Harder Simplify Practice #2

Fully simplify the following expressions:

1. $(5xy)^2$
2. $12x^2 \div 8x^3$
3. 5^{-2}
4. $\frac{1}{x^2} \times \frac{x}{3}$
5. $16x \div 4x$
6. $(2x^2y)^3$
7. $5xy^2 + 2x^2y - 8xy^2$
8. $\sqrt{x^8}$
9. $12pq^2 \div 3p^2q$
10. $(x^{-1}y^2)^2$

11. $4yx^2 - 8yx^2$
12. $\sqrt{9x^6}$
13. $x - (y - (x - y))$
14. $\left(\frac{x^2}{5z}\right)^2$
15. $\frac{1}{x} \div \frac{3}{x}$
16. $\frac{10x + 8y}{-2}$
17. $(½ab)^2$
18. $xy \div {}^-3x^2$
19. $2x \div 8x^3$
20. $30x \div {}^-6xy^2$

Answers: Harder Simplify Practice #2

Some working stages are shown, but answers must be in the simplest form

1. $(5xy)^2$ $= 5xy \times 5xy$ $= 25x^2y^2$

2. $12x^2 \div 8x^3$ $= \frac{12\ x^2}{8\ x^3}$ $= \frac{3}{2x}$ or $1.5\ x^{-1}$ (or $\frac{1.5}{x}$)

3. 5^{-2} $= \frac{1}{5^2}$ $= \frac{1}{25}$ or 0.04

4. $\frac{1}{x^2} \times \frac{x}{3}$ $= \frac{1\ x}{3\ x^2}$ $= \frac{1}{3x}$

5. $16x \div 4x$ $= \frac{16\ x}{4\ x}$ $= 4$

6. $(2x^2y)^3$ $= 2x^2y \times 2x^2y \times 2x^2y$ $= 8x^6\ y^3$

7. $5xy^2 + 2x^2y - 8xy^2$ $= {}^-3xy^2 + 2x^2y$ or $2x^2y - 3xy^2$ or $xy(2x - 3y)$

8. $\sqrt{x^8}$ $= x^4$

9. $12pq^2 \div 3p^2q$ $= \frac{12\ p\ q^2}{3\ p^2\ q}$ $= \frac{4\ q}{p}$ or $4\,qp^{-1}$

10. $(x^{-1}y^2)^2$ $= x^{-1}y^2 \times x^{-1}y^2$ $= x^{-2}y^4$ or $\frac{y^4}{x^2}$

11. $4yx^2 - 8yx^2$ $= {}^-4yx^2$

12. $\sqrt{9x^6}$ $= 3x^3$

13. $x - (y - (x - y))$ $= x - (y - x + y)$ $= 2x - 2y$

14. $\left(\frac{x^2}{5z}\right)^2$ $= \frac{x^2}{5z} \times \frac{x^2}{5z}$ $= \frac{x^4}{25z^2}$

15. $\frac{1}{x} \div \frac{3}{x}$ $= \frac{1}{x} \times \frac{x}{3} = \frac{1\ x}{3\ x}$ $= \frac{1}{3}$

16. $\frac{10x + 8y}{-2}$ $= \frac{10x}{-2} + \frac{8y}{-2}$ $= {}^-5x + {}^-4y$

17. $(½ab)^2$ $= ½ab \times ½ab$ $= ¼\,a^2\,b^2$ or $\frac{a^2b^2}{4}$

18. $xy \div {}^-3x^2$ $= \frac{y\ x}{-3\ x^2}$ $= \frac{-y}{3x}$ or $\frac{-1}{3}\,y\ x^{-1}$ etc (with – on **top** of fraction)

19. $2x \div 8x^3$ $= \frac{2\ x^1}{8\ x^3}$ $= \frac{1}{4x^2}$ or $0.25\,x^{-2}$

20. $30x \div {}^-6xy^2$ $= \frac{30\ x}{-6\ x\ y^2}$ $= \frac{-5}{y^2}$ or $^-5\,y^{-2}$