

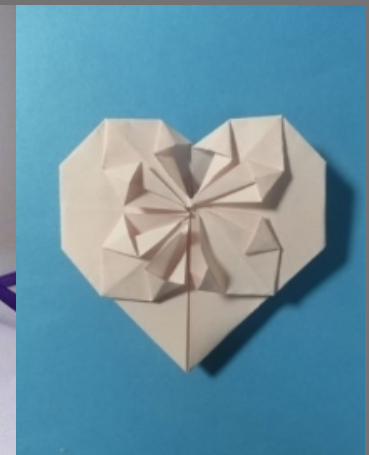
折纸艺术欣赏



图片来源: Veer图库 www.veer.com



shouyihuo.com



鲁教版九年级下册综合与实践

折纸与数学

It is made of silk and it is very fine. It is very soft and it is very strong. It is very beautiful and it is very useful. It is very important and it is very interesting. It is very old and it is very new. It is very small and it is very big. It is very light and it is very heavy. It is very easy and it is very hard. It is very simple and it is very complex. It is very common and it is very rare. It is very cheap and it is very expensive. It is very good and it is very bad. It is very nice and it is very ugly. It is very kind and it is very cruel. It is very gentle and it is very violent. It is very calm and it is very angry. It is very happy and it is very sad. It is very healthy and it is very sick. It is very young and it is very old. It is very smart and it is very stupid. It is very brave and it is very cowardly. It is very honest and it is very dishonest. It is very kind and it is very unkind. It is very generous and it is very selfish. It is very helpful and it is very unhelpful. It is very friendly and it is very unfriendly. It is very polite and it is very impolite. It is very clean and it is very dirty. It is very neat and it is very messy. It is very organized and it is very disorganized. It is very tidy and it is very untidy. It is very neat and it is very messy. It is very organized and it is very disorganized. It is very tidy and it is very untidy.



活动目标

- 1、经历“想一想—折—折—做—做”的过程，进一步锻炼把折纸问题转化为数学问题的能力，理解折纸与尺规作图原理、轴对称变换等有关知识之间的联系。
- 2、会根据折纸基本操作方法折叠出一些规定的图形，发展学生的动手能力。
- 3、培养学生合作交流的意识，发展数学思维能力。



想一想，折一折

你能想出几种特殊的折法？
每种折法里蕴含着什么数学知识？
把你的想法和自己小组的小伙伴们分享一下。

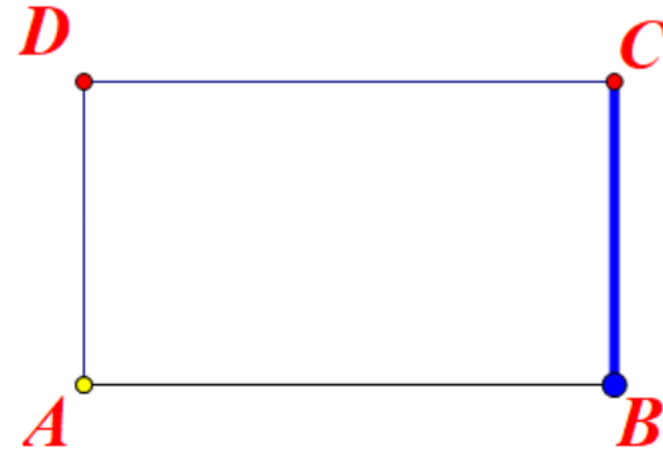
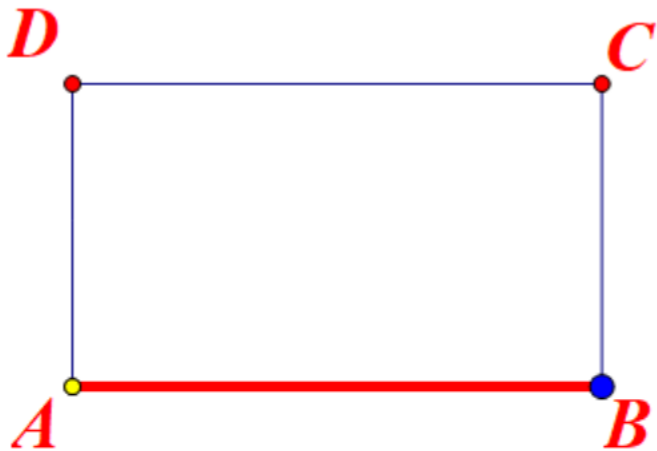


