5.2 Greatest Common Factor

Common factors

Factors of two or more numbers that are the same

28 — 1, 2, 4, 7, 14, 28
32 — 1, 2, 4, 8, 16, 32

Greatest Common Factor
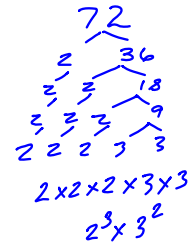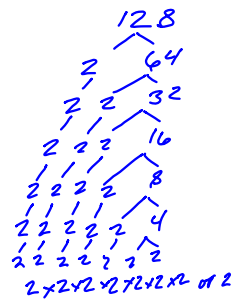
Largest number that is a factor of both numbers

more than one way to find this

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1. Factor Lists

51 — 1, 3, 17, 51
81 — 1, 3, 9, 27, 81

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2. Prime Factorization

128
2 — 64
2, 2 — 32
2 2 2 — 16
2 2 2 2 — 8
2 2 2 2 2 — 4
2 2 2 2 2 2 — 2
$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$ or 2^7

72
2 — 36
2, 3 — 18
3, 3, 3 — 9
2 2 2 3 3
$2 \times 2 \times 2 \times 3 \times 3$
$2^3 \times 3^2$

Product form

128 — $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
72 — $2 \times 2 \times 2 \times 3 \times 3$

$2 \times 2 \times 2 = 8$

Circle all factors in common and multiply the circled numbers

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Power form

128 — 2^7
72 — $2^3 \cdot 3^2$

Lowest exponent of the common factors

$2^3 = 8$

$2 \times 2 \times 3 \times 5 \times 5 \times 7 \times 7 \times 7$

$2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 7$

$2 \times 2 \times 3 \times 5 \times 7 = 420$

$2^2 \times 3 \times 5^2 \times 7^3$

$2^3 \times 3^2 \times 5 \times 7$

$2^2 \times 3^1 \times 5^1 \times 7^1 = 420$

P 238-239

2-16, 22-28 even