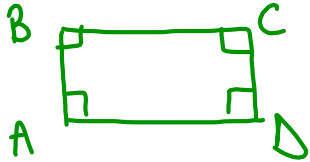


## 6.2 Coordinate Proofs using Slope

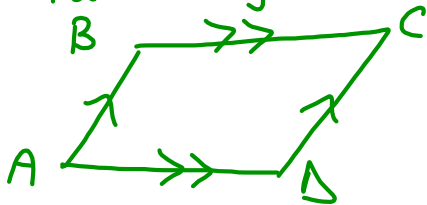
### Review of Shapes

1. Rectangle:



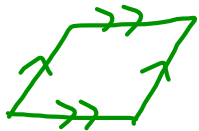
$BC \parallel AD$  (parallel)  
 $BA \parallel CD$   
 $CD \perp BC$   
 $BA \perp AD$  (perpendicular)

2. Parallelogram



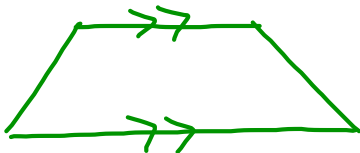
$BC \parallel AD$   
 $AB \parallel CD$

3. Rhombus



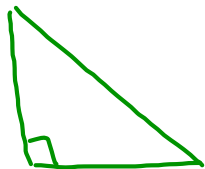
opposite sides  
are parallel

4. Trapezoid



one set of  
parallel lines

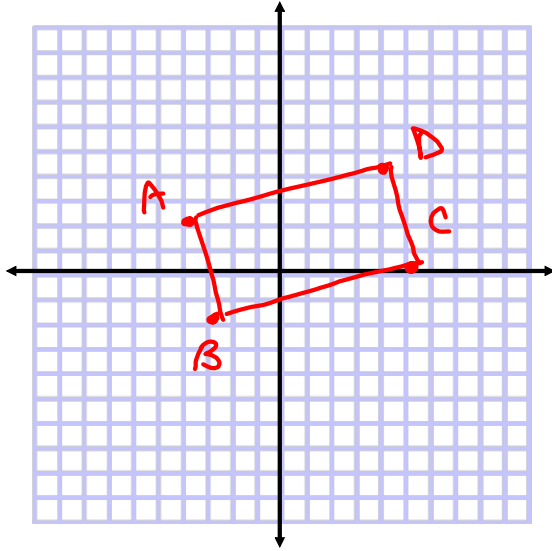
5. Right Triangle



Two slopes will  
be perpendicular  
to each other.

Example : A (-4,2) B (-3,-2)  
C (5,0) D (4,4)

Prove this is a rectangle.



slope  $\Rightarrow \frac{y_2 - y_1}{x_2 - x_1}$

Slope of AD  
 $\frac{(-4,2) (4,4)}{(x_1, y_1) (x_2, y_2)}$

$$\frac{4 - 2}{4 - (-4)} = \frac{2}{8} = \frac{1}{4}$$

Slope BC  
 $\frac{(-3,-2) (5,0)}{(x_1, y_1) (x_2, y_2)}$

$$\frac{0 - (-2)}{5 - (-3)} = \frac{2}{8} = \frac{1}{4}$$

↑ parallel  
↓

Slope AB  
 $(-4,2) (-3,-2)$

$$\frac{-2 - 2}{-3 - (-4)} = \frac{-4}{1}$$

Slope DC  
 $(4,4) (5,0)$

$$\frac{0 - 4}{5 - 4} = \frac{-4}{1}$$

↑ parallel  
↓

Conclusion

Opposite sides are parallel with the same slope and adjacent sides are perpendicular with slopes that are negative reciprocal.