

Learning Objectives

- To characterize images in a plane mirror
- To learn how to locate images in plane mirrors



11.7 Images in Plane Mirrors



Writing Reflectively

- Complete the “Try This” activity on p. 488

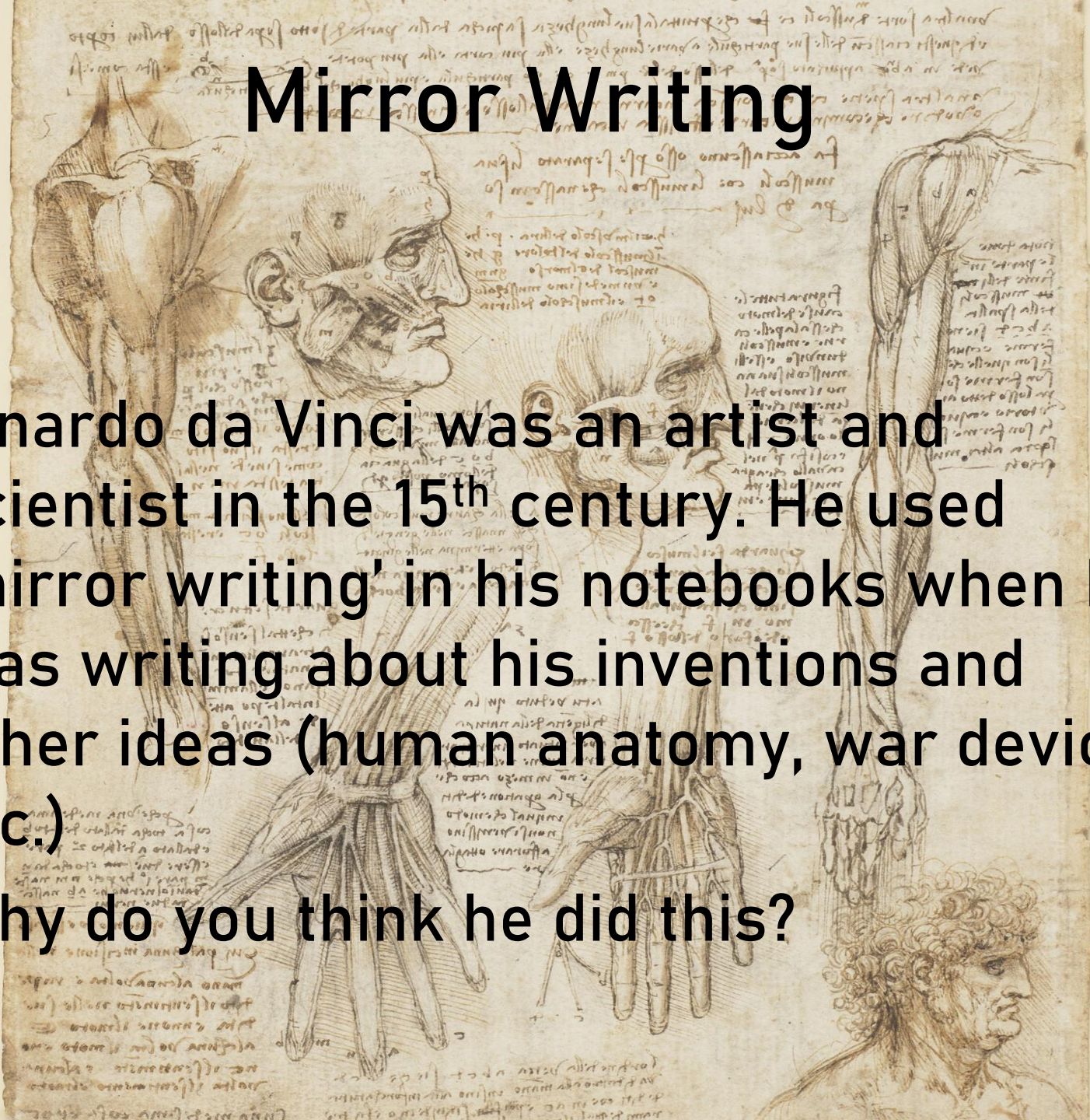


ILLUSTRATION BY ANTHONY RUSSO

Mirror Writing

Leonardo da Vinci was an artist and scientist in the 15th century. He used 'mirror writing' in his notebooks when he was writing about his inventions and other ideas (human anatomy, war devices, etc.)

