Chapter 6 Homework, Class session #11, ENGT 120   I-Beam Example 6.21 page 182
(preliminary info and methods Example 6.16 and 6.17 p. 177)
For homework, what is the volume and weight of a 30" I-beam with the same holes?
Use template below to **fill in column B empty boxes** from book. Enter formulas where indicated.
Formulas are already entered so when missing items are filled in, you should get a final answer.
Fill in missing formulas and be sure you understand why it is used.

Flange width =	7 1/2	in
Flange thickness =	11/16	in
Flange area=	5.1563	in^2
no Flanges =	2	
total Flange area =	10.31	in^2
I beam height =	18 1/4	in
Web height =	16.8750	in
Web width =	7/16	in
Web area =	7.38	in^2 enter the formula for the Web Area (web h
Square =	1.00	in^2
Fillet radius =	0.50	in
Fillets area =	0.054	in^2
number of fillets =	4	
Total Fillet area =	0.2146	in^2

Before deducting hole volumes

Total Area =	17.91	in^2
I Beam Length =	30	in enter length of I-beam from above
I Beam Volume =	537.30	in^3 (This is the total volume without holes)

Calculate flange hole volume

Flange hole diameter =	2	in
Flange hole radius =	1	in
Flang hole area =	3.142	in^2
Flange thickness =	11/16	in
Flange hole volume =	2.160	in^3
Number of Flanges =	2	
Holes per Flange =	6	
Total Number of Flange Holes =	12	
Total Flange hole volume =	25.918	in^3

Calculate web hole volume

Web hole diameter =	3/4	in
Web hole radius =	3/8	in
Web hole area =	0.4418	in^2
Web width =	7/16	in
Web hole volume =	0.193	in^3

Total Number of Flange Holes = 2

Total Web hole volume = 0.387 in^3

Add flange and web hole volumes

Total hole volume = 26.30 in^3 enter the formula in box

Subtract hole volumes from total

Total I Beam Volume = 510.99 in^3 enter formula in box to subtract
hole volume from original volume

Weight density = 0.28 lbs/in^3

Final Answer

Total I Beam Weight = **143.08** lbs

eight x web width)