Design & Technology

Mathematics for D&T – Ratio

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don't spend too much time on one question

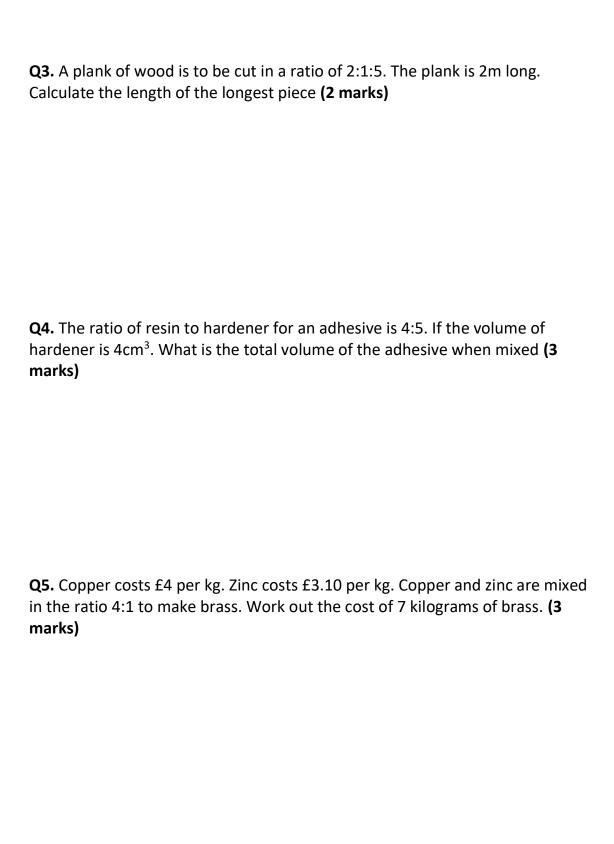
Good luck!

Q1. A screwdriver has a volume of 32,000mm³. The handle is formed of 2 materials:

Material	Density	Percentage of handle
Α	1.3g/mm ³	70%
В	1.5g/mm ³	30%

Calculate the mass of the handle in grams (4 marks)

Q2. A manufacturer is producing a concrete mix for a new building. The building requires 4 concrete beams, each 1.2m x 2m x 5m. The cement is mixed with water in a 2:4 water to cement ratio. How much water is needed for the building? **(4 marks)**



Q6. A bag contains nuts and bolts in the ratio 1:3 There are 8 more bolts than nuts. How many nuts are there **(3 marks)**

Answers

Q1.

43,520 grams

Q2.

Volume = $48m^3$ Water needed = $16m^3$

Q3.

1.25m

Q4.

 $7.2 cm^3$

Q5.

5.6kg Copper x 4 = 22.4 1.4kg Zinc x 3.10 = 4.34 Total = £26.74

Q6.

4 nuts and 12 bolts