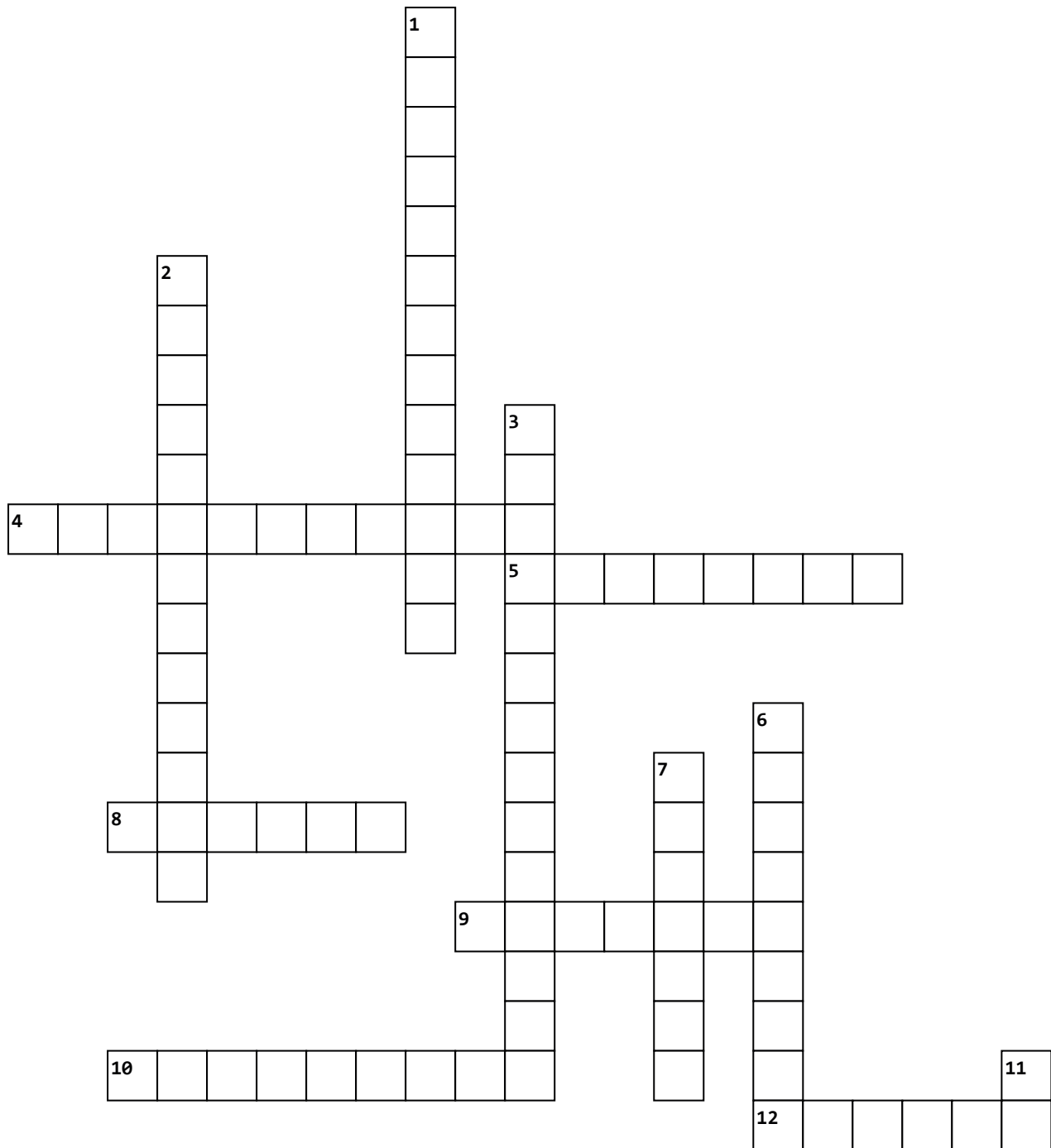# Fundamentals of Structural Analysis

**Across**

**4.** What method allows the analysis of indeterminate beams using three consecutive moments?

**5.** In which type of loading is strain energy stored due to twisting?

**8.** What is the unit of strain energy?

**9.** support What type of support does a propped cantilever beam have at its free end?

**10.** What is the main assumption in applying the principle of superposition?

**Down**

**1.** Castigliano's first theorem is used to determine what quantity in a structure?

**2.** What principle allows for linear addition of effects in structural systems?

**3.** Which method uses partial derivatives of strain energy with respect to force or moment?

**6.** method is used to calculate deflection using strain energy and virtual loads?

**7.** What method uses an iterative procedure to balance moments at beam joints?

**12.** Which structural element is composed of pin-jointed members?

**11.** What is the degree of static indeterminacy of a fixed-fixed beam?