Earth Science 11
Unit 3 – Minerals and Rocks
Day 6 – QAP Diagrams

Name: Schaub

Date: _____

Block: _____

Classification…. "the messy stuff"….

- Classification is necessary in interpreting igneous rocks
- In some mining camps (Sudbury) INCORRECT nomenclature becomes imbedded.
- International Union of the Geological Sciences (IUGS) classifications presents a common language which is understood by geologists everywhere.

IUGS Classification: _____

classification of igneous rocks requires accurate estimates of the percentage minerals in an igneous rock which can be estimated visually in coarse grained rocks.

Ternary Diagrams

Ternary diagrams are used for the classification of igneous rocks.

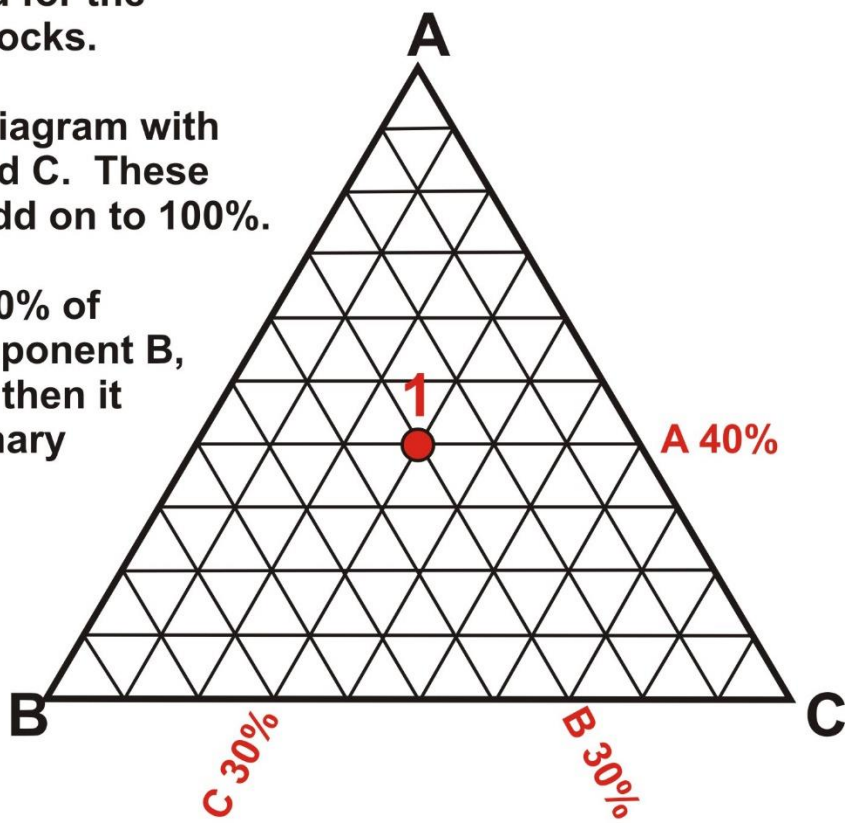
This is a generic ternary diagram with three components A, B and C. These three components must add on to 100%.

If a rock is composed of 40% of component A, 30% of component B, and 30% of component C, then it plots at Point 1 on the ternary diagram.

Point 1 A 40% B 30% C 30%

Point 2 A 80% B 10% C 10%

Point 3 A 20% B 30% C 50%



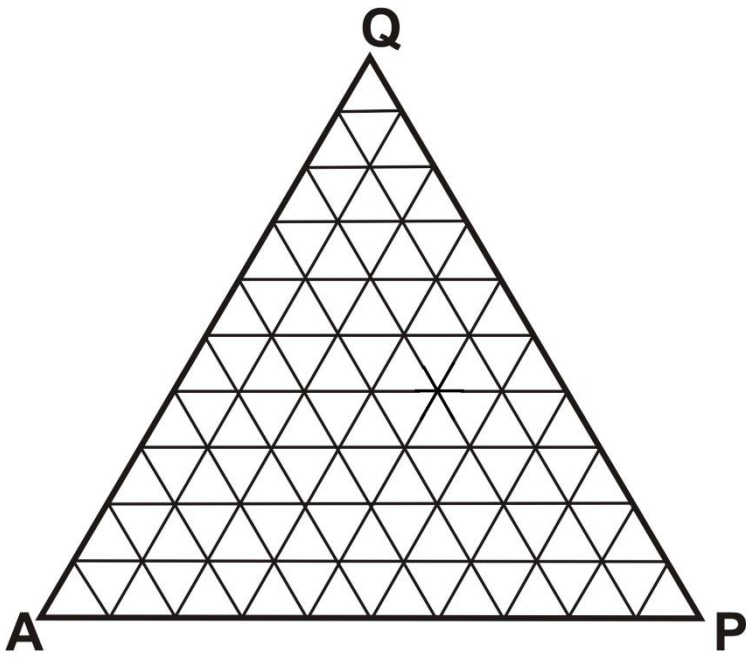
The three components most commonly used for the classification of igneous rocks are:

Q Quartz
A Alkali feldspar (orthoclase, K-feldspar)
P Plagioclase

If a rock contains,

40% Q Quartz
20% A Alkali feldspar
40% P Plagioclase

...then it plots on the ternary diagram at the blue circle.



If a rock contains,

20% Q Quartz
20% A Alkali feldspar
40% P Plagioclase
10% Biotite
10% Hornblend

....then (Q + A + P) < 100% so....

...these components must be recalculated to 100% for the total three components.

20% Quartz in 80% quartz, alkali feldspar, plagioclase is equal to....

$$\frac{20}{80} = \frac{X}{100} \quad \text{Thus } X = 25$$

The recalculated Q, A, P values are:

25% Q
25% A
50% P