

[exponents]

1. Simplify each of the following. (Answers must have positive exponents.)

a. $\frac{(4x^3y^2)^2(3x^5y^9)^3}{(6x^7y^2)^2}$

b. $\frac{(4^n)(2^{n+7})}{(8^{n+1})}$

c. $2^{-1} - 2^{-2}$

d. $\frac{3^{-1}-3^{-2}}{3^{-1}\times 3^{-2}}$

e. $(8x^{-4}y^4)(3x^8y^{-3})$

f. $(\sqrt{36x^6y^4})^3$

g. $\frac{(3^{x-1})(9^{2x})}{27^x}$

h. $(n^{\frac{1}{2}})^{-6}$

2. Solve.

a. $16^{x-1} = 64$

b. $10(3^x) = 270$

c. $18(6^{x+3}) - 28 = 80$

3. Solve

a. You buy an antique chair for \$350. The value of the chair appreciates by 15% each year. Find the value of the chair in 6 years.

b. You give your little brother a box of 2500 Smarties. He eats them at a rate of 12% per day. If you take the box back from him at the end of 3 days, how many Smarties will be left?

c. Cookies have a half life of $\frac{1}{2}$ hour. There are 192 cookies in the jar at 4:00 pm/ How many are there at 5:30 pm?

d. The amount of dirty laundry on Joe's floor doubles every day. If there are 11 pieces of laundry on the floor now, how many pieces of laundry will there be in 5 days?

e. Mr. and Mrs. Laplante invest \$700 towards a cruise vacation to the Caribbean. Interest is 10% p.a. compounded semi-annually. How much money would the couple have saved after 2 years?

f. On her sweet sixteenth birthday, Poppy received a \$10 000 cheque from her parents. This money was the accumulated sum of money that Poppy's parents invested for her on the day she was born. What was the amount of their investment if the interest rate was 5.6% p.a. compounded semi-annually?