合作规则

- 1、以前后四人为一个小组；
- 2、尝试提出不同的折法；
- 3、每一个小组将想到的折法推选出一位展示人，负责到前面为同学们展示。

想一想，折一折

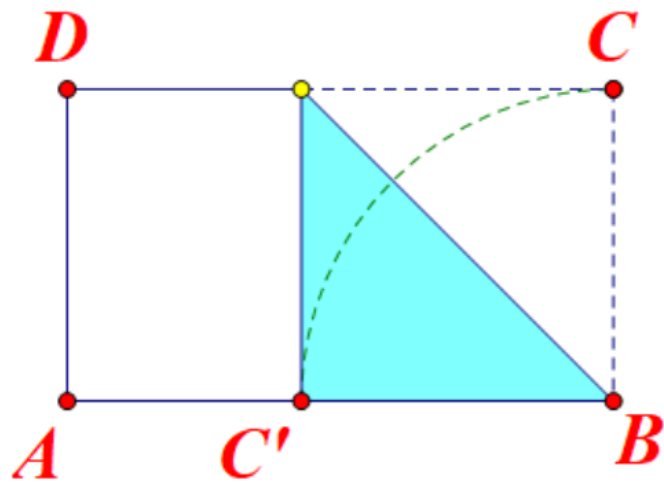
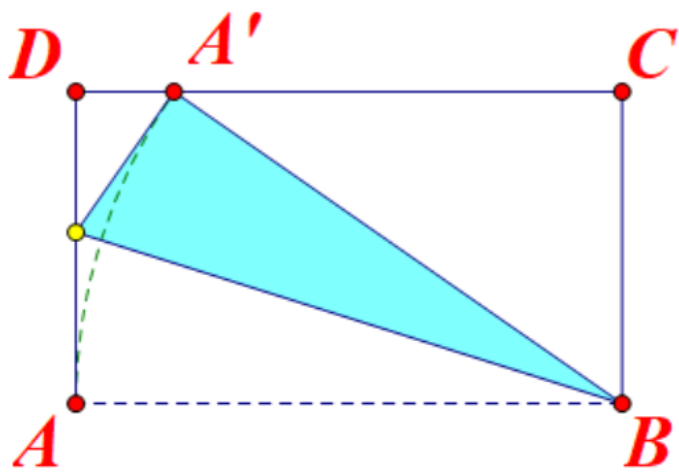
折纸要求: B点不动, 将 AB边折起, 随着AB边在纸面上移动, 点A也在移动, 直到点A最终落在 DC边上的 A' 处时, A点的运动轨迹是什么?
若点 B不动, 将BC边折起, 能否使点C落在 AD边上? 为什么?



