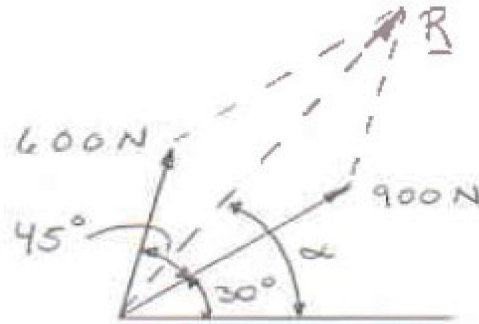


PROBLEM 2.1

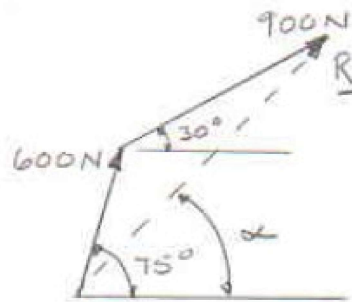
Two forces are applied as shown to a hook. Determine graphically the magnitude and direction of their resultant using (a) the parallelogram law, (b) the triangle rule.

SOLUTION

(a) Parallelogram law:



(b) Triangle rule:

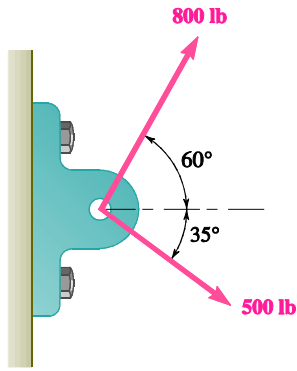


We measure:

$$R = 1391 \text{ kN}, \quad \alpha = 47.8^\circ$$

$$\mathbf{R} = 1391 \text{ N} \nearrow 47.8^\circ \blacktriangleleft$$

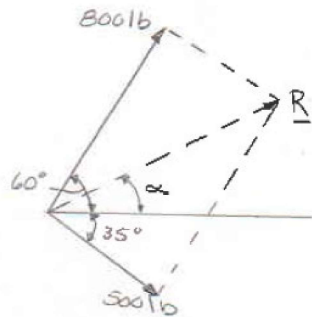
PROBLEM 2.2



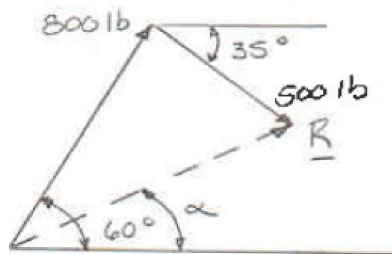
Two forces are applied as shown to a bracket support. Determine graphically the magnitude and direction of their resultant using (a) the parallelogram law, (b) the triangle rule.

SOLUTION

(a) Parallelogram law:



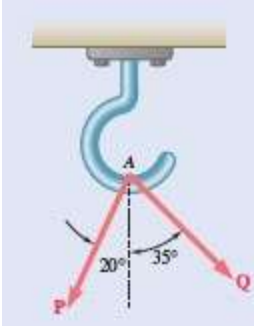
(b) Triangle rule:



We measure:

$$R = 906 \text{ lb}, \alpha = 26.6^\circ$$

$$R = 906 \text{ lb} \nearrow 26.6^\circ \blacktriangleleft$$

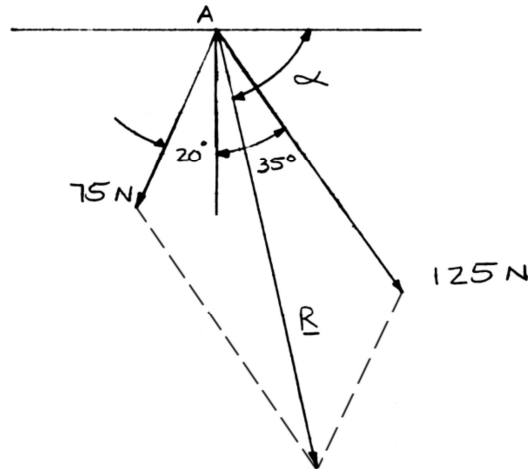


PROBLEM 2.3

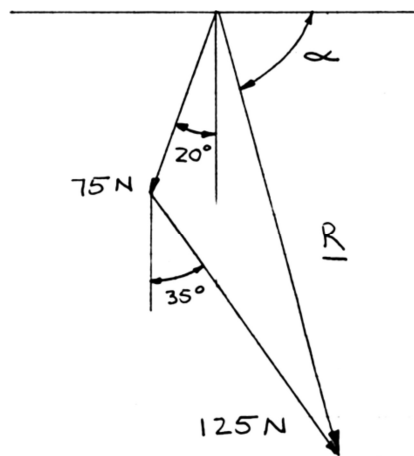
Two forces **P** and **Q** are applied as shown at Point A of a hook support. Knowing that $P = 75 \text{ N}$ and $Q = 125 \text{ N}$, determine graphically the magnitude and direction of their resultant using (a) the parallelogram law, (b) the triangle rule.

SOLUTION

(a) Parallelogram law:



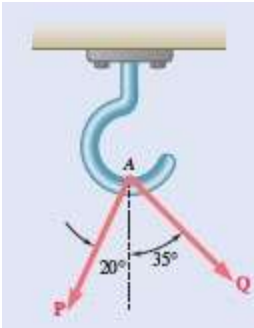
(b) Triangle rule:



We measure:

$$R = 179 \text{ N}, \quad \alpha = 75.1^\circ$$

$$\mathbf{R} = 179 \text{ N} \searrow 75.1^\circ$$

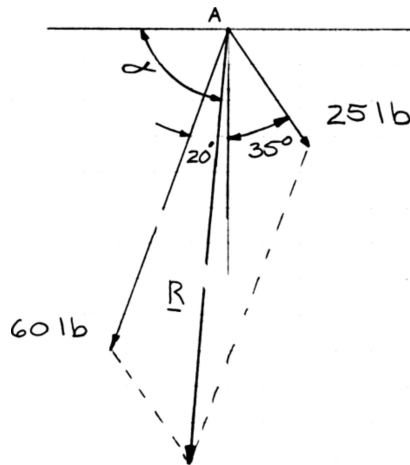


PROBLEM 2.4

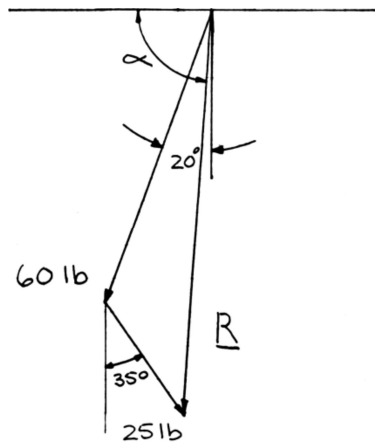
Two forces **P** and **Q** are applied as shown at Point A of a hook support. Knowing that $P = 60$ lb and $Q = 25$ lb, determine graphically the magnitude and direction of their resultant using (a) the parallelogram law, (b) the triangle rule.

SOLUTION

(a) Parallelogram law:



(b) Triangle rule:



We measure:

$$R = 77.1 \text{ lb}, \quad \alpha = 85.4^\circ$$

$$\mathbf{R} = 77.1 \text{ lb} \nearrow 85.4^\circ$$