

Domain 3 - Develop Expert Mathematics Learners

Element 3.1 - Teach students how to learn





Strategy

From Information to Understanding

Technique

Compare and contrast: Ask students to identify similarities and differences.

Level	Before	After	
	Rectangles can look different. Can you recognise different	These shapes are all rectangles. What's the same about all of the rectangles?	

types of rectangles? Colour all 5 rectangles.



What's different about them?

Would it help if you cut the shapes out and moved them around?

Do rectangles need to be long and thin?

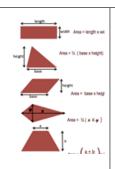
Do rectangles need to have sides that are horizontal/vertical?



Secondary

A review of area calculations:

Using these formulae, find the area of the shaded regions in the exercise below.



A review of area calculations:

- 1. Label the dimensions that you might measure to calculate the area of each of these polygons and write the formula that you would use.
- 2. Check with a partner to see if you have the same/different ideas about:
 - a. the dimensions that you would measure.
 - b. how they would be used in the formula.
- 3. What's the same about each of the formulae? What's different about them? (Did you notice that all formulae involve multiplication of two lengths? The triangle and kite also involve a multiplication by ½. Why?)
- 4. What's the same about the dimensions that you have labelled? What's different about them? (Did you notice that the dimensions are always perpendicular to each other. Why?)

How do you think the technique Compare and contrast might support *Element 3.1 - Teach students how to learn?*

There are many ways to articulate this relationship. One response to this question has been provided on the next page.



ELEMENT

Domain 3 - Develop Expert Mathematics Learners

Element 3.1 - Teach students how to learn



How does the technique Compare and contrast support Element 3.1 - Teach students how to learn

Challenging students to 'compare and contrast' will not automatically lead towards an understanding of 'how to learn'. However, teachers can intentionally support students to reflect on the effect that comparing and contrasting has on their understanding.

In the Secondary Years example, where the students compare and contrast area formulae, teachers could ask:

- How did comparing the area formulae affect your understanding about each of the individual formulae?
- How could this understanding be useful in the future?

In the Primary Years example, students need to notice and bear in mind their observation about one feature of a rectangle while they look for the same feature in the other rectangles. Teachers can explicitly model choosing one feature to think about and really focus on (perhaps even saying it out loud to yourself), while checking that feature against other rectangles. Through modelling strategies for thinking and learning, teachers support the development of students' learning skills.