

VBE - Geometry II THURSDAY 5-5-11

ACT  
PRACTICE

①  $f(x) = \frac{x^3 + \frac{5}{8}}{x + \frac{1}{4}} ; f(\frac{1}{2}) = ?$

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ANS

$$f(\frac{1}{2}) = \frac{\frac{1}{8} + \frac{5}{8}}{\frac{1}{2} + \frac{1}{4}}$$

$$= \frac{\frac{6}{8}}{\frac{3}{4}} = \frac{3}{4} \cdot \frac{4}{3}$$

$$= \boxed{1}$$

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• Return/Markup Quiz 5

## Ch. 9 TRANSFORMATIONS

A change to a geometric shape.

The "STARTING" shape is called

A pre image the final shape is  
↑  
before

simply the image.

Transformations apply to 2D (x,y) shapes and 3D (x,y,z) shapes but most of Ch. 9 involves 2D.

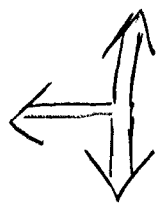
There are 4 basic transformations we will study in Ch. 9

| <u>TRANSFORMATION</u> | <u>Fancy Geometry Name</u> |
|-----------------------|----------------------------|
| Mirror image →        | reflect across a line      |
| SLIDE →               | <u>translate</u>           |
| turn →                | rotate                     |
| SHRINK or ENLARGE →   | dilate                     |

(EX)

Preimage

Image



REFLECTION  
AND  
dilation  
(bigger)