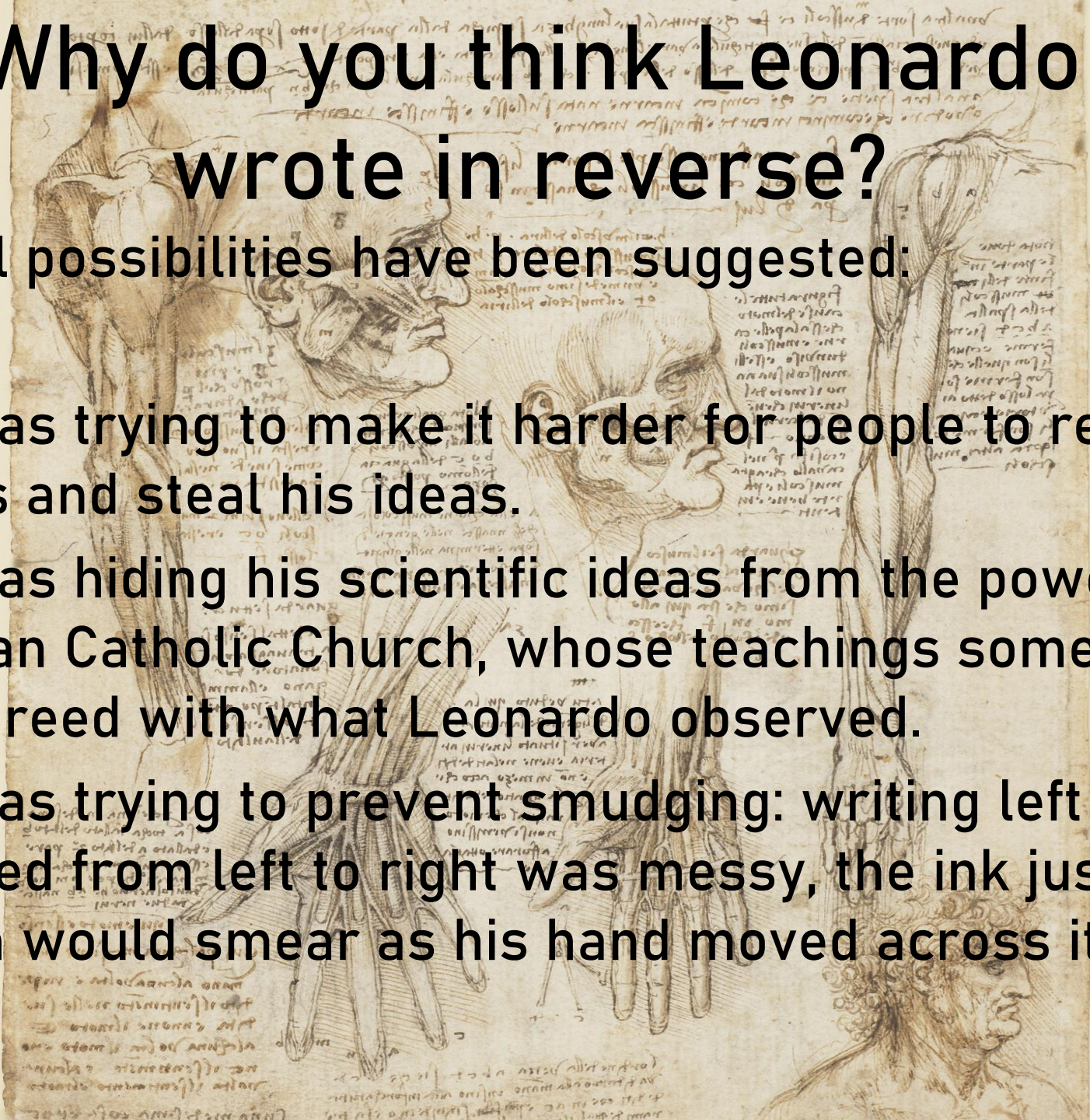
Why do you think he did this?



