

NAME \_\_\_\_\_

GEOL.3070 – EARTH MATERIALS I  
BRAGG'S LAW CALCULATIONS

1. An unknown sample is analyzed by x-ray diffraction. A copper x-ray tube is used ( $K\alpha = 1.54\text{\AA}$ ). A diffracted beam occurs at  $19.4^\circ$ . Calculate the d spacing.

2. An unknown sample is analyzed by x-ray diffraction. A copper x-ray tube is used ( $K\alpha = 1.54\text{\AA}$ ). The following data are obtained. Complete the table below.

$\Theta$	Intensity (cps)	d ( $\text{\AA}$ )	$I/I_0$
11.0	772		
15.5	15448		
20.6	4788		
25.5	4557		

The sample was collected from a carbonate rock. X-ray powder diffraction data for calcite and dolomite are reproduced below. Identify the mineral.

Calcite (5-586)				
$I/I_1$	100	18	18	12
d	3.04	2.29	2.10	3.86
Dolomite (11-78)				
$I/I_1$	100	30	30	5
d	2.89	2.19	1.79	4.03