

Complex Operations TBT
Simplify:

1. $5i^{121}$
 $5 \cdot i \cdot i \cdot i \cdot \dots \cdot i$
 $5 \cdot i \cdot (i^2)^{60}$
 $5 \cdot i \cdot (-1)^{60}$
 $5 \cdot i \cdot (1)$
 $5i$

4. $\frac{(12-8i)(5-i)}{(5+i)(5-i)}$
 $\frac{60 - 12i - 40i + 8i^2}{25 - 5i + 5i - i^2}$
 $\frac{52 - 52i}{26}$
 $2 - 2i$

Imagining Complexity KEY

2. $\frac{(3+4i)(6+2i)}{(6-2i)(6+2i)}$
 $\frac{18 + 6i + 24i + 8i^2}{36 + 12i - 12i - 4i^2}$
 $\frac{10 + 30i}{40}$

5. $\frac{1+3i}{4}$ OR $\frac{1}{4} + \frac{3i}{4}$
 $-12i^{68}$
 $-12(i^2)^{34}$
 $-12(-1)^{34}$
 $-12(1)$
 -12

3. $\frac{(9+5i) \cdot \frac{i}{i}}{8i \cdot \frac{i}{i}}$
 $\frac{9i + 5i^2}{8i^2}$

$\frac{-5+9i}{-8}$ OR $\frac{5-9i}{8}$

6. $-\frac{5-3i}{4i}$
 $\frac{(5-3i) \cdot \frac{i}{i}}{-4i \cdot \frac{i}{i}}$
 $\frac{5i - 3i^2}{-4i^2}$
 $\frac{3+5i}{4}$