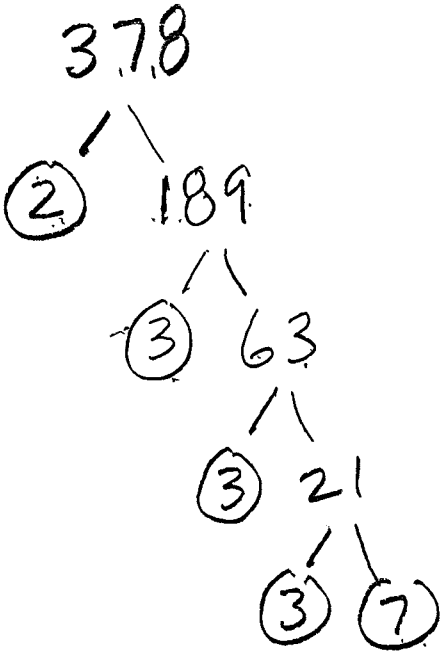
Algebra 1 | Monday 4-8-13 | Class Notes

1. Prime factorization




$2 \cdot 3 \cdot 3 \cdot 3 \cdot 7$ or $2 \cdot 3^3 \cdot 7$

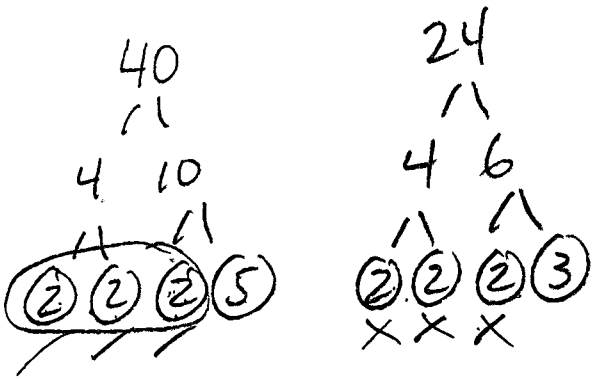
ALL factors:

1, 378
2, 189
3, 126
6, 63
18, 21
14, 27
9, 42
7, 54

1, 2, 3, 6, 7, 9, 14, 18 ...
21, 27, 42, 54, ...
63, 126, 189, 378

(25) GCF

$40y, 24y^2$




$8y$

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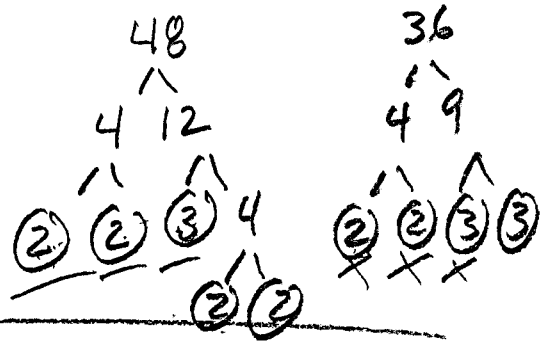
(31) $48xy, 36y^2x$




$12xy$

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(45) $30x^2y, 50yx, 40x^2y$

$10xy$

# Exponent Rules

MR $a^m \cdot a^n = a^{m+n}$ (Ex) $x^3 \cdot x^8 = x^{11}$

DR $\frac{a^m}{a^n} = a^{m-n}$ (Ex) $\frac{x^8}{x^3} = x^5$

→ ZER $\frac{a^m}{a^m} = a^{m-m} = \boxed{a^0 = 1}$

EXCEPT $0^0 = 0$

→ NER $\frac{a^m}{a^n} = a^{m-n} = a^{-(\text{EXPONENT})}$

$N > m$

(Ex) $\frac{x^3}{x^8} = x^{-5} = \frac{\cancel{x}\cancel{x}\cancel{x}}{\cancel{x}\cancel{x}\cancel{x}\cancel{x}\cancel{x}\cancel{x}\cancel{x}\cancel{x}} = \frac{1}{x^5}$

or $\frac{1}{x^{-5}} = x^5$

PPR $(a^m)^n = a^{m \cdot n}$ (Ex) $(x^3)^8 = x^{24}$

GPR $\left(\frac{ab}{cd}\right)^n = \frac{a^n b^n}{c^n d^n}$ (Ex) $\left(\frac{3x}{2y}\right)^2 = \frac{9x^2}{4y^2}$

FER $a^{\frac{m}{n}} = \sqrt[n]{a^m}$ or $\left(\sqrt[n]{a}\right)^m$

Fractional Exponent Rule

(ex) $16^{\frac{3}{4}} = \sqrt[4]{16^3} = \left(\sqrt[4]{16}\right)^3$

$(2)^3$

$= \boxed{8}$

$(2N)^0 = 1$
$2N^0 = 2$

(47) $$-\frac{2N^0 \cdot N^{-2}}{(-N^{-4})^2}$$

$$-\frac{2}{N^2(-N)^{-8}} = -\frac{2(-N)^8}{N^2}$$

$$= -\frac{2N^8}{N^2}$$

$$= \boxed{-2N^6} \checkmark$$

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(48) $$-\frac{X^{-4} \cdot 2X^2}{(2X)^4} = -\frac{X^{-4} \cdot 2X^2}{16X^4}$$

$$= -\frac{2X^{-2}}{16X^4} = -\frac{1X^{-6}}{8}$$

$$= \boxed{-\frac{1}{8X^6}}$$