Rotation  
AND  
translation



dilation (smaller)  
AND  
translation



translation

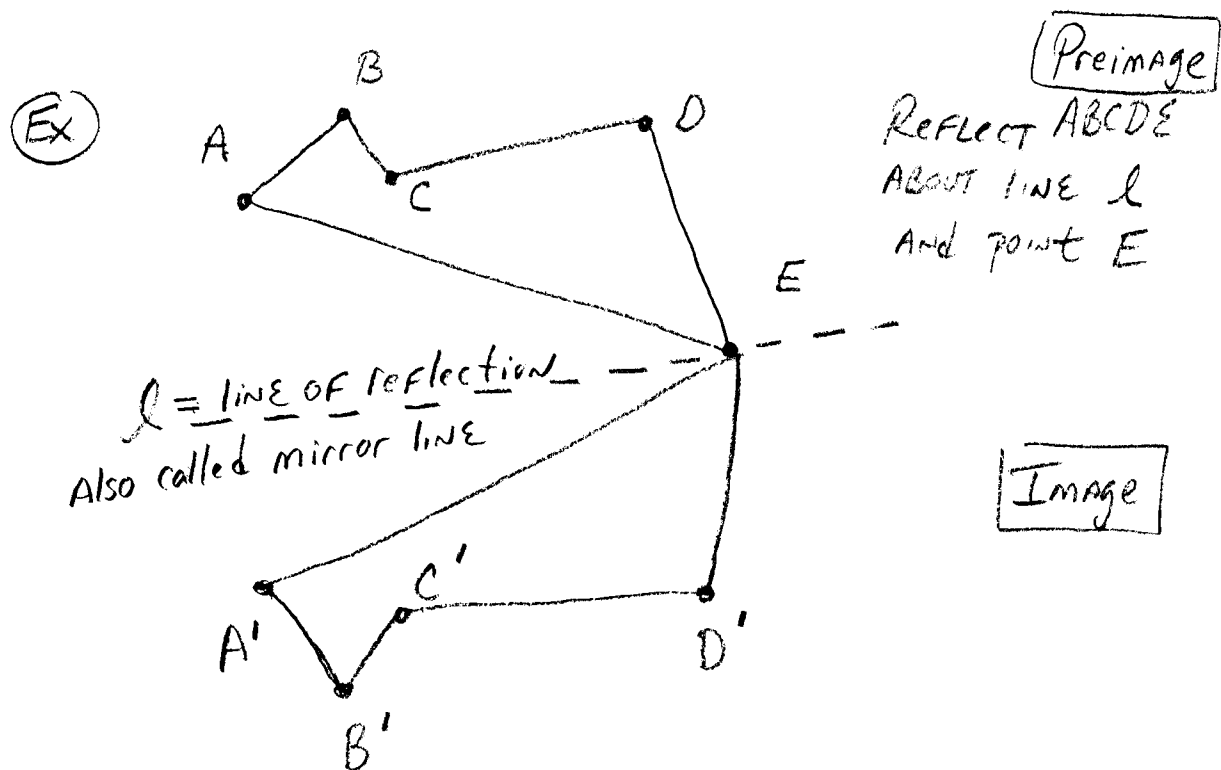


Ch 9-1 Reflections

IN 2D A REFLECTION may be

About A point or about a line.

$\Rightarrow$  REFLECTED BY A point or by a line

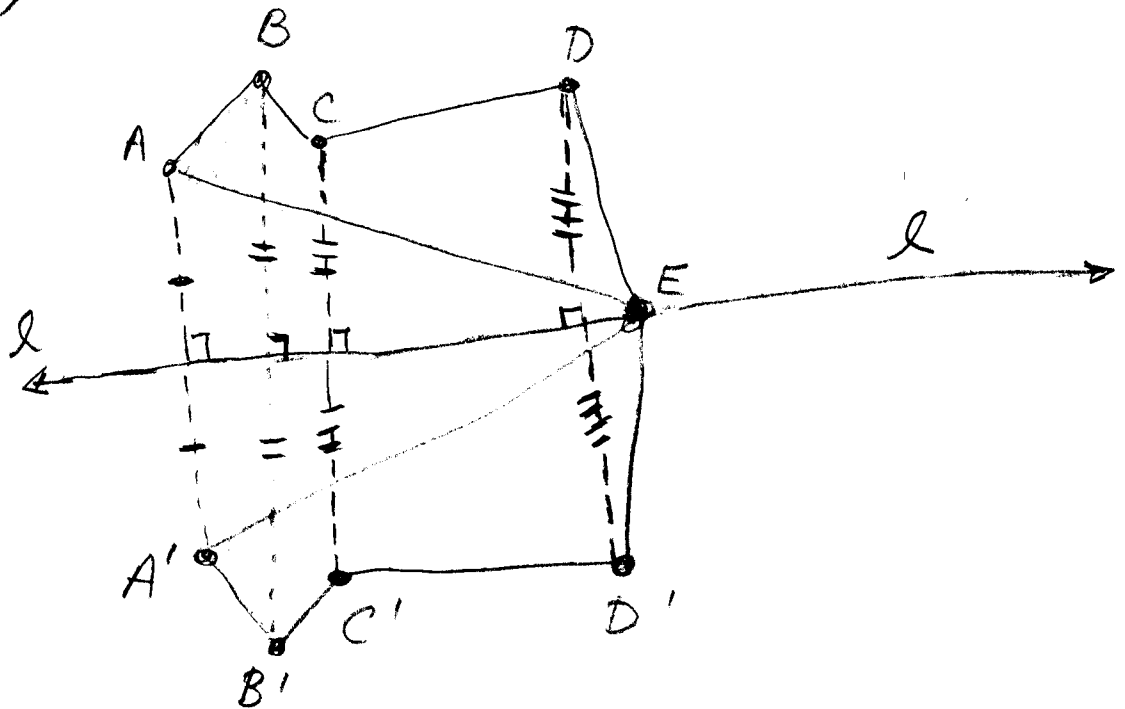


NOTES:  $l$  is the "fold" line

Corresponding points are  
labeled  $A'$ ,  $A''$ ,  $A'''$ , etc...

Preimage and Image for point  $E$   
are the same.

