

## Ore grade

Grade of an ore deposit is always given as a percentage. The grade is the

$$\frac{\text{Mass of extractable metal}}{\text{Mass of rock or mineral}} \times 100$$

1 A vein in the Pennines consists of 20% galena and 80% calcite. What is the lead grade?

2 A part of the Bushveld intrusion consists of 50% chromite and 50% silicates. What is the chromite grade?

3 A vein in Cornwall has 3% cassiterite and 97% tourmaline, feldspar and quartz. What is the tin grade?

Mineral	Atomic weights
Galena PbS	Pb = 207 S = 32
Chromite $\text{FeCr}_2\text{O}_4$	Fe = 56 Cr = 52 O = 16
Cassiterite $\text{SnO}_2$	Sn = 119 O = 16

4 Calculate the grade of the following:

Mass of rock	Mass of extractable metal	Grade
1000 kg of copper ore	20 kg of copper	
1000 tons of iron ore	760 tons of iron	
1000 kg of gold ore	4 grams of gold	