Why do you think Leonardo wrote in reverse?

Several possibilities have been suggested:

- He was trying to make it harder for people to read his notes and steal his ideas.
- He was hiding his scientific ideas from the powerful Roman Catholic Church, whose teachings sometimes disagreed with what Leonardo observed.
- He was trying to prevent smudging: writing left handed from left to right was messy, the ink just put down would smear as his hand moved across it.



Version 2.0 of Try this....

- Write your name on a small piece of paper
- Trace it on the back
- Observe in mirror



Images in Plane Mirrors

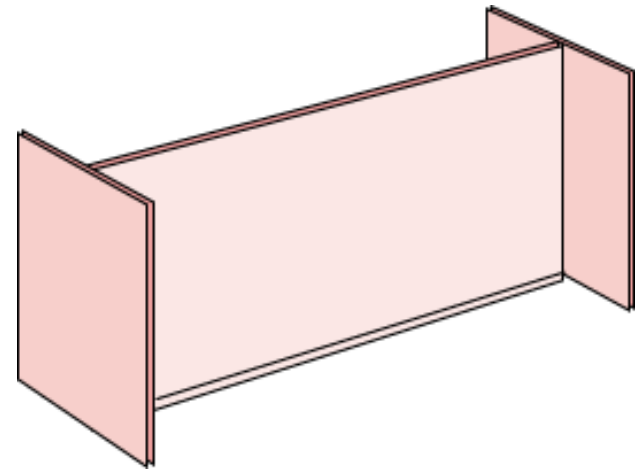
- Our eyes detect light reflected off a mirror as having travelled in a straight line
- Therefore the light **appears** to be coming from behind the mirror
- Therefore the image **appears** to be behind the mirror
- This is called a **virtual** image

Images in Plane Mirrors

- **Virtual Image:** an image formed by light coming from an *apparent* light source; light is not arriving at or coming from the actual image location.
- It cannot be projected on a screen
- You must look at the optical device in order to see a virtual image

Try this....

- Stand a mira in the middle of a blank piece of paper and trace both sides
- Write your name in front of the mira such that you can easily see its reflection
- While looking through the mira, trace the reflection
- Remove the mira and measure the distance from your name to the mira, and the distance from its tracing to the mira. What did you find out?



Now....

- Replace the mira with a plane mirror
- While looking at the mirror, place your finger where you think the image of your name is located
- Is your finger on top of the image you drew with the mira?



Think



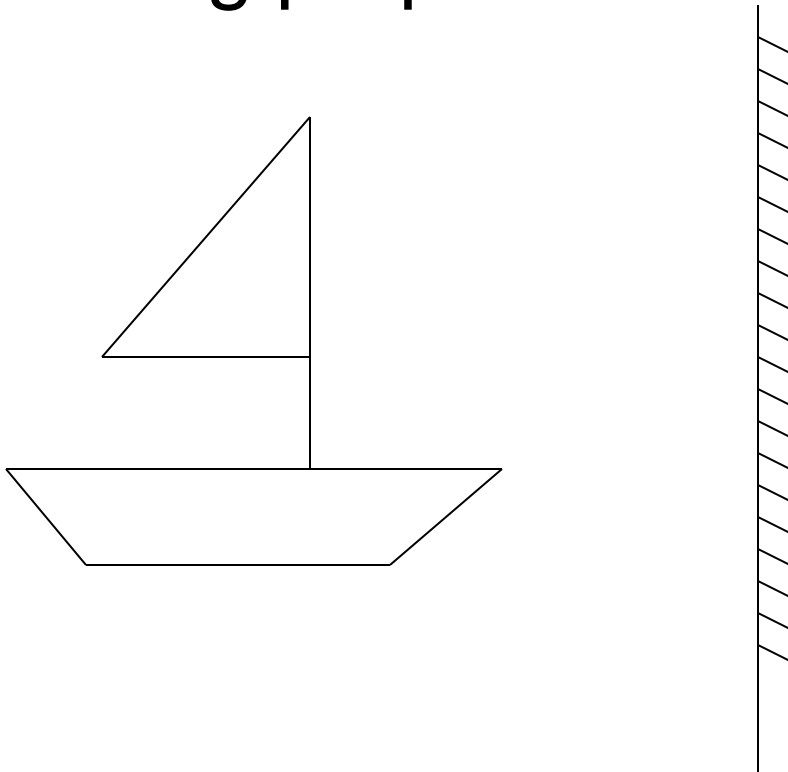
- Where was the image located with respect to the mirror?
- How far was the image from the mirror?
- How big was the image compared to the object?

