Sheet #22

Simplify That is: remove any brackets, cancel any fractions, and add like terms

1) $(x^4)^2$

2) $\frac{y^6}{y^3}$

3) $(xy^4)^2$

4) $\left(\frac{a}{5}\right)^2$

5) $\frac{5y^4}{10y^3}$

6) $\frac{p^2}{p^5}$

7) $\left(\frac{a}{b^2}\right)^3$

8) $3(2y^4)^3$

9) $\frac{6k}{4k^3}$

10) $s(s^3)^2$

11) $\sqrt{s^9}$

12) $\sqrt{t^3} \times \sqrt{t^3}$

13) $\sqrt{\frac{x^4}{y^6}}$

14) $(6x^4)^2 \div 9x^3$

15) $5(ab^2)^3$

16) $\sqrt{25t^6}$

Answers : Sheet 22

1) $(x^4)^2 = x^4 \times x^4 = x^8$

2) $\frac{y^6}{y^3} = \frac{y^3 \times y^3}{y^3} = \frac{y^3}{1} = y^3$ We do not write denominators of 1, just as $\frac{5}{1} = 5$

3) $(xy^4)^2 = xy^4 \times xy^4 = x^2y^8$

4) $\left(\frac{a}{5}\right)^2 = \frac{a}{5} \times \frac{a}{5} = \frac{a \times a}{5 \times 5} = \frac{a^2}{25}$

5) $\frac{5y^4}{10y^3} = \frac{5 \times y \times y^3}{5 \times 2 \times y^3} = \frac{y}{2}$

6) $\frac{p^2}{p^5} = \frac{p^2}{p^2 \times p^3} = \frac{1}{p^3}$ (or p^{-3}) Note when you cancel 1 is left ($p^2 \div p^2 = 1$, not 0)

7) $\left(\frac{a}{b^2}\right)^3 = \frac{a \times a \times a}{b^2 \times b^2 \times b^2} = \frac{a^3}{b^6}$

8) $3(2y^4)^3 = 3 \times 2y^4 \times 2y^4 \times 2y^4 = 24y^{12}$ The 3 is outside the bracket, so not cubed

9) $\frac{6k}{4k^3} = \frac{3 \times 2 \times k}{2 \times 2 \times k \times k^2} = \frac{3}{2k^2}$ A calculator will do the numerical part

10) $s(s^3)^2 = s \times s^3 \times s^3 = s^7$ Only the bracket is squared

11) $\sqrt{s^9} = s^{4.5}$ Because $s^{4.5} \times s^{4.5} = s^9$

12) $\sqrt{t^3} \times \sqrt{t^3} = t^3$ $\sqrt{x} \times \sqrt{x} = x$ for literally everything

13) $\sqrt{\frac{x^4}{y^6}} = \frac{x^2}{y^3}$ Because $\frac{x^2}{y^3} \times \frac{x^2}{y^3} = \frac{x^4}{y^6}$

14) $(6x^4)^2 \div 9x^3 = \frac{6x^4 \times 6x^4}{9x^3} = \frac{36x^8}{9x^3} = \frac{4 \times 9 \times x^3 \times x^5}{9 \times x^3} = 4x^5$

15) $5(ab^2)^3 = 5 \times ab^2 \times ab^2 \times ab^2 = 5a^3b^6$

16) $\sqrt{25t^6} = 5t^3$ Because $5t^3 \times 5t^3 = 25t^6$