




# Mathematical Mindsets

In Mathematics, the students in 5/6M have been exploring the role of the **Skeptic** and the **Convincer**.

A **Skeptic**, is someone who asks lots of questions; they want an answer to be justified to them so they can really understand the mathematical process – they are not easily convinced!

Whereas, a **Convincer**, wants to explain how they were able to find their answer to others. They look at a problem and assess it from every angle, in order to use mathematical language to convince others that their thinking is correct.

It is important for all children to understand that mathematical learning is about understanding concepts and exploring ideas; it is not just about getting the correct answer. In fact, research has proven that while learning new mathematical concepts, students learn best when they make mistakes and have to work extra hard to solve the problem. Everyone can learn Mathematics!



David

$$\begin{array}{r}
 1014 \text{ r}5 \\
 36 \overline{)36509} \\
 \underline{36} \phantom{09} \\
 050 \phantom{9} \\
 \underline{36} \phantom{9} \\
 149 \phantom{9} \\
 \underline{144} \\
 5
 \end{array}$$

**Skeptic**  
Long Division

$$\begin{aligned}
 36 \times 2 &= 72 \\
 36 \times 3 &= 108 \\
 36 \times 4 &= 144
 \end{aligned}$$



What questions would you ask?

- How do you know the remainder is 5?
- Is 1014 the correct answer?
- Did you check that you carried numbers correctly?



**Convincer**  
Indices

$$= 12 \times 12 \times 12$$

$$12^3 = 1728$$

$$\begin{array}{r}
 12 \times 12 = 144 \\
 144 \\
 \times 12 \\
 \hline
 288 \\
 1440 \\
 \hline
 1728
 \end{array}$$

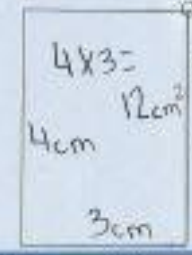
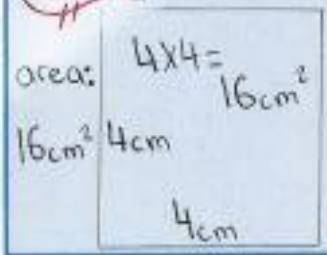
How can you convince someone that you're correct?

- $12^3$  is  $12 \times 12 \times 12$ .
- $12 \times 12$  is 144 and  $144 \times 12$  is 1728.

**Area**

**Skeptic**

Calculate the areas in  $\text{cm}^2$ .



area:  $12 \text{cm}^2$



What questions would you ask?

- How do you know it is 4cm by 4cm?
- How do you know it is 4cm by 3cm?
- Why is it  $\text{cm}^2$ ?



Measure **Convincer** the angles

**Angles**

$130^\circ$

$45^\circ$

How can you convince someone that you're correct?

- I used a protractor.
- I used the protractor correctly.
- I measured from 0.