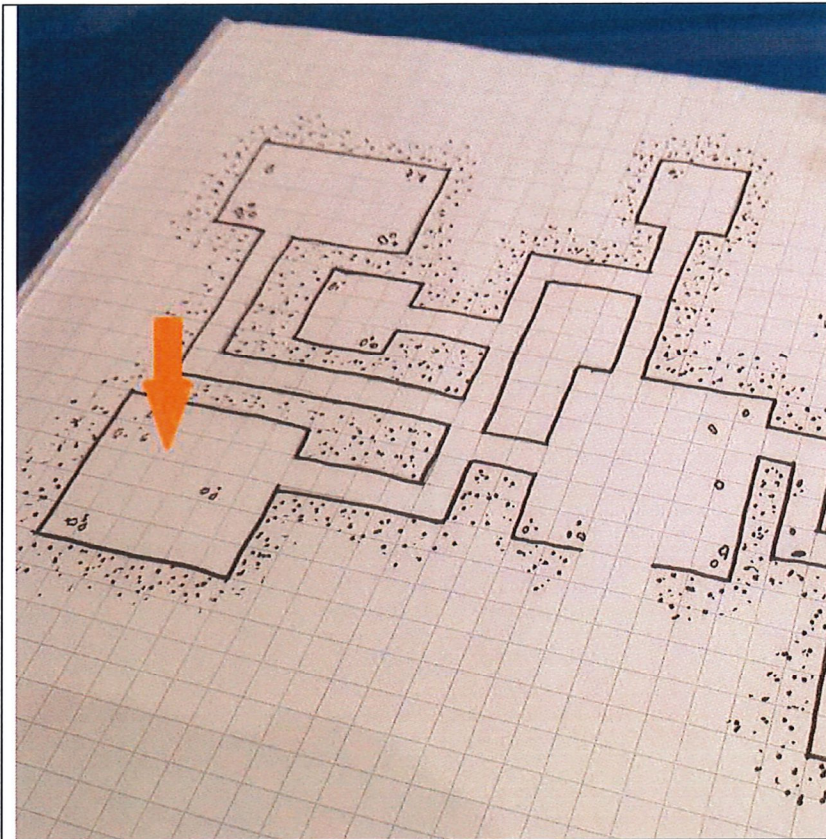


Problem Solving – VLAD’S DUNGEON Set

Area, surface area, volume, circumference

<http://www.learnersgrid.com>



Vlad's-Dungeon-Set [1] The Dungeon

This is part of a map of the dungeons beneath the castle of Vlad the Impaler, a fifteenth century noble from what is now Romania.

Look carefully at the room indicated by the orange arrow. It is a treasure room.

Each square represents 2 metres.

Give the area of this room.

$$\text{Area} = 67.62 \text{ cm}^2$$



4.2 cm

$$\text{AREA} = 67.84 \text{ cm}^2$$



12.3 cm

Vlad's-Dungeon-Set [2] Money, Money, Money!

Look at the two banknotes to the left. One is Canadian, one is Australian.

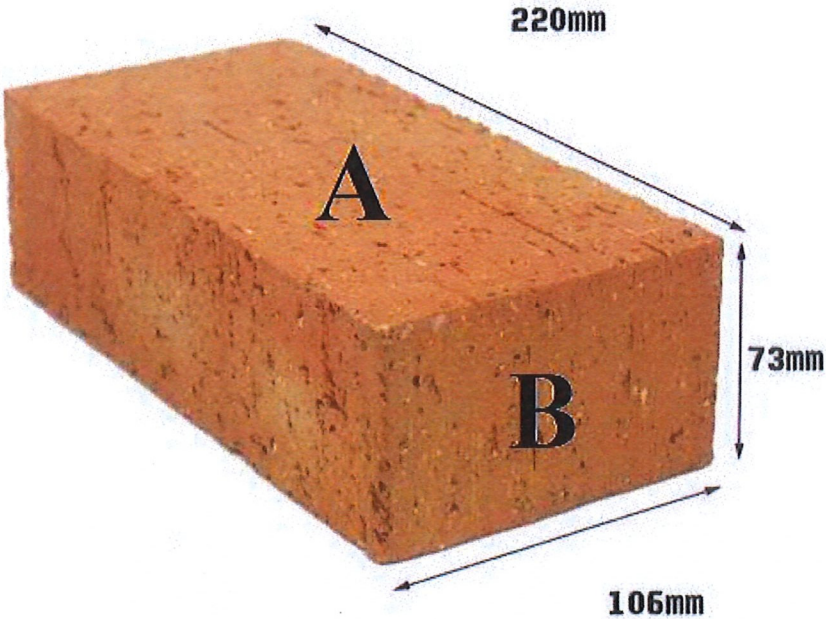
- Which banknote is longest?
 - Give this banknotes' length:


- Which banknote is widest?
 - Give this banknotes' width:

Problem Solving – VLAD'S DUNGEON Set

Area, surface area, volume, circumference

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 <p>A 3D diagram of a brick. The top edge is labeled 220mm, the front edge is labeled 106mm, and the height is labeled 73mm. The top surface is labeled 'A' and the front face is labeled 'B'.</p>	<p><i>Vlad's-Dungeon-Set</i> [3] Its a Brick!</p> <p>To the left, you can see a lovely brick.</p> <p>It is a brick that was recovered from the tomb of the pharaoh, Neferwiti. It is said to be cursed.</p> <ul style="list-style-type: none">• Give the area of side A:• Give the area of side B:
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 <p>A kite with a sun face wearing sunglasses. The kite is divided into four colored sections: blue, red, yellow, and purple. The top-left section is labeled 30 cm, the horizontal width is labeled 78 cm, and the bottom-right section is labeled 92 cm.</p>	<p><i>Vlad's-Dungeon-Set</i> [4] Happy Kite!</p> <p>To the left, you can see a lovely kite – very happy and very lovely. Just look at it! Doesn't it make you happy?!</p> <p>Anyway... moving on...</p> <p>At its widest point, this kite is 78 cm wide.</p> <ul style="list-style-type: none">• Use all the measurements given to <u>calculate the area</u> of this kite.
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Problem Solving – VLAD'S DUNGEON Set

Area, surface area, volume, circumference

<http://www.learnersgrid.com>

Hotel Dance Floor



Vlad's-Dungeon-Set [5] Boogie Time!

A lounge in a hotel is rectangular in shape and measures 25m by 18m.

In the centre of the floor, a large rectangular area measuring 7m by 5m has been tiled for some funky dancing.

The rest of the floor is carpeted.

- Calculate the area of the carpet.



Vlad's-Dungeon-Set [6] Unbearable!

A brown bear is pushing a large see-through cube end over end as if it was a giant cubic wheel. Bumpy ride for poor old Norihito inside!

The area of one face of the cube is 3.24 m^2 .

Imagine the bear flips the cube over 5 times.

- How far does the cube (and Norihito) travel?

Problem Solving – VLAD'S DUNGEON Set

Area, surface area, volume, circumference

<http://www.learnersgrid.com>

