

**MATH 5: HOMEWORK
POWERS. REVIEW.**

1. Simplify:

(a) $\frac{3^7 2^7}{2^3 2^4}$

(c) $\frac{(-7)^9 2^5}{7^2 2^4}$

(e) $(7^4 11^2 11^{-5} 7^2)^2$

(b) $\frac{6^5 2^4}{3^5 2^5}$

(d) $\frac{x^2 y^2 x^{-3}}{x^2}$

2. Solve the following equation: $3 - 5(2 - x) = 18$

3. Do the operation with binary numbers:

$$101101 + 110100$$

4. Find errors and fix them:

Example: $(a^2)^3 = a^5$.

Answer: $(a^2)^3 = a^6$

(a) $(-a^4)^3 = a^{12}$

(b) $a^2 \left(\frac{a}{b}\right)^4 = \frac{a^8}{b^4}$

(c) $\left(\frac{c^2}{3d}\right)^3 = \frac{c^6}{9d^3}$

(d) $\frac{(a \cdot b)^3}{b^2} = a^3 b^5$

5. For the following problem, you need to know that the speed of light is about 300,000 km/sec, and one year is about $3 \cdot 10^7$ seconds.

(a) How long would it take light to travel from Sun to Earth? The distance is about $1.5 \cdot 10^8$ km

(b) In astronomy, a common unit of distance is a light year: the distance light covers in one year. How many kilometers is it?

6. Simplify:

(a) $\left(\frac{5g^4 b^5}{4g^2 b^3}\right)^3$

(b) $\frac{(-ab)^8}{(ab)^2}$

7. * Decrypt the puzzle below (different letters stand for different digits):

$$\begin{array}{r} \text{ME} \\ + \quad \text{M} \\ \hline \text{ASA} \end{array}$$