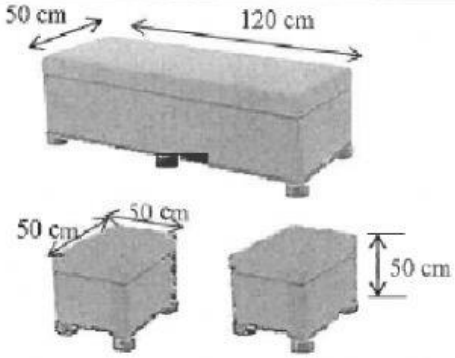
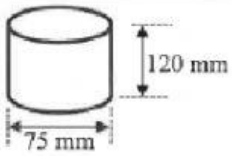
QUESTION 3

3.1 Ten years ago, John bought a rectangular prism-shaped ottoman and two matching cubic-shaped ottomans[1]. He wants to refurbish each of them by having the side surfaces (excluding the top and bottom) repainted. He will also employ an upholsterer[2] to re-cover the top of each ottoman and to attach cylindrical-shaped legs to the base of each ottoman. Each cubic-shaped ottoman will have 4 legs, while the rectangular prism-shaped ottoman will have 6 legs.

RECTANGULAR AND CUBIC SHAPED PRISM-SHAPED OTTOMANS		INFORMATION
		**DIMENSIONS:** **Rectangular ottoman** Length = 120 cm Width = 50 cm Height = 50 cm **Cubic-shaped ottomans** Side = 50 cm
PICTURE OF A LEG	**DIAGRAM OF A LEG**	**DIMENSIONS OF A LEG**
		Diameter = 75 mm Total height = 120 mm

[Source: www.takealot.com]

[1]Ottoman: a piece of furniture like a large box with a soft top, used as a seat
[2]Upholsterer: someone whose job it is to cover furniture with material

Use the above information to answer the questions that follow.

3.1.1 Determine the total number of legs for the ottomans John has to purchase. (3)

3.1.2 Calculate the radius of the ottoman's leg. (2)

3.1.3 Calculate, in centimetres, the total height (including the legs) of ONE cubic-shaped ottoman. (2)

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3.1.4 Calculate, in cm^2, the total surface area of the side surfaces of all three ottomans that need to be painted.

You may use the following formulae:

Area of a rectangle = length × width
Area of a square = side × side (5)

3.1.5 John bought a one-litre tin of luxurious silk paint to paint the side surfaces. The paint has a spread rate of 8 m^2 per litre.

Calculate, in millilitres, the amount of paint needed to paint ALL the ottomans with TWO coats of paint.

1-litre tin of paint

[Source: www.farmcity.co.za]

(4)

3.1.6 The tin has an inner radius of 6,5 cm.

Calculate the height (in cm) of the paint in the tin, if 1 litre = 1 000 cm^3.

You may use the following formula:

$$\textbf{Height} = \frac{\textbf{Volume}}{\textbf{3,142} \times (\textbf{radius})^2}$$ (3)

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3.2 The upholsterer can use the following materials to cover the tops of ALL the ottomans: synthetic leather (S), genuine leather (G) or canvas (C). The materials are available in the following colours: red (R), brown (B) and white (W).

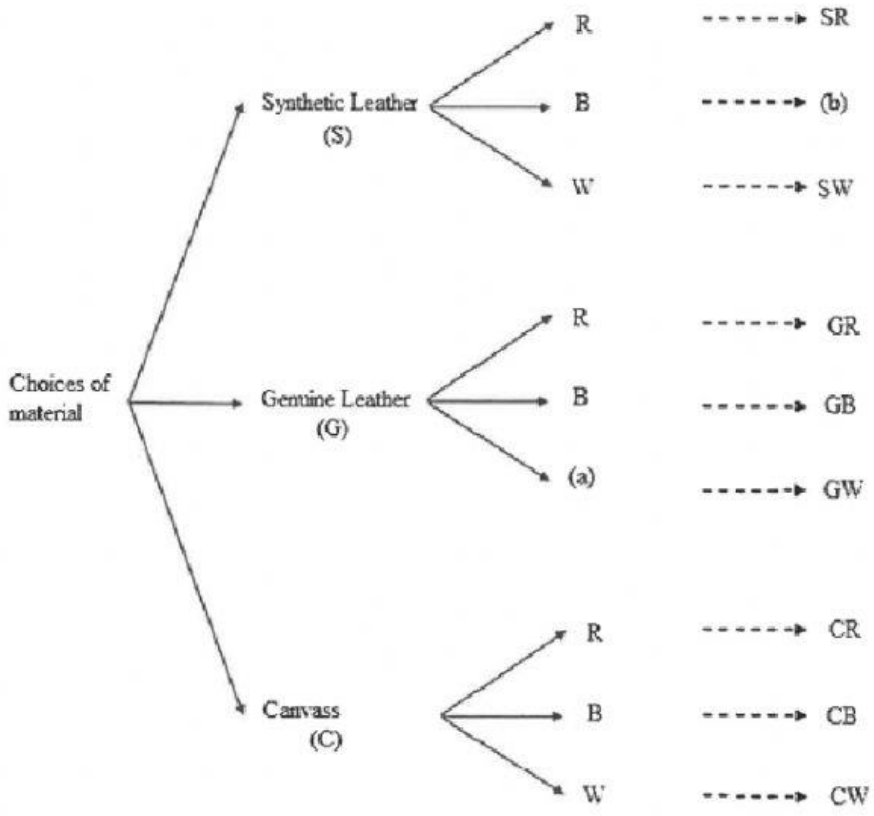
ANNEXURE C shows a tree diagram that represents the choice and colour of the material to be used to cover the ottomans.

