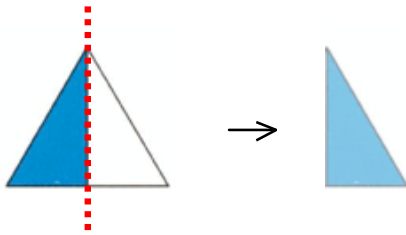


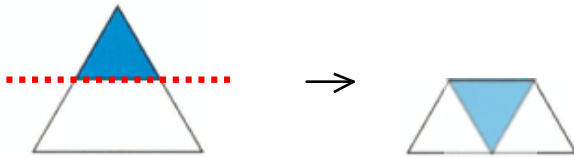
Half of a Whole Task: Sample Solutions

Students can use a variety of strategies to show that one-half is shaded in Figures (a) – (j) and that one-half is not shaded in Figures (k) and (l), as described below.

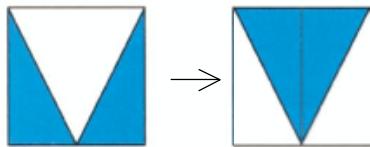
Folding. In this strategy, students fold the figure along the segment that separates the shaded part from the unshaded part and will notice that the shaded part is the same size (and shape) as the unshaded part. For example, this strategy can be used to show that one-half is shaded in Figure (h):



This strategy can also be used to show that one-half is shaded in Figures (a), (b), (e), (h), and (j) and that one-half is not shaded in Figures (k) and (l). For example, in Figure (l) the shaded part covers some, but not all, of the unshaded part, as shown below:



Cutting and rearranging. In this strategy, students cut out the pieces of each figure and rearrange them to determine if the shaded piece(s) are the same size as the unshaded piece(s). This strategy can be used for all of the figures, but it is especially useful for Figures (f) and (g) because the folding strategy (described above) cannot be used. For example, the shaded parts in Figure (g) can be rearranged to cover the unshaded parts, as shown below:



Copying the shaded part(s) to make a whole. If students have multiple copies of the figures, they could cut out the shaded parts of a figure, and show that putting both shaded parts together makes the whole. Students can then reason that if two shaded parts can make the whole, then each shaded part must be one-half. For example, two copies of the shaded piece in Figure (f) can be rearranged to make the whole:



Comparing to a previously-known figure. In this strategy, students can reason that figures whose shaded amount is the same as a previously-known figure, then that figure also has one-half shaded. For example, if students know that one-half is shaded in Figure (e), they can argue that Figure (a) must also have one-half shaded because the shaded amount in Figure (a) is the same size as that in Figure (e). This strategy can be used on Figures (c) and (d) if students cut out the pieces and rearrange them to look like Figure (e) as well as Figures (i) and (h) or (j), if students cut out the pieces and rearrange them to look like Figure (h) or (j).