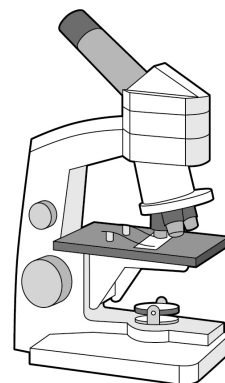**Name** _____ **Class** _____ **Date** _____

1 Label the microscope to show position of the:

   a **eyepiece lens**

   b **objective lens**

   c stage

   d slide

   e focusing wheel

2 The microscope above has an eyepiece lens with a ×5 **magnification**. It has three objective lenses: ×10, ×20 and ×30. When the ×10 objective lens is used, the total magnification is: 5 × 10 = ×50

   a Calculate the total magnification when the ×20 objective lens is used. Show your working.

   _____

   b Calculate the total magnification when the ×30 objective lens is used. Show your working.

   _____

3 Shiv examines some animal hairs using a microscope. Hair X is 20 μm wide and hair Y is 60 μm wide.

   a How many times wider is hair Y compared with hair X? Show your working.

   _____

   b Shiv examines hair X using a total magnification of ×150. How wide will the hair appear under the microscope, in micrometres?

   _____

   c Give your answer to part **b** in millimetres. _____

   d What total magnification will Shiv need to make hair Y appear 6 mm wide? Show your working.

   _____

4 1 μm = 1 000 000 pm

   a What do the unit symbols μm and pm stand for? _____

   b Complete this sentence: 1 μm = 1000 nm and 1 nm = _____ pm.

5 Complete the sentence to explain what is meant by a microscope's resolution.

   The resolution of a microscope is the _____ distance between two points that can still be seen

   as _____ points rather than one point.

6 **a** What is an electron microscope? _____

   b State two reasons why an electron microscope can detect more detail inside a cell, compared with a light microscope.

   _____

   _____