



## ELEMENT Domain 2 - Create Safe Conditions for Rigorous Mathematics Learning

# 2.2 Element 2.2 - Build a community of learners

The following suggestions for practice are extracts from the 'Transforming Tasks' module on the Leading Learning resource:

### Strategy

**From Closed to Open**

### Technique

**Different perspectives:** Have students explore different points of view.

Level	Before	After																
Primary	<p>Answer these questions:</p> <p>4 x 3, 7 x 3, 9 x 3 etc up to 12 x 3</p>	<p>Think about how you would sort the following multiplication questions into three levels of difficulty:</p> <p>Harder, medium, easier:1 x 3, 2 x 3, 3 x 3 etc, up to 12 x 3</p> <div><div>Harder</div><div>Medium</div><div>Easier</div></div> <ul style="list-style-type: none"><li>Deal out the x3 cards and work in a group to place each card in the place that best describes its difficulty for you. Do you all agree?</li><li>Take turns to move a card to a different section if you think it has a different level of difficulty for you. Explain why you find it hard/easy. Did anyone find their opinion changed when listening to the ideas and reasoning of others?</li></ul>																
Secondary	<p>Answer these questions:</p> <table><tr><td>Half of 32</td><td>0.25 x 68</td></tr><tr><td>¼ of 48</td><td>¼ of 32</td></tr><tr><td>32 x 0.5</td><td>½ of 32</td></tr><tr><td>68 divided by 4</td><td>48 x 0.25</td></tr></table>	Half of 32	0.25 x 68	¼ of 48	¼ of 32	32 x 0.5	½ of 32	68 divided by 4	48 x 0.25	<p>Individually, sort the following questions into at least two groups of your own choosing.</p> <table><tr><td>Half of 32</td><td>0.25 x 68</td><td>¼ of 48</td><td>¼ of 32</td></tr><tr><td>32 x 0.5</td><td>½ of 32</td><td>48 x 0.25</td><td>68 divided by 4</td></tr></table> <p>In pairs, share your individual thinking and try to find at least one more way to sort this collection of questions. Share your thinking with another pair. Share your thinking with the class.</p> <ul style="list-style-type: none"><li>Did anyone else sort the questions in the same ways as you?</li><li>Did anyone else sort the questions differently from you?</li><li>Why might they have sorted their questions like this?</li></ul> <p>Check with the students who presented that grouping. Summarise the connections that have been made.</p>	Half of 32	0.25 x 68	¼ of 48	¼ of 32	32 x 0.5	½ of 32	48 x 0.25	68 divided by 4
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**How do you think the technique **Different perspectives** might support *Element 2.2 - Build a community of learners*?**

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



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# 2.2

## Element 2.2 - Build a community of learners



### How does the technique **Different perspectives** support *Element 2.2 - Build a community of learners*?

When teachers use this transformation technique to design learning in which students share different perspectives they provide opportunities for students to become aware of the range of ways in which individuals think and process information. Teachers can support students to notice the effect that hearing their peer's perspective has on their own thinking. For example, in relation to the Primary Years times table example, it is relatively common for students who initially identify  $9 \times 3$  as a difficult question, to later decide that it can be thought of as a medium or easy question. They usually experience this change in thinking through listening to a peer explain that they see  $9 \times 3$  as, 3 less than ten-threes (3 less than 30). When teachers support students to share their perspectives about mathematical procedures, or connections, they create the conditions for students to become a community of learners, in which there are many teachers and many learners.



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# 2.2 Element 2.2 - Build a community of learners

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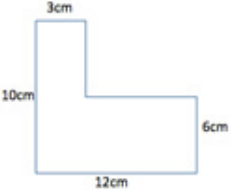
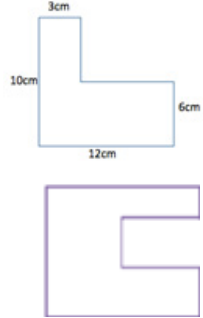


**Strategy**

**From Closed to Open**

**Technique**

**Many pathways:** Ask for one problem to be solved in **multiple ways**, rather than multiple problems in **one way**.

Level	Before	After
Primary	<p>Calculate:</p> $39 + 43$	<p>Find at least two different ways to do the calculation:</p> $39 + 43$ <p>Share your methods with another student. Together, try to identify at least three different methods.</p> <ul style="list-style-type: none"> <li>Identify which method is the most efficient for this calculation.</li> <li>Identify which methods are best for mental calculation.</li> <li>Identify if some methods would be better than others for addition sums with larger values.</li> </ul>
Secondary	<p><b>Calculate the area of this shape:</b></p> 	<p>Calculate the area of this 'L' shape in at least two different ways.</p> <ul style="list-style-type: none"> <li>Share your methods with another pair of students. Work together to try to identify at least three different methods.</li> <li>Do you think that one method was easier or more effective than another method? Why?</li> <li>Would one of your methods be more efficient than another if the shape was like this one? Why/why not?</li> </ul> 

**How do you think the technique **Many pathways** might support *Element 2.2 - Build a community of learners*?**

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



## ELEMENT Domain 2 - Create Safe Conditions for Rigorous Mathematics Learning

# 2.2

### Element 2.2 - Build a community of learners



#### How does the technique **Many pathways** support *Element 2.2 - Build a community of learners*?

The emphasis of this transformation technique is to challenge individual students to explore many pathways for themselves, before expanding their repertoire through sharing ideas with peers. Once students are ready to share their 'pathways', teachers can support the development of a community of learners through using a range of processes for sharing. Processes, which can be agreed upon and established as a group, could include:

- random selection of a sharing partner (using named pop-sticks, or a digital generator of random pairs)
- partnering, or grouping, of students who identify as confident with this learning with those seeking a peer tutor for the learning.