Using Equal Perpendicular Lines to Locate an Image

- The distance from the object to the mirror is exactly the same as the distance from the image to the mirror.
- The object-image line is perpendicular to the mirror surface.

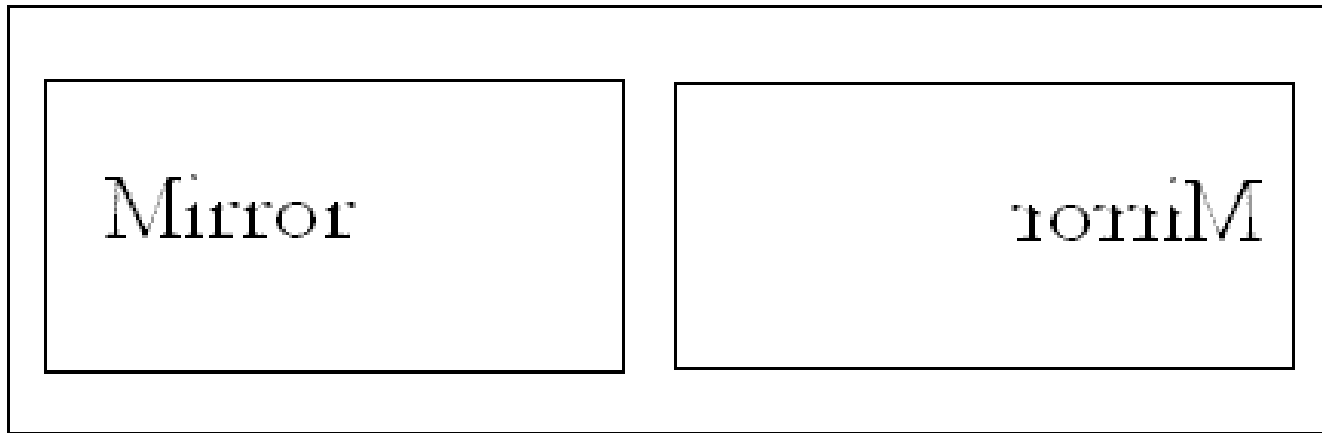
For Example....

- Draw a sailboat, and then draw its image using perpendicular lines.



Characteristics of an Image in a Plane Mirror

- Images undergo a lateral inversion - the orientation is backwards and in reverse order.



Lateral Inversions

Can you read this?



SALT

Size, Attitude, Location, Type

- Use this acronym to describe the properties of an image.
- See Figure 11 on p. 492

Size	Larger, Same Smaller
Attitude	Upright Inverted
Location	Distance of image from mirror or lens; in front of or behind mirror or lens
Type	Virtual Real

Summary of Properties of an Image Using S.A.L.T.

