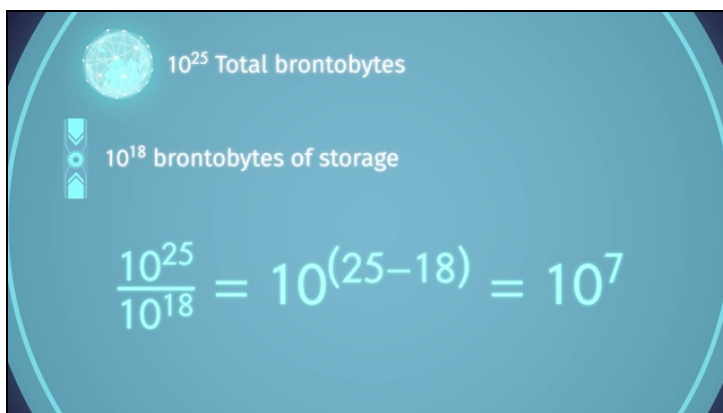




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Exponents and Division – the Quotient of Powers Property



- 1 Describe the quotient of powers property.
- 2 Explain how to divide 2^5 by 2^3 .
- 3 Determine the number of hard drives AA-RNO needs to store an entire copy of the internet.
- 4 Decide which division the quotient of powers property can be used.
- 5 Examine the growth of the internet data volume between 3008 and 8008.
- 6 Carry out the following divisions.
- + with lots of tips, answer keys, and detailed answer explanations for all of the problems.



The complete package, including all problems, hints, answers, and detailed answer explanations is available for all [sofatutor.com](https://www.sofatutor.com) subscribers.



Describe the quotient of powers property.

Choose the correct statements.

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

- A
It's very important that the basis are the same.
- B
This rule also works for different basis.
- C
For different basis we keep the basis of the denominator.
- D
Subtract the exponent of the denominator from the exponent of the numerator.
- E
Subtract the exponent of the numerator from the exponent of the denominator.



Hints for solving these problems

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Describe the quotient of powers property.

Hint #1

Remember that $a^n = \underbrace{a \times \dots \times a}_{n \text{ times}}$

Hint #2

$$\frac{3^5}{3^2} = \frac{3 \times 3 \times 3 \times \cancel{3} \times \cancel{3}}{\cancel{3} \times \cancel{3}} = 3^3$$

In this example, we can see that the two 3's in the denominator cancel out with two of the 3's in the numerator.

Hint #3

$$\frac{2^5}{3^2} = \frac{2 \times 2 \times 2 \times 2 \times 2}{3 \times 3}$$

In this example, nothing in the denominator can cancel out with anything in the numerator.



Answers and detailed answer explanations for these problems

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of 6

Describe the quotient of powers property.

Answer key: A, D

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

This is the formula for the quotient of powers property.

Let's talk about what it means. This property assists with simplifying powers, but only if they have the same basis.

When dividing powers with the same basis, you can simply subtract the exponent of the denominator from the exponent of the numerator and raise the common basis to the result.