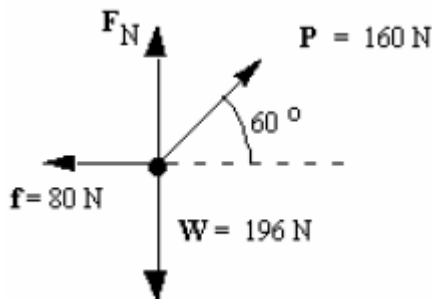


Name: \_\_\_\_\_ Block: \_\_\_\_\_

## Resolving Forces #2

1. A force of 160 N ( $\vec{P}$ ) pulls at an angle of  $60^\circ$  on a crate that is sitting on a rough surface. The weight of the crate ( $\vec{W}$ ) is 196 N. The force of friction on the crate ( $\vec{f}$ ) is 80 N. These forces are shown in the diagram below:



What is the magnitude of the normal force ( $\vec{F}_N$ ) on the crate?

57 N

2. A custodian is struggling to move a 100. kg desk on a dolly, using a rope. He is pulling on the rope at a  $60.^\circ$  angle.
- (a) How much force will the custodian need to apply in order to cause the desk to accelerate horizontally at a rate of  $1.0 \frac{\text{m}}{\text{s}^2}$ ?

200 N

- (b) You suggest that the custodian will have an easier time if he uses a longer rope, which will decrease the angle. If the longer rope results in an angle of  $30.^\circ$ , much force will the custodian need to apply in order to cause the 100. kg desk to accelerate horizontally at  $1.0 \frac{\text{m}}{\text{s}^2}$ ?

120 N