



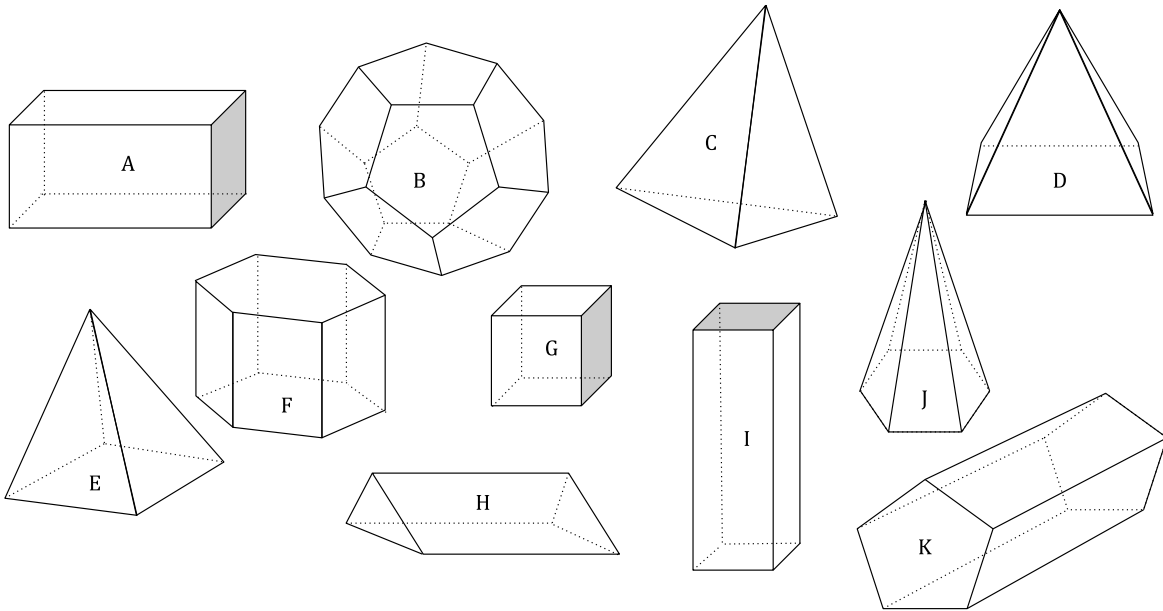
Problem of the Week

Problem A and Solution

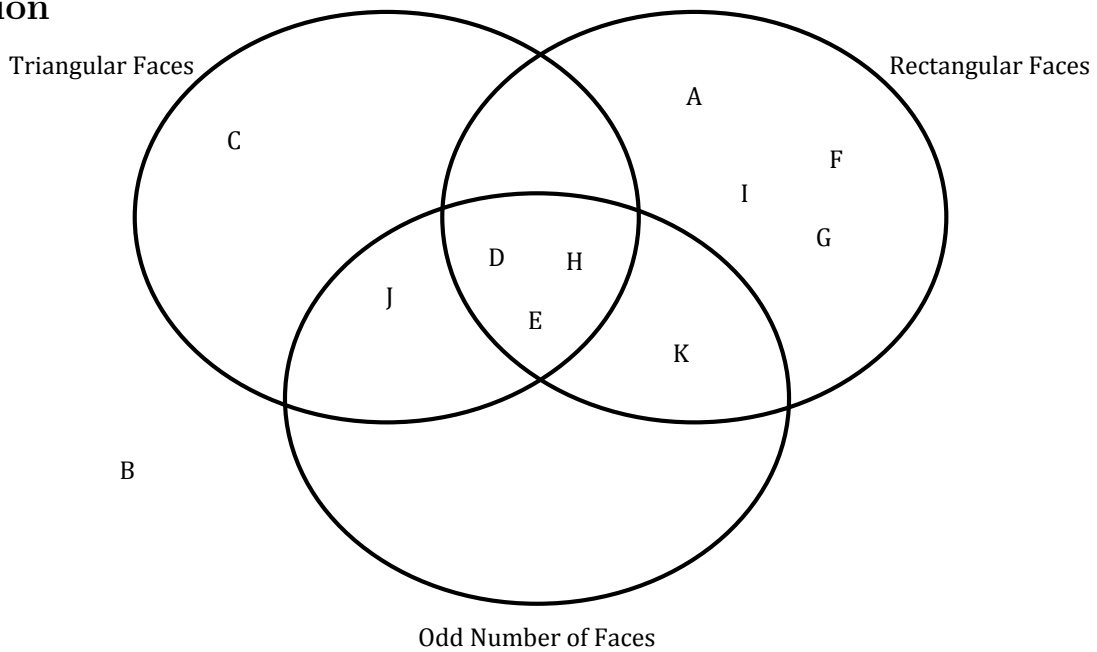
Sorting Solids

Problem

Use the Venn diagram below to classify the solids labelled with the letters A - K.



Solution





Teacher's Notes

You might notice in the solution that there are no examples of solids that have both triangular faces and rectangular faces but have an even number of faces. This is because all of the solids shown that have triangular faces and rectangular are either prisms or pyramids. When these shapes are formed, we either need to connect triangles to the sides of a single rectangle or connect two triangles using rectangles. In the first case we have one face from the rectangle and four faces from the triangles on each side. This is a total of five faces which is an odd number. In the second case, we have two faces from the triangles at the ends of the prism connected by three rectangles that are attached to the sides of the triangles. Again this is a total of five faces which is an odd number. Any prism or pyramid formed by using only triangles and rectangles must have an odd number of faces.

However, it is possible to form a solid that has an even number of faces with triangular and rectangular faces by introducing another polygon. An example of this is an *antiprism*. For more information about antiprisms, you can look at the Wikipedia page <https://en.wikipedia.org/wiki/Antiprism>.

