$$
\sum_{i=1}^n\sum_{j=1}^mgcd(i,j)^k
\\=\sum_{d=1}^{min(n,m)}d^k\sum_{i=1}^{\frac{n}{d}}\sum_{j=1}^{\frac{m}{d}}1
\\=\sum_{d=1}^{min(n,m)}d^k\frac{n}{d}\frac{m}{d}
\\预处理d^k,O(n+T\sqrt n)
$$

$$
\sum_{i=1}^{n}\sum_{j=1}^{m}gcd(i,j)^k
$$

$$
=\sum_{d=1}^{min(n,m)}d^k\sum_{i=1}^{\frac{n}{d}}\sum_{j=1}^{\frac{m}{d}}1
$$

$$
=\sum_{d=1}^{min(n,m)}d^k\frac{n}{d}\frac{m}{d}
$$

$$
预处理d^k,O(nlogn+T\sqrt{n})
$$

$$
\sum_{i=1}^{n}\sum_{j=1}^{m}gcd(i,j)^k
$$

$$
=\sum_{d=1}^{min(n,m)}d^k\sum_{i=1}^{\frac{n}{d}}\sum_{j=1}^{\frac{m}{d}}1
$$

$$
=\sum_{d=1}^{min(n,m)}d^k\frac{n}{d}\frac{m}{d}
$$

$$
预处理d^k,O(n+T\sqrt{n})
$$