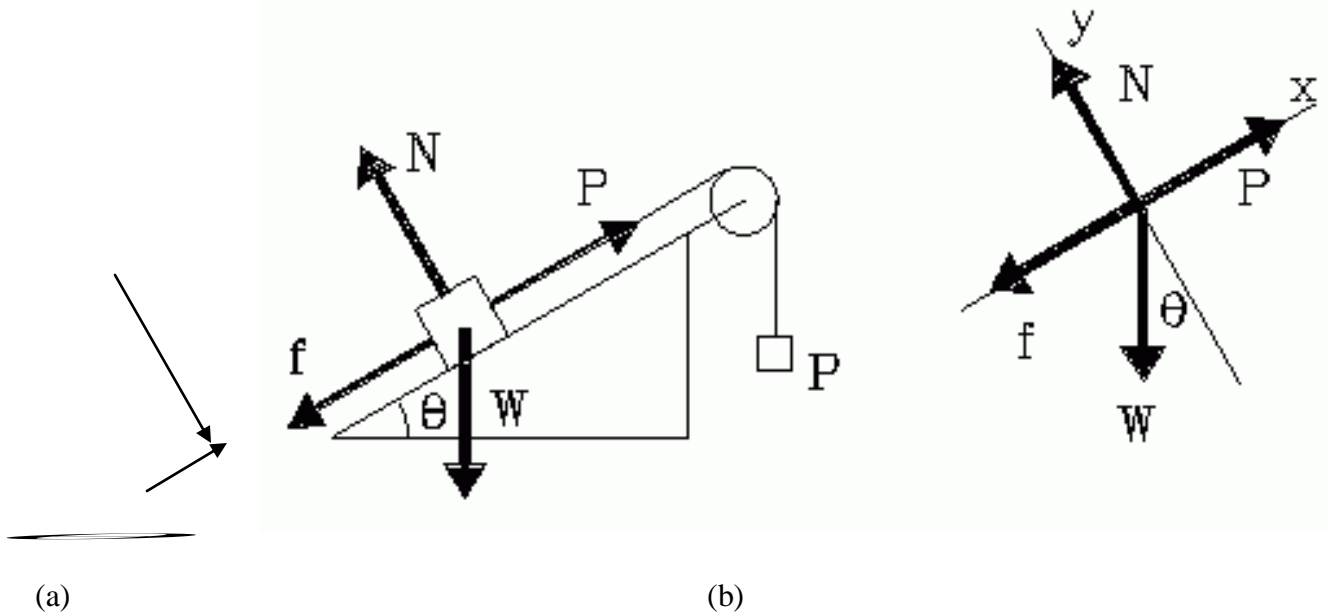


## Angles and Inclines



How do we know that the angles labeled  $\theta$  in diagrams (a) and (b) are the same?

The triangle in diagram (a) with vectors  $f$  and  $W$  consists of angle  $\theta$ , a  $90^\circ$  angle, and the remaining angle which must be  $90^\circ - \theta$  because the sum of the angles in a triangle is  $180^\circ$ :

$$\theta + 90^\circ + 90^\circ - \theta = 180^\circ$$

The triangle in diagram (b) with vector  $W$  also has an angle  $\theta$  because:

- the angle between vector  $f$  and the line extending downward from vector  $N$  is  $90^\circ$  because vector  $N$  is at right angles to the incline and vectors  $f$  and  $P$
- the angle between vectors  $f$  and  $W$  is  $90^\circ - \theta$  determined from diagram (a)
- thus the  $90^\circ$  angle consists of two angles, one is  $90^\circ - \theta$  and the other is  $\theta$