Which of the following are advantages of die casting over sand casting (four best answers):
(A) better surface finish,
(B) closer tolerances,
(C) higher melting temperature metals,
(D) higher production rates,
(E) larger parts can be cast, and
(F) mold can be reused?

Turbulence during pouring of the molten metal is undesirable for which of the following reasons (two best answers):
(A) it causes discoloration of the mold surfaces,
(B) it dissolves the binder used to hold together the sand mold,
(C) it increases erosion of the mold surfaces,
(D) it increases the formation of metallic oxides that can become entrapped during solidification,
(E) it increases the mold filling time, and
(F) it increases total solidification time

In sand casting, the volumetric size of the pattern is
(A) bigger than,
(B) same size as, or
(C) smaller than
the cast part.

Which of the following casting processes are expendable mold operations (four correct answers):
(A) centrifugal casting,
(B) die casting,
(C) investment casting,
(D) low pressure casting,
(E) sand casting,
(F) shell molding,
(G) slush casting, and
(H) vacuum molding
Three different casting shapes are to be compared (for the same casting alloy) with respect to their total solidification times, namely (1) a sphere of diameter = 8 cm, (2) a cylinder of diameter and length both = 8 cm, and (3) a cube with a length side = 8 cm.

Determine which geometric shape will solidify first.

Determine which geometric shape will make the best riser.

The volume of the mold cavity forming the outside surface of a copper casting is 10000 cm$^3$. An internal sand core placed at the bottom of the casting experiences a buoyancy force of 50 kg.

What is the weight of the final casting? Ignore the shrinkage effects.

Data:

Sand Density=1.6 g/cm$^3$;

Copper Density=8.92 g/cm$^3$

A sand mold is been filled with pure aluminum. The metal level in the mold is 10 in lower than the metal level in the pouring basin. The runner has a diameter of 0.4 in.

What is the flow rate of the metal into the mold?

What is the velocity of the metal into the mold?