

Hw 3-4 Re-do

Calc $6.875 \cdot 10^4 \cdot 6.25 \cdot 10^4$

$$6.875 \cdot 10^4$$

$$6.875/2 = 3.4375$$

$$3.4375/2 = 1.71875$$

$$6.875 = 1.71875 \cdot 2^2$$

$$.71875 = 101110$$

1 sign bit

5 exp bits

\leftarrow implicit
10 fraction bits

- exponent is 2 convert to excess $15+2=17_{10} = (10001)_2$

$$2 \quad 1000100000 \quad 0000$$

$$6.25 \cdot 10^4$$

$$6.25/2 = 3.125$$

$$3.125/2 = 1.5625.$$

$$6.25 = 1.5625 \cdot 2^2$$

$$.5625 = 1001$$

- exponent + bias = $17_{10} = 10001$

$$0 \quad 1001000000$$

mantissa multiplication

$$6.875 \quad 1.101100000$$

$$6.25 \quad 1.100100000$$

$$\underline{\hspace{1cm} 0}$$

$$\underline{\hspace{1cm} 0}$$

$$\underline{\hspace{1cm} 0}$$

$$\underline{\hspace{1cm} 0}$$

$$\underline{\hspace{1cm} 0}$$

$$1.1011100000$$

$$\underline{\hspace{1cm} 0}$$

$$1.1011100000$$

exponent multiplication

$$2+2=4 \rightarrow \text{bias}(15)=19$$

$$19_{10} = 10011$$

implied
 $\downarrow 1$

GRS

1.010101111 Thus, 0 010101111 10100 000
 $= 42.97$ and thus is accurate