Multiplying Square Roots of Negative Numbers

Multiply and simplify: $\sqrt{18}\cdot\sqrt{2}$ $\quad\sqrt{18}\cdot\sqrt{2}=\sqrt{36}=6$

Now multiply and simplify: $\sqrt{-18}\cdot\sqrt{-2}$ does it also equal $\sqrt{36}$? **NO!**

In the imaginary world, multiplication of negative values works differently!!!
So what does it equal?

To multiply square roots of negative numbers, express the radical in terms of $\sqrt{-18}\cdot\sqrt{-2}$,

first rewrite the values in terms of i before proceeding. $\sqrt{-1\cdot18}\cdot\sqrt{-1\cdot2}=i\sqrt{18}\cdot i\sqrt{2}$

Next, multiply the i's , then multiply the radicals. Remember, $i^2=-1$.

$$\sqrt{-1\cdot18}\cdot\sqrt{-1\cdot2}=i\sqrt{18}\cdot i\sqrt{2}=i^2\sqrt{36}=-1\cdot6=-6$$

It is a very common error to forget the negative!

$$\sqrt{-7}\cdot\sqrt{-11}=i\sqrt{7}\cdot i\sqrt{11}=i^2\sqrt{77}=-\sqrt{77}$$

TRY:

$\sqrt{-3}\cdot\sqrt{-6}$ $\qquad\qquad$ $\sqrt{-5}\cdot\sqrt{-20}$