Algebra
Rational Exponent Homework

Name: _____
Date: _____ Block: _____

Solve the following equations without using a calculator. *Make sure your fractions are simplified.*

1. $\frac{1}{2}-\frac{1}{4}=$ $\frac{2}{4}-\frac{1}{4}=\boxed{\frac{1}{4}}$
2. $\frac{3}{4}\times\frac{1}{2}=$ $\boxed{\frac{3}{8}}$
3. $\frac{1}{4}+\frac{6}{10}=$ $\frac{5}{20}+\frac{12}{20}=\boxed{\frac{17}{20}}$
4. $\frac{1}{2}+\frac{2}{10}=$ $\frac{5}{10}+\frac{2}{10}=\boxed{\frac{7}{10}}$
5. $\frac{2}{3}-\frac{1}{2}=$ $\frac{4}{6}-\frac{3}{6}=\boxed{\frac{1}{6}}$
6. $\frac{2}{3}+\frac{4}{5}=$ $\frac{10}{15}+\frac{12}{15}=\boxed{\frac{22}{15}}$
7. $\frac{1}{12}\times\frac{2}{5}=$ $\boxed{\frac{2}{5}}$
8. $\frac{3}{3}\times\frac{2}{3}=$ $\boxed{2}$
9. $\frac{1}{3}\times\frac{1}{5}=$ $\boxed{\frac{1}{15}}$
10. $\frac{1}{2}-\frac{4}{10}=$ $\frac{5}{10}-\frac{4}{10}=\boxed{\frac{1}{10}}$
11. $\frac{9}{10}-\frac{1}{4}=$ $\frac{18}{20}-\frac{5}{20}=\boxed{\frac{13}{20}}$
12. $\frac{3}{5}-\frac{1}{4}=$ $\frac{12}{20}-\frac{5}{20}=\boxed{\frac{7}{20}}$
13. $\frac{2}{3}\times\frac{2}{5}=$ $\boxed{\frac{4}{15}}$
14. $\frac{2}{5}+\frac{1}{3}=$ $\frac{6}{15}+\frac{5}{15}=\boxed{\frac{11}{15}}$
15. $\frac{1}{3}\times\frac{2}{5}=$ $\boxed{\frac{2}{15}}$
16. $\frac{4}{5}\div\frac{2}{3}=$ $\frac{2}{\frac{4}{5}}*\frac{3}{2_1}=\boxed{\frac{6}{5}}$

Simplify each of the following exponential expressions

1. $(x^6)^{1/6}$ $\boxed{x}$
2. $(x^{10})^{1/5}$ $\boxed{x^2}$
3. $(y^8)^{1/4}$ $\boxed{y^2}$
4. $(z^{12})^{1/4}$ $\boxed{z^3}$
5. $(x^{1/4})^{1/3}$ $\boxed{x^{\frac{1}{12}}}$
6. $(x^{3/2})^{1/5}$ $\boxed{x^{3/10}}$
7. $(x^3y^6)^{1/3}$ $\boxed{xy^2}$
8. $(2^{16}x^4y^8)^{1/4}$ 2^4xy^2 $\boxed{16xy^2}$
9. $y^{2/3}\cdot y^{7/3}$ $y^{9/3}$ $\boxed{y^3}$
10. $a^{3/5}\cdot a^{7/5}$ $a^{10/5}$ $\boxed{a^2}$

11. $(x^4y)^{1/2}$ $\boxed{x^2y^{1/2}}$

12. $(a^{1/2}b^{1/3})^2$ $\boxed{ab^{2/3}}$

13. $\frac{10x^{2/5}}{5x^{3/5}}$ $\boxed{\frac{2}{x^{1/5}}}$

14. $\frac{3x^{4/3}}{12x^{2/3}}$ $\frac{1x^{2/3}}{4}$ $\boxed{\frac{x^{2/3}}{4}}$

15. $(4x^{3/7}y^{4/5})(7x^{2/7}y^{4/5})$ $\boxed{28x^{5/7}y^{8/5}}$

16. $(5x^{4/9}y^{3/5})(2x^{2/9}y^{2/5})$ $10x^{6/9}y^{5/5}$ $\boxed{10x^{2/3}y}$

17. $(3a^{-1/3}b^{-3/4})^{12}$ $3^{12}a^{-4}b^{-9}$ $\boxed{\frac{3^{12}}{a^4b^9}}$

18. $(4a^{-3/7}b^{-2/3})^{21}$ $4^{21}a^{-9}b^{-14}$ $\boxed{\frac{4^{21}}{a^9b^{14}}}$

19. $(2^{3/4}x^{-2/5}y^{1/10})^{20}$ $2^{15}x^{-8}y^2$ $\boxed{\frac{2^{15}y^2}{x^8}}$

20. $(5^{5/6}x^{2/3}y^{-1/4})^{12}$ $5^{10}x^8y^{-3}$ $\boxed{\frac{5^{10}x^8}{y^3}}$