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The answers must be the original work of the author. While discussion with others is permitted and encouraged, the final work should be done individually. You are not allowed to work in groups. You are allowed to build on the material supplied in the class. Any other source must be specified clearly.

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**1.** (25 points) Convert  $1362_{10}$  to binary using two different methods.

Show your work (10 points).

**2.** (25 points) Convert  $0.3_{10}$  to binary. Show the repeating digits clearly.

Show your work (10 points).

**3.** (25 points) Create your own example where the associative law fails due to limited precision.

**4.** (25 points) Create your own example where the distributive law fails due to limited precision.