Properties of Exponents

Emphasis on Power of a Power

Simplify each of the following:

1. $(a^5)^9$ $a^{5 \cdot 9} = \boxed{a^{45}}$	2. $(b^{-2})^{-5}$ $b^{-2 \cdot -5} = \boxed{b^{10}}$
3. $(c^{10})^3$ $c^{10 \cdot 3} = \boxed{c^{30}}$	4. $(d^6)^8$ $d^{6 \cdot 8} = \boxed{d^{48}}$
5. $(e^2)^{10}$ $e^{2 \cdot 10} = \boxed{e^{20}}$	6. $(f^7)^5$ $f^{7 \cdot 5} = \boxed{f^{35}}$
7. $(g^{-8})^{-2}$ $g^{-8 \cdot -2} = \boxed{g^{16}}$	8. $(h^{-1})^{-9}$ $h^{-1 \cdot -9} = \boxed{h^{9}}$
9. $(j^{11})^{11}$ $j^{11 \cdot 11} = \boxed{j^{121}}$	10. $(k^6)^6$ $k^{6 \cdot 6} = \boxed{k^{36}}$

11. $(l^7)^7$ $l^{7 \cdot 7} = \boxed{l^{49}}$	12. $(m^{13})^{13}$ $m^{13 \cdot 13} = \boxed{m^{169}}$
13. $(n^3)^8$ $n^{3 \cdot 8} = \boxed{n^{24}}$	14. $(p^2)^{11}$ $p^{2 \cdot 11} = \boxed{p^{22}}$
15. $(q^{-9})^{-2}$ $q^{-9 \cdot -2} = \boxed{q^{18}}$	16. $(r^{10})^6$ $r^{10 \cdot 6} = \boxed{r^{60}}$
17. $(t^3)^7$ $t^{3 \cdot 7} = \boxed{t^{21}}$	18. $(u^{-3})^{-12}$ $u^{-3 \cdot -12} = \boxed{u^{36}}$
19. $(v^5)^3$ $v^{5 \cdot 3} = \boxed{v^{15}}$	20. $(w^3)^{18}$ $w^{3 \cdot 18} = \boxed{w^{54}}$