# A whopper of a number

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Model theory? Whassat?

Can't get no satisfaction

A really big number

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# Models and theories

• Model theory = Models + Theories.

A really big number

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- A theory:
  - $\forall x \forall y \forall z (x \cdot y) \cdot z = x \cdot (y \cdot z)$
  - $\forall x \ x \cdot e = e \cdot x = x$
  - $\forall x \exists y \ x \cdot y = e$ .

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- Models:

•  $(\mathbb{R}^{\times}, \times, 1).$ 

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## Compactness

#### Theorem (Gödel's compactness theorem)

# A theory T is satisfiable if and only if every finite subset of T is satisfiable.

Proof.

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#### Proof.

Ask Dave.

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- PA tell you about "=", "1", and "+1".

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- $\omega = \text{big.}$

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- Exists thing that looks like  $\mathbb N$

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- $\omega = \text{big.}$
- Exists thing that looks like N, but has a *really* big number in it.