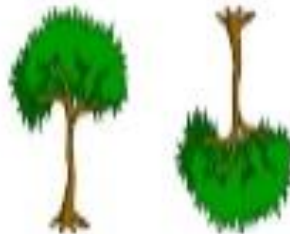
Size



Larger, same, or smaller

Size

Attitude



Upright or inverted

Attitude

Location

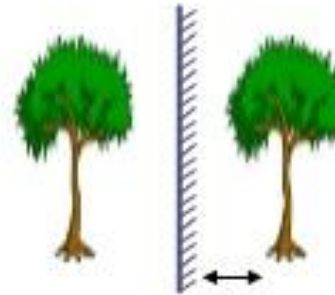


Image distance

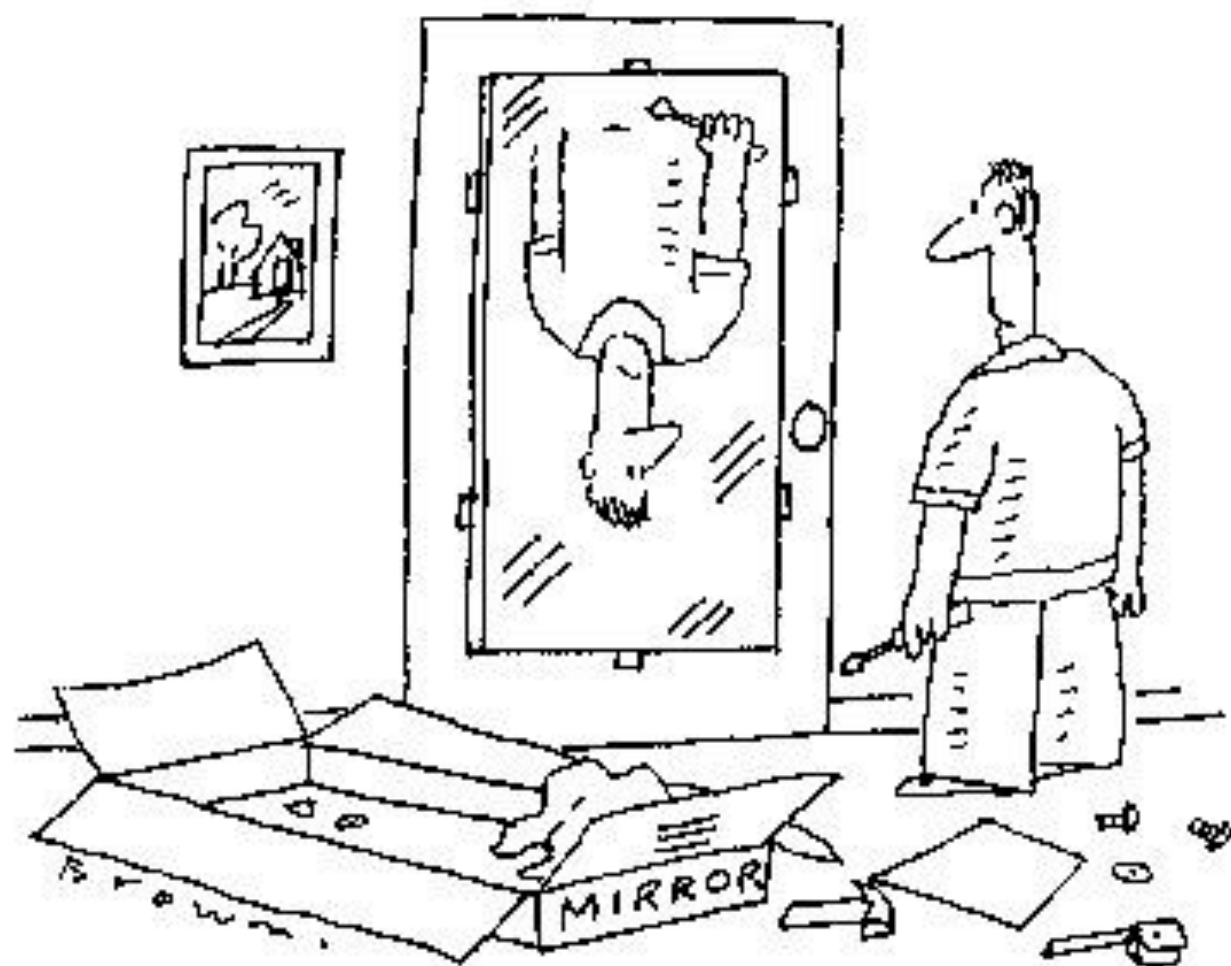
Location

Type



Virtual or Real

Type



A BOTCHED HOME IMPROVEMENT JOB

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ROY G BIV says:

- P. 493 # 1 – 7, 9
*(for question # 9, extend
mirror 1 cm further down)*