Line segments connecting corresponding point  $\textcircled{EX} \overline{AA'}, \overline{BB'}, \overline{CC'}, \overline{DD'}$  are perpendicular to line  $l$  and are bisected by it.



Pre image  $\cong$  image For Reflection

$\therefore$  This is called a

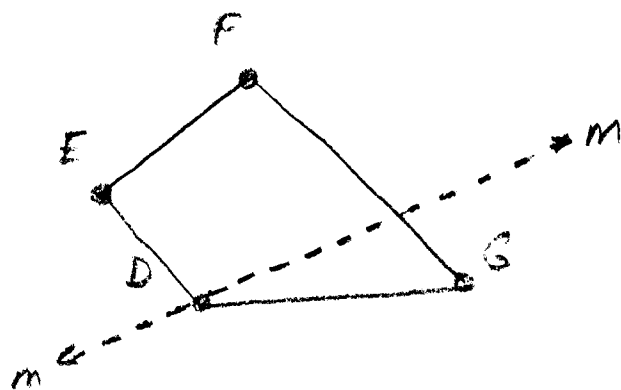
congruent transformation or isometry

Reflect, translate, and rotate are all congruent transformations. Dilation is NOT.

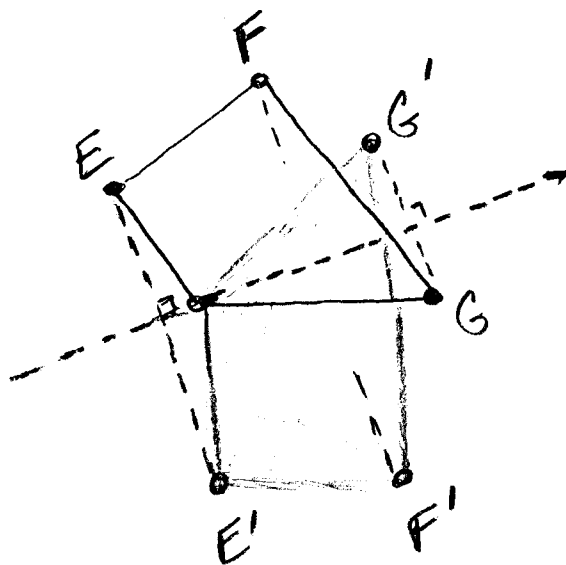
The line of Reflection may be  
"inside" the preimage.

EX1  
pg 464

REFLECT  $DEFG$  in line  $m$   
"about"

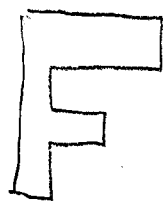


$D$  is on line  $m$ . Draw  $\perp$  line segments  
to line  $m$  from  $E, F, G$ .  $E', F', G'$  ARE  
SAME distance from line of REFLECTION



Shapes may have NONE, or more than ONE, lines of symmetry = fold lines.

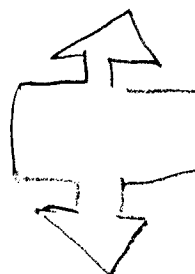
(EX)



NONE



ONE



TWO



> 2

See  
Pg 466

Lines of Symmetry

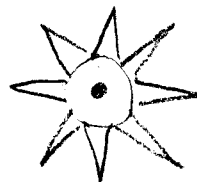
Point of Symmetry } if all line segments joining preimage to image meet at point.



NONE

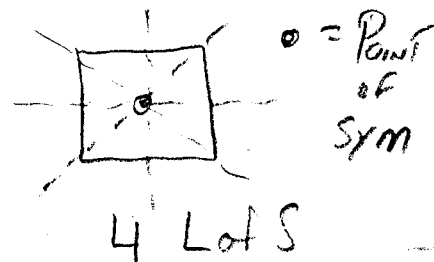


ONE



ONE

EX7 How many lines of symmetry for square.  
Pg 466 Has point symmetry?



4 Lines

Homework: Pg 467 #5-7, 12-17, 24, 25