A GCSE maths question on recurring decimals

Prove algebraically that $0.2\dot{3}\dot{4} = \frac{116}{495}$

Let $x = 0.2\dot{3}\dot{4}$

Multiply by 10 to obtain a pure recurring decimal.

$$10x = 2.\dot{3}\dot{4}$$

Multiply by 100 to obtain a different number with the same recurring decimal.

$$1000x = 234.\dot{3}\dot{4}$$

Subtract one equation from the other.

$$990x = 232$$

So

$$x = \frac{232}{990} = \frac{116}{495}$$

$$0.2\dot{3}\dot{4} = \frac{116}{495}$$

Bury Maths Tutor