



Problem of the Week

Problem A and Solution

Bright Beautiful Banners

Problem

A club is making a large, colourful banner to carry in a parade.

When you buy fabric, you specify the exact length of material you need. The table below shows information about the amount of fabric of each colour needed for the banner design.

Colour	Amount of Fabric Needed
red	two times as much fabric as purple
orange	one half as much fabric as white
purple	one third as much fabric as orange
white	four times as much fabric as green
green	half a metre

- (a) How many metres of each colour fabric are needed to make the banner?
- (b) The fabric costs \$6 per metre. Determine the total cost of the fabric required to make the banner.

Solution

- (a) Since $\frac{1}{2}$ m of green fabric is needed, and the club needs 4 times as much white fabric as green, then they must need $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 2$ m of white fabric.

Since they need $\frac{1}{2}$ as much orange fabric as white, then they must need 1 m of orange fabric.

Since they need $\frac{1}{3}$ as much purple fabric as orange, then they must need $\frac{1}{3}$ m of purple fabric.

Since they need 2 times as much red fabric as purple, then they must need $\frac{2}{3}$ m of red fabric.

- (b) The club needs $2 + 1 + \frac{1}{3} + \frac{2}{3} + \frac{1}{2} = 4\frac{1}{2}$ m of fabric in total.

Since the fabric costs \$6 per metre, the total cost of 4 m of fabric is $4 \times \$6 = \24 . The cost of $\frac{1}{2}$ m of fabric is $\frac{1}{2} \times \$6 = \3 . So the total cost of the fabric required to make the banner is $\$24 + \$3 = \$27$.