

What kind of questions will appear on the final

State and prove a theorem (any of the six theorems marked with a star), e.g.

- State and prove Euclid's theorem about prime numbers.

State a theorem (any theorem on the list), e.g.

- State the theorem about the decomposition of a finite abelian group.

Give the definition of something, e.g.

- Give the definition of a ring homomorphism.

Give an example of something, e.g.

- Give an example of a nonabelian group of order 6.
- Find an irreducible polynomial of degree 4 over \mathbb{Z}_7 .

Yes/no questions, give brief explanations or examples, e.g.

- Can an abelian group have a nonabelian subgroup?
- Can a nonabelian group have an abelian subgroup?

Computational problems, e.g.

- 1. Write $10!$ as a product of primes.
2. How many positive divisors does $10!$ have?
- Solve the congruence $4x \equiv 2 \pmod{18}$
- Let $\sigma = (1253)$ and $\tau = (13)(24)$.
 1. Find $\sigma\tau$ and $\tau\sigma$.
 2. Find σ^{-1} and τ^{-1} .
 3. Find the orders of σ and τ .
 4. Are σ and τ cycles?