Use ANNEXURE C to answer the questions that follow.

ANNEXURE C

TREE DIAGRAM OF DIFFERENT MATERIALS AVAILABLE

QUESTION 3.2



3.2.1 Write down missing items **(a)** and **(b)**. (4)

3.2.2 Determine (as a fraction in simplest form) the probability of NOT selecting red material. (3)

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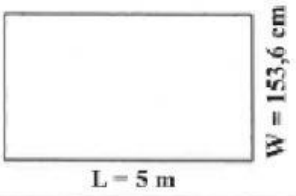
3.3 John asked the upholsterer to use synthetic leather to cover each of the ottomans. The upholsterer uses large sheets of synthetic leather, which he then cuts into smaller pieces to fit the top of each ottoman. Alibaba.com is an online store that sells the sheets of synthetic leather with a width (W) of 60 inches and a length (L) of 5 m.

Diagram of one sheet of synthetic leather	**Sheets of synthetic leather**
	

[Source: www.hangzhougeyi.en]

Use the above information to answer the questions that follow.

3.3.1 Given that 60 inches = 153,6 cm, complete:

1 inch = ... cm (2)

3.3.2 Calculate, in cm, the perimeter of one large sheet of synthetic leather.

You may use the following formula: **Perimeter = 2 × (length + width)** (3)

[31]

QUESTION 4

4.1 Peet and his friend, Roland, plan a camping trip using their motorcycles along Cape Route 62. This is a popular tourist route passing through the Western Cape and Eastern Cape provinces.

The map on ANNEXURE D shows Cape Route 62.

Use ANNEXURE D to answer the questions that follow.

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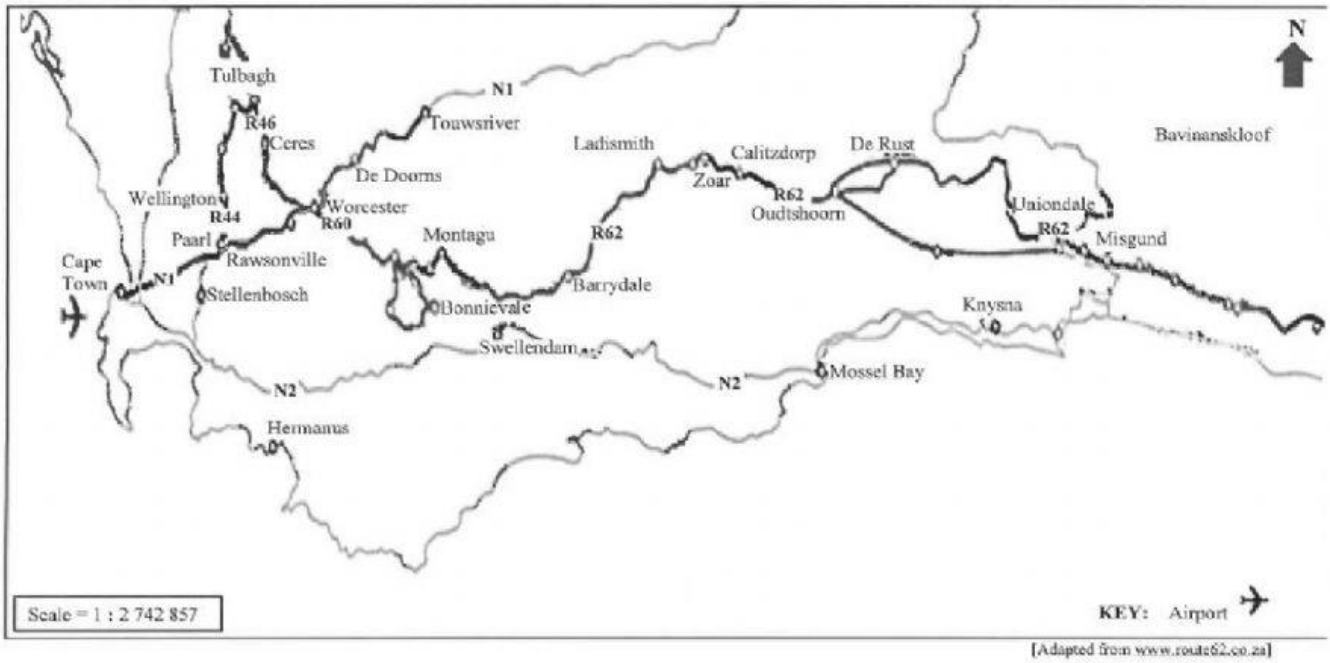
ROUTE 62 ROAD MAP



[Adapted from www.route62.co.za]

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4.1.1 Identify the road that must be travelled on between Tulbagh and Ceres. (2)

4.1.2 Name the type of scale shown on the map. (2)

4.1.3 Write down the general direction from Knysna to Mossel Bay. (2)

4.1.4 The total distance from Cape Town to Worcester, via Tulbagh, is 210 km.

TABLE 4 indicates the actual distances between some of the towns on Cape Route 62.

TABLE 4: ACTUAL DISTANCES BETWEEN TOWNS

Cape Town to Paarl	62 km
Paarl to Wellington	13 km
Wellington to Tulbagh	**A**
Tulbagh to Worcester	82 km

[Adapted from www.route62.co.za]

Determine missing value **A**. (2)

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