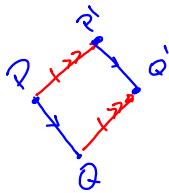


### 7.4 Translations and Vectors

#### Translations (Slide)

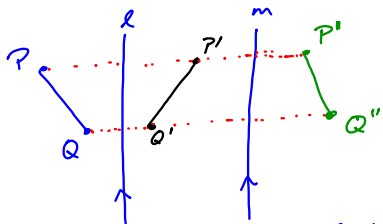


Case 1.  
 $\overline{PQ} \parallel \overline{P'Q'}$   
 $\overline{PP'} \parallel \overline{QQ'}$   
 case 2  
 $\overline{PP'}$  and  $\overline{QQ'}$  are collinear

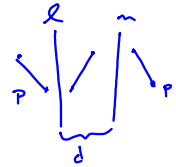
#### Translations are Isometries

- maintains shape and size

#### Reflections on parallel lines



Double reflection on parallel lines creates a rotation



On the double reflection  
 1.  $\overline{PP''} \perp$  to  $l, m$   
 2.  $PP'' = 2d$

#### Translation Notation

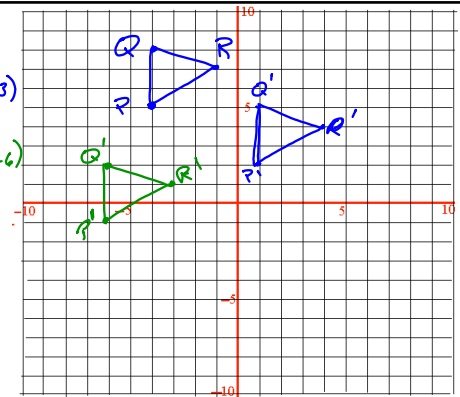
In a coordinate plane all translations are described by a change in the  $x, y$  or both

$$(x, y) \rightarrow (x+a, y+b)$$

what does this mean  
 $a$  - change in  $x$  + to right - to left  
 $b$  - change in  $y$  + up - down

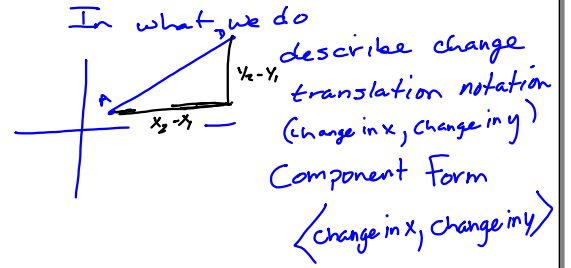
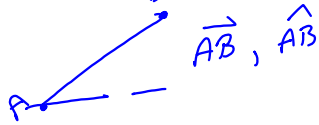
$$(x, y) \rightarrow (x+5, y-3)$$

$$(x, y) \rightarrow (x-2, y-6)$$

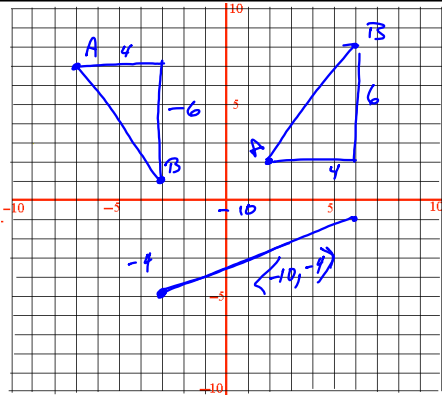


### Vectors

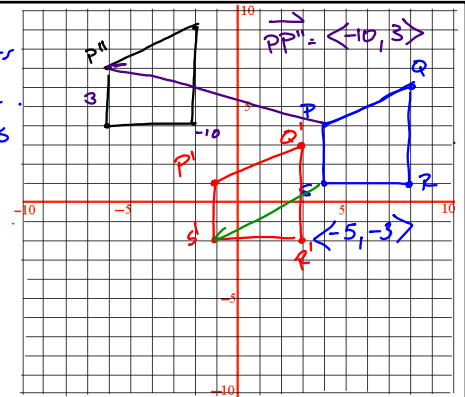
Translations that describe change using an initial point and a terminating point



$\langle 4, 6 \rangle$   
 $\langle 4, -6 \rangle$   
 Direction can be positive or negative



Using Vectors to describe translations



P 425 - 427  
 2 - 50 even