矩形折叠.GSP

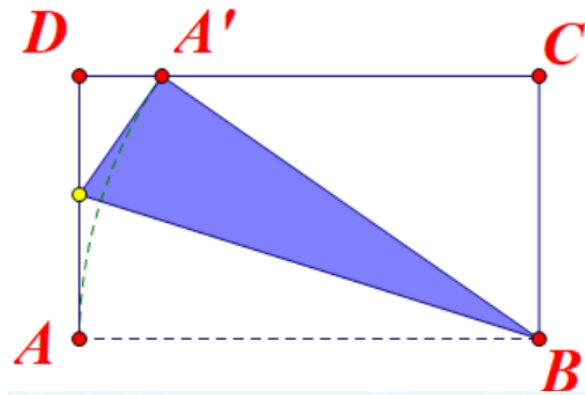
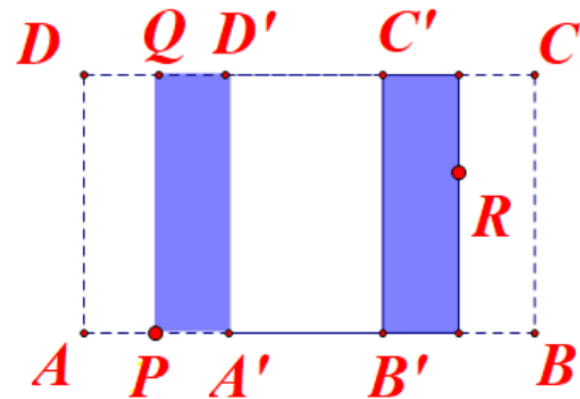
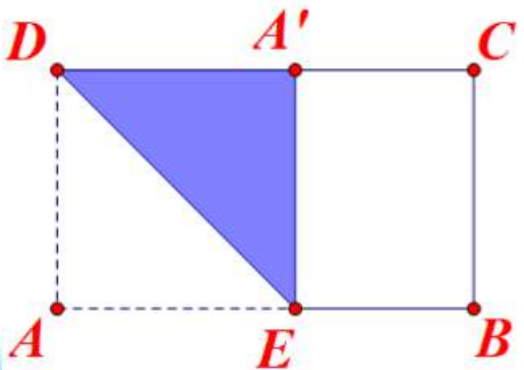
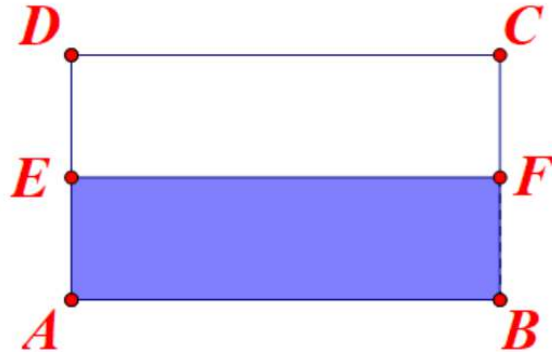
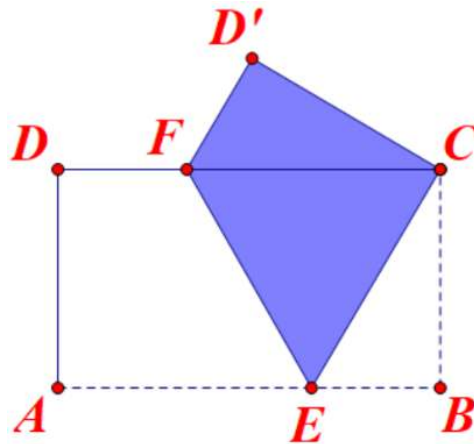
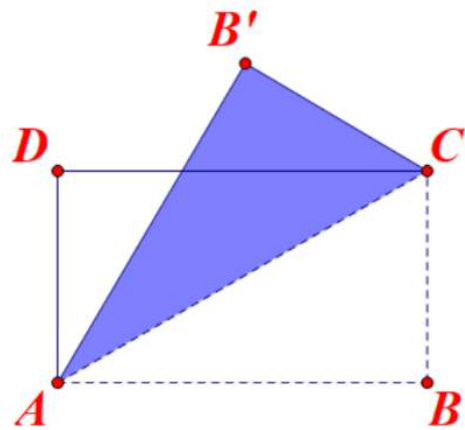
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若点B不动, 将BC边折起, 能否使点C落在AD边上? 为什么?



