Hydraulic Gradient Three Point Solution Worksheet

Instructions to determine groundwater (GW) gradient and flow direction based on static water elevations (SWE) of 3 wells.

SITE NAME: _____

A.   Record elevation difference and horizontal distances (HD) between the wells:

Well	Topographic Elevation (ft)		Depth to Static Water (ft bgs*)		SWE (ft)	Wells		HD (ft)
#1		-		=		#1 to #2	=	
#2		-		=		#2 to #3	=	
#3		-		=		#3 to #1	=	

* bgs = below ground surface

B.   Plot the well locations on a scaled diagram

SCALE: _____" = _____'

C.   Perform the following calculations:
   1.   Calculate the position between the High Static Water Elevation (HSWE) well and the Low Static Water Elevation (LSWE) well where the SWE is the same as the Intermediate Static Water Elevation (ISWE).

   (a)   HSWE _____ minus LSWE _____ = (a) _____(ft)

   (b)   Horizontal distance between HSWE well and LSWE well _____ divided by (a) _____

           = (b) _____(ft/ft)

   (c)   HSWE _____ minus ISWE _____ = (c) _____(ft)

   (d)   (b) _____ x (c) _____ = (d) _____(ft) (= the horizontal distance between
           the HSWE well and LSWE well that is equal to the ISWE).
   2.   Measure the distance (d) from the HSWE well along the line between it and the LSWE well, and plot that position on the diagram.
   3.   Draw a straight line from the ISWE well to position (d) on the well location diagram. This represents the water level contour line along which the SWE is the same as the ISWE well.
   4.   Draw a line perpendicular to the ISWE contour line through the HSWE well location on the well location diagram. This is the ground water flow direction (high to low). The distance along this groundwater flow line from the HSWE well to the ISWE contour line is (e).

D.   Calculate the Hydraulic Gradient (HG) of the groundwater by dividing (c) by (e).

(c) _____ divided by (e) _____ = HG _____(ft/ft)