Simplify each . Assume that all variables are positive quantities. Give answer in reduced radical form.

1. $\sqrt{30w^3x^7} \cdot \sqrt{18w^4x^{11}}$

2. $\sqrt{28} - 5\sqrt{96} + 2\sqrt{150} - 4\sqrt{63}$

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1. $\sqrt{30w^3x^7} \cdot \sqrt{18w^4x^{11}}$

$= \sqrt{540\,w^7x^{18}}$

$= \sqrt{36\cdot15\;w^7x^{18}}$

$= \boxed{6w^3x^9\sqrt{15w}}$

2. $\sqrt{28} - 5\sqrt{96} + 2\sqrt{150} - 4\sqrt{63}$

$= \sqrt{4\cdot7} - 5\sqrt{16\cdot6} + 2\sqrt{25\cdot6} - 4\sqrt{9\cdot7}$

$= 2\sqrt{7} - 5\cdot4\sqrt{6} + 2\cdot5\sqrt{6} - 4\cdot3\sqrt{7}$

$= 2\sqrt{7} - 20\sqrt{6} + 10\sqrt{6} - 12\sqrt{7}$

$= \boxed{-10\sqrt{7} - 10\sqrt{6}}$

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