小结论：折纸与轴对称的联系

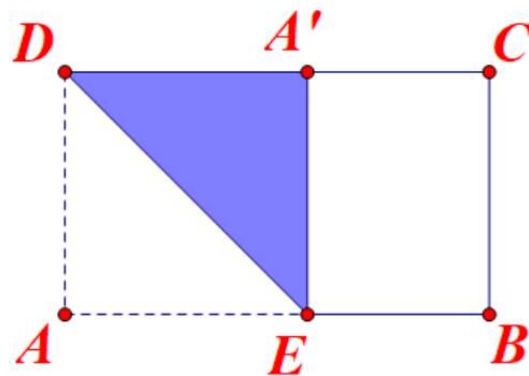
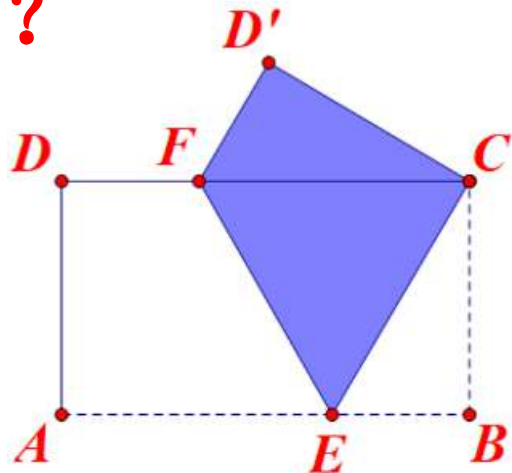
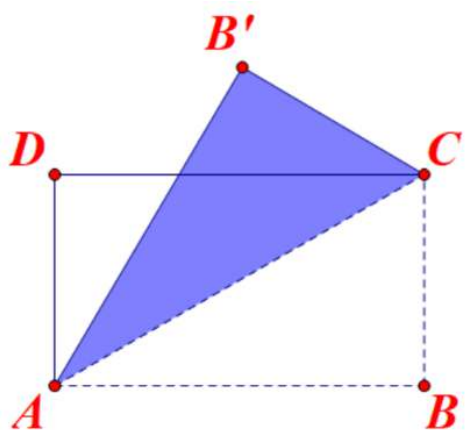
将一张纸上一条直线一侧的图形绕这条直线翻折 180° ，
翻折前后的两个图形关于这条直线(折痕) **成轴对称**



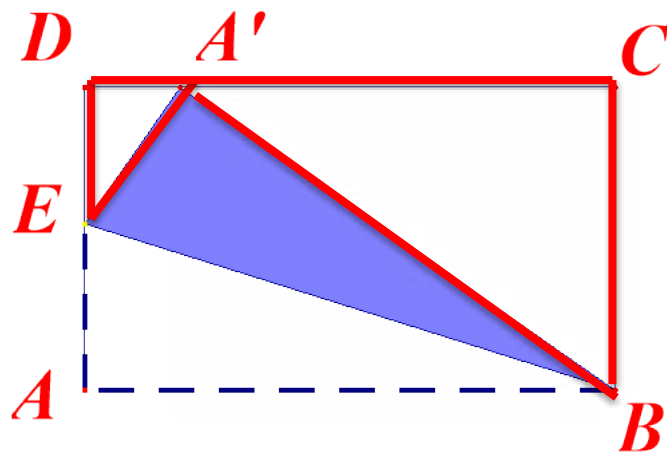
慧眼识珠

六种基本折法中还蕴含着什么数学知识

?



