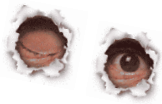
Warm Up



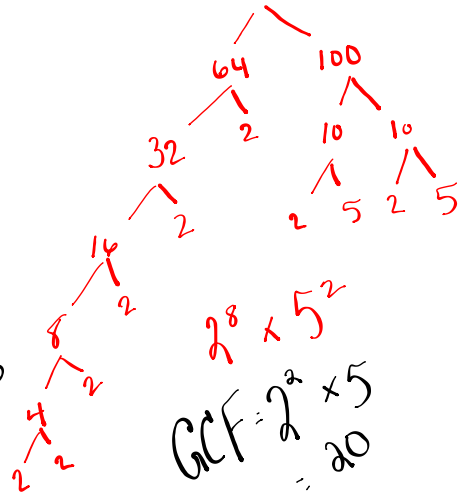
List the product of primes, GCF and LCM for:

580

$2^2 \times 5 \times 29$

LCM: $2^8 \times 5^2 \times 29$
$= 185600$

6400

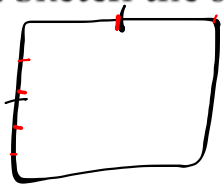


$2^8 \times 5^2$

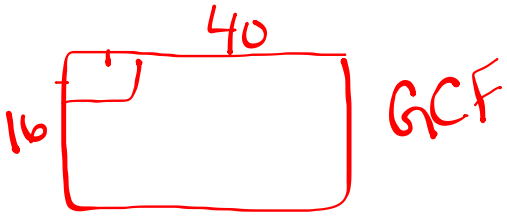
GCF: $2^2 \times 5$
$= 20$

Solving Problems that Involve Greatest Common Factor and Least Common Multiple

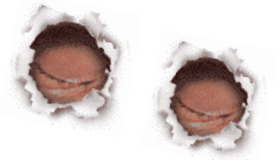
a) What is the side length of the smallest square that could be tiled with rectangles that measure 16 cm by 40 cm? Assume the rectangles cannot be cut. Sketch the square and rectangles.



b) What is the side length of the largest square that could be used to tile a rectangle that measures 16 cm by 40 cm? Assume that the squares cannot be cut. Sketch the rectangle and squares.



Warm Up



1. Use the least common multiple to help determine each answer.

a) $\frac{8}{3} + \frac{5}{11}$

b) $\frac{13}{5} - \frac{4}{7}$

c) $\frac{1}{6} \cdot \frac{9}{10} \div \frac{1}{4} \div \frac{7}{3}$

Using Prime Factors to Solve GCF of Numbers

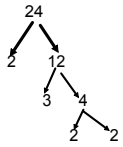
Steps:
1) Find the prime factors of each number

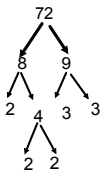
2) Compare the prime factors of each number

3) Circle the prime factors that each number has in common

4) Multiply common prime factors together to get GCF of #'s

Example:
Find the GCF of 24 and 72





2 x 2 x 2 x 3

2 x 2 x 2 x 3 x 3

Factoring

There are 5 different kinds of Factoring:

- **Greatest common factor (GCF)**
- **Factor by grouping**
- **Simple Trinomials (Factor by Inspection)**
- **Hard Trinomials (Factor by Decompostion)**
- **Special Factors**
  - **Difference of Squares**
  - **Perfect Square Trinomials**

Common Factoring

for the Greatest Common Factor
GCF

Anything in common?

$$\frac{20x}{5}+\frac{15y}{5}-\frac{30z}{5}$$

GCF = 5

$$5(4x+3y-6z)$$

Common Factoring

Look for a common variable.

Anything Common?

$$3x + 10xy - 7xyz$$

x x x

$x(3 + 10y - 7yz)$

Common Factor! $a^0 = 1$

1. $\frac{a^5c^6z^{11}}{a^5c^6z^{11}} + \frac{a^9c^{10}z^{13}}{a^5c^6z^{11}}$

$a^5c^6z^{11}\left(1 + a^4c^4z^2\right)$

25: 1×25, 5×5 $\quad$ 15: 1×15, 3×5

2. $\frac{25x^7}{5x^5} - \frac{15x^5}{5x^5}$

$5x^5\left(5x^2 - 3\right)$

$1\cdot1\cdot y^9$

12: 1×12, 2×6, 3×4 $\quad$ 24: 1×24, 2×12, 3×8, 4×6

3. $\frac{12x^7y^8}{12x^7y^4} - \frac{24x^9y^4}{12x^7y^4}$

$12x^7y^4\left(y^4 - 2x^2\right)$

$12x^7y^8 - 24x^9y^4$

$$a^3b^4c^7 - 3a^4b + a^{10}b^6c^5$$

a^3b $\quad a^3b$ $\quad a^3b$

$$a^3b(b^3c^7 - 3a + a^7b^5c^5)$$

How do I factor out the GCF?

Step 1: Identify the GCF of the polynomial

$$14y^5 - 4y^3 + 2y$$

What is the largest monomial that we can factor out?

The GCF is.....*2y*

Step 2: Divide the GCF out of every term of the polynomial

$$14y^5 - 4y^3 + 2y$$

Factor out our GCF 2y →

$$2y(7y^4 - 2y^2 + 1)$$

3.3 Common Factors of a Polynomial

Exercises Page 155

A

4 5 6

B

7 8 9 10 11 12 13 14

15 16 17 18 19 20

b

C

21 22

Reflect

Pg 155
#10 → Just factor
#16