$5.100 \quad q=\cdots$.

$$
\begin{aligned}
V & =\cdots \\
M & =-\frac{w_{0}}{2}\langle x\rangle^{2}+\frac{w_{0}}{6 a}\langle x\rangle^{3}-\frac{w_{0}}{6 a}\langle x-a\rangle^{3} \\
M_{c} & =\left.M\right|_{x=2 a}=-\frac{w_{0}}{2}(2 a)^{2}+\frac{w_{0}}{6 a}(2 a)^{3}-\frac{w_{0}}{6 a}(a)^{3} \\
& =-2 w_{0} a^{2}+\frac{4 w_{0}}{3} a^{2}-\frac{w_{0} a^{2}}{6}=w_{0} a^{2}\left(-2+\frac{4}{5}-\frac{1}{6}\right)=\frac{w_{0} a^{2}}{6}(12+8-1)
\end{aligned}
$$

$M_{c}=\frac{-5 w_{0} a^{2}}{6}$ For equil. of the $F B D$ of the beam, we write


Shearing stresses ins beams
 Shearing stresses on perpendiculars planes of a tress elements have equal magnitudes :

$$
\tau_{x y}=\tau_{y x}
$$

$q=\frac{\Delta H}{\Delta x} \quad q=\frac{V Q}{I}$ (See page 375 oo text.)
$q$ : horizontal shearing force per units length
V : vertical shearing force is the beam.
Q: first moment about the natral axis due to the shaded area
6.3

$$
F_{R}=150 \mathrm{lh} \quad R=3 \mathrm{~min} \quad V=\text { ? }
$$



$$
\begin{aligned}
& q=\frac{V Q}{I} \quad F_{A}=q_{R} \\
& \frac{V Q}{I} \cdot R=F_{R}
\end{aligned}
$$

$$
\frac{V(3)(6)(2)}{\frac{1}{12}(6)(8)^{3}-\frac{1}{12}(2)(4)^{3}(2)} \cdot(3)=150, \quad \therefore V=\square \quad V=\square l b
$$

