

Name _____

Class _____

Date _____

By the end of this worksheet I can...

- ☐ explain what strain is
- ☐ calculate strain using $\epsilon = \Delta L \div L$
- ☐ rearrange the formula to find a change in length or an original length
- ☐ use the same units for both lengths

I DO**Key ideas and worked example** Read this first

Strain compares how much a member stretches (or squashes) with its original length.

$$\epsilon = \Delta L \div L$$

Strain = change in length $\div$ original length

- Both lengths in the same units (usually mm)
- Strain has no units

Remember

Convert first: 4.0 m = 4000 mm.

A 4.0 m steel wire stretches by 2.5 mm when loaded.

Example Calculate the strain.

Worked answer set out every step like this

$$L = 4.0 \text{ m} = 4000 \text{ mm}$$

$$\epsilon = \Delta L \div L = 2.5 \div 4000$$

$$\epsilon = 0.00063 \text{ (no units)}$$

YOU DO

On your own Show your working. Check your answers afterwards.

1 A 10 m wire stretches 5.0 mm when a force is applied. Calculate the strain.

2 The allowable strain on a bar is 0.0075 and its length is 2.5 m. Calculate the change in length.

3 During testing a steel rod stretches 0.6 mm and the strain is 0.0012. Calculate the original length of the rod.

Check and reflect

Mark your answers with the answer sheet. Which “I can” statement above still needs work? Look back at the notes for that topic on the site.
