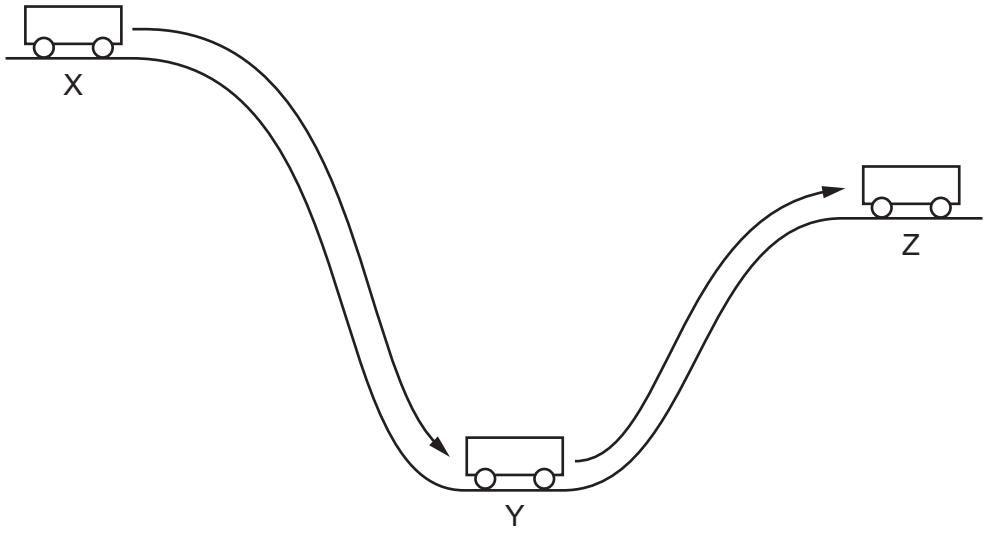
16 A trolley starts from rest at X. It rolls down to Y and eventually comes to rest at Z.

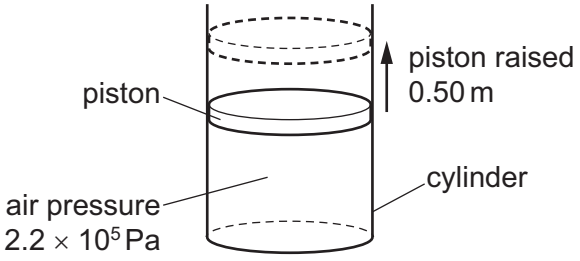


Which row is a possible summary of the energy changes during this process?

	X to Y	Y to Z
A	PE → KE	KE → PE
B	PE → KE	KE → PE + heat
C	PE → KE + heat	KE → PE
D	PE → KE + heat	KE → PE + heat

key
PE = potential energy
KE = kinetic energy

17 A cylinder is heated, causing the air inside to expand at a constant pressure of 2.2×10^5 Pa.



The expansion of the air causes the piston to rise through a vertical distance of 0.50 m, doing 11 kJ of work. Frictional forces are negligible.

What is the cross-sectional area of the piston?

A $1.0 \times 10^{-4}\,m^2$

B $2.5 \times 10^{-2}\,m^2$

C $5.0 \times 10^{-2}\,m^2$

D $1.0 \times 10^{-1}\,m^2$