Reflection investigation – Protractor mirrors

Problem:

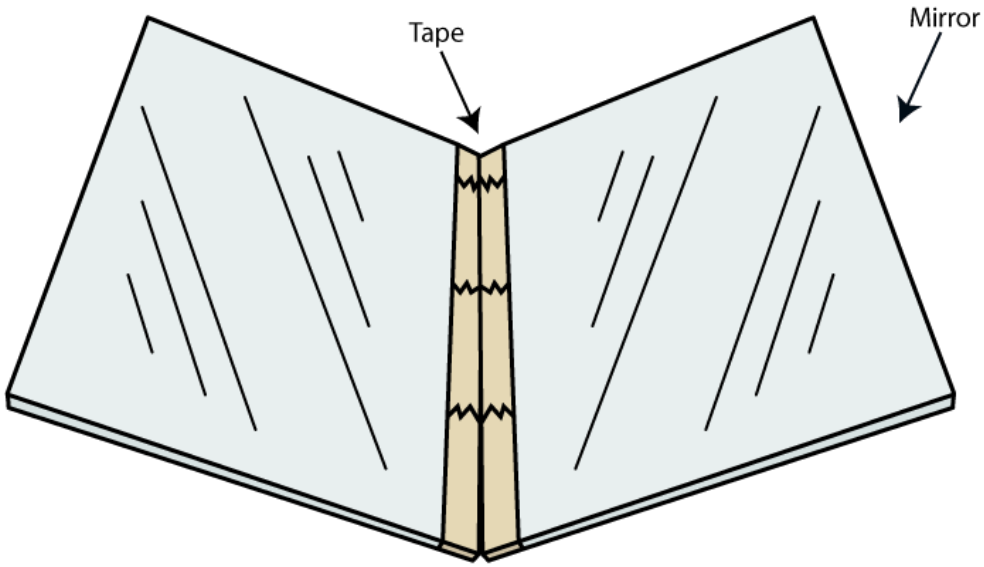
How does the angle of two mirrors change the reflection of an object?

Materials

- Protractor or printout of protractor rays
- Two identical, small plane mirrors
- Modeling clay/playdoh (if your object won't stand on its own)
- Small object (coin, small lego figure, etc.)
- Plastic packing tape/sellotape

Procedure

1. Tape your mirrors together so that they can be opened and closed like a hinge. You want to leave a slight gap between the two edges (around 1/16th of an inch) to do this.



2. Mark angles of 30, 36, 45, 60, 90, 120 and 180 degrees on a piece of paper using your protractor (or use the protractor ray attachment).
3. Place the hinge of your mirrors at the vertex (corner) of your marked angles.
4. The first angle you will test will be 180 degrees.
5. Place your object (you can embed it in modeling clay if it won't stand up on its own) in the middle of the mirrors and look at the reflection. *How many objects do you see, including both reflected and real? Record this in a results table (see example as part of the protractor ray attachment)*

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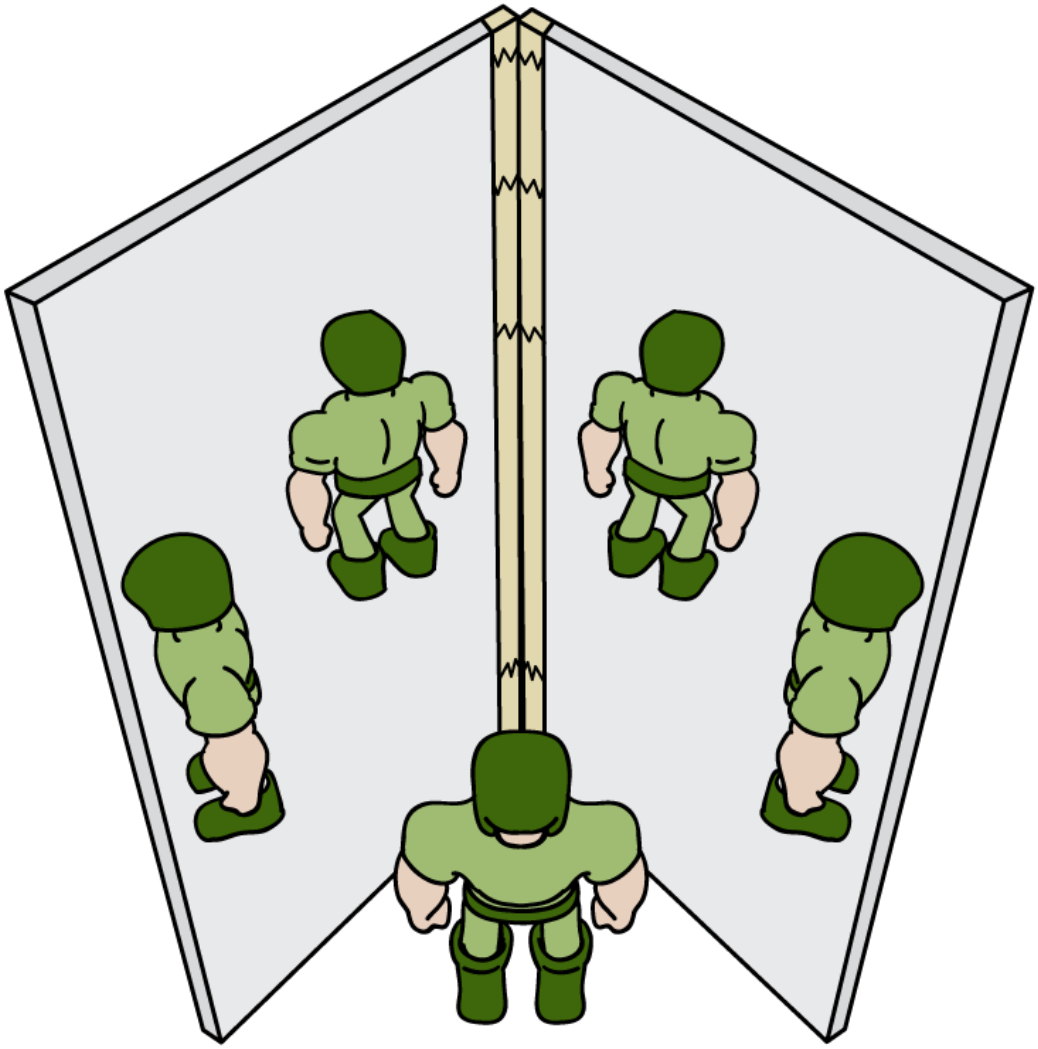
6. Keeping the object equally between the two mirrors, move the mirrors together into the other angles you marked out with your protractor. *How many objects do you see at each angle? (record your findings) Is there something about the angle can help you predict how many objects you will see? Is every reflected image the same brightness?*



Extension: Write a word on a piece of paper, and place it in between the mirrors at 60 degrees. Look closely at the second reflection (the reflection of the reflection). Can you read the text? *Why do you think this is happening?*