角平分线+平行 \longrightarrow 等腰三角形



一线三等角模型图



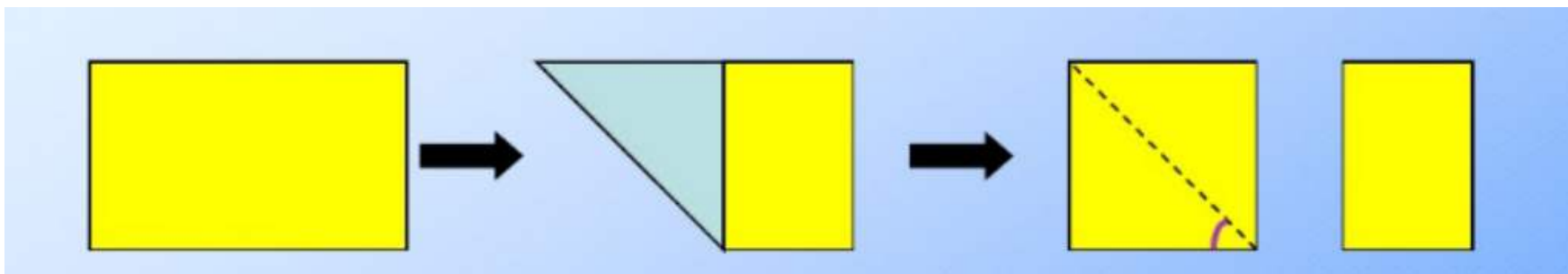
评价量规

能折出4-5种基本折法图 +10分

能找出4-5种折法图隐藏的数学知识，并能说出理由+15分

折一折，做一做

不用任何作图工具，利用矩形纸，怎么折出 45° 角？（是哪个基本图形的用法）



你还能折出多少度的角呢？

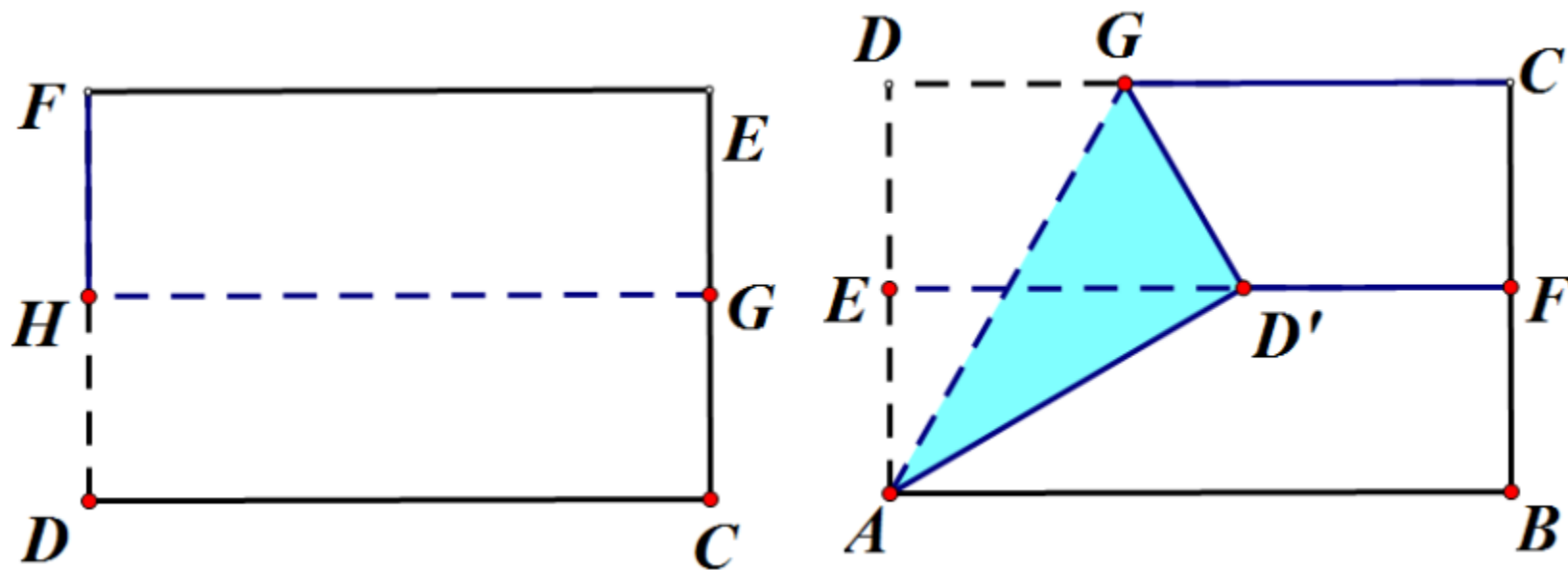


折一折，做一做

活动1： 一张矩形纸片，长与宽的比是2:1，你能否只折叠一次就得到 30° 的角？



活动2: 小明认为, 任意一张矩形纸片, 折两次就可以折出 30° 的角, 你能说明小明这种折法的道理吗?



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