

Harder Simplify Practice #1

Fully simplify the following expressions:

1. $(3x^2)^3$

2. $25x \div 10x^2$

3. $(4xy^3)^2$

4. $\frac{1}{x} \times \frac{1}{4}$

5. $16x \div 4k$

6. $4x^2 + 5x - 12x^2$

7. $\sqrt{x^6}$

8. 4^{-1}

9. $2k \div 10k^2h$

10. $(x^3y^2)^2$

11. $\frac{1}{x} \div \frac{3}{y}$

12. $\left(\frac{2}{x}\right)^2$

13. $(2kh^2)^3$

14. $-xy \div -x^2y$

15. $\frac{12x - 20}{4}$

16. $-3x - 5x - 6x$

17. $\left(\frac{4}{x^2}\right)^2$

18. $20x^2 \div 4x^4$

19. $\sqrt{64x^8}$

20. $20y \div -2xy^2$

Answers: Harder Simplify Practice #1

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

1. $(3x^2)^3 = 3x^2 \times 3x^2 \times 3x^2 = 27x^6$
2. $25x \div 10x^2 = \frac{25x}{10x^2} = \frac{5}{2x}$ or $2.5x^{-1}$ (or $\frac{2.5}{x}$)
3. $(4xy^3)^2 = 4xy^3 \times 4xy^3 = 16x^2y^6$
4. $\frac{1}{x} \times \frac{1}{4} = \frac{1}{4x}$
5. $16x \div 4k = \frac{4x}{k}$ or $4xk^{-1}$
6. $4x^2 + 5x - 12x^2 = -8x^2 + 5x$ or $5x - 8x^2$
7. $\sqrt{x^6} = x^3$
8. $4^{-1} = \frac{1}{4} = 0.25$
9. $2k \div 10k^2h = \frac{2k}{10k^2h} = \frac{1}{5hk}$ or $0.2h^{-1}k^{-1}$
10. $(x^3y^2)^2 = x^3y^2 \times x^3y^2 = x^6y^4$

11. $\frac{1}{x} \div \frac{3}{y} = \frac{1}{x} \times \frac{y}{3} = \frac{y}{3x}$
12. $\left(\frac{2}{x}\right)^2 = \frac{2}{x} \times \frac{2}{x} = \frac{4}{x^2}$
13. $(2kh^2)^3 = 2kh^2 \times 2kh^2 \times 2kh^2 = 8k^3h^6$
14. $-xy \div -x^2y = \frac{-xy}{-x^2y} = \frac{1}{x}$ or x^{-1}
15. $\frac{12x - 20}{4} = \frac{12x}{4} + \frac{-20}{4} = 3x - 5$
16. $-3x - 5x - 6x = -14x$
17. $\left(\frac{4}{x^2}\right)^2 = \frac{4}{x^2} \times \frac{4}{x^2} = \frac{16}{x^4}$
18. $20x^2 \div 4x^4 = \frac{20x^2}{4x^4} = \frac{5}{x^2}$ or $5x^{-2}$
19. $\sqrt{64x^8} = 8x^4$
20. $20y \div -2xy^2 = \frac{20y}{-2xy^2} = \frac{-10}{xy}$ or $-10x^{-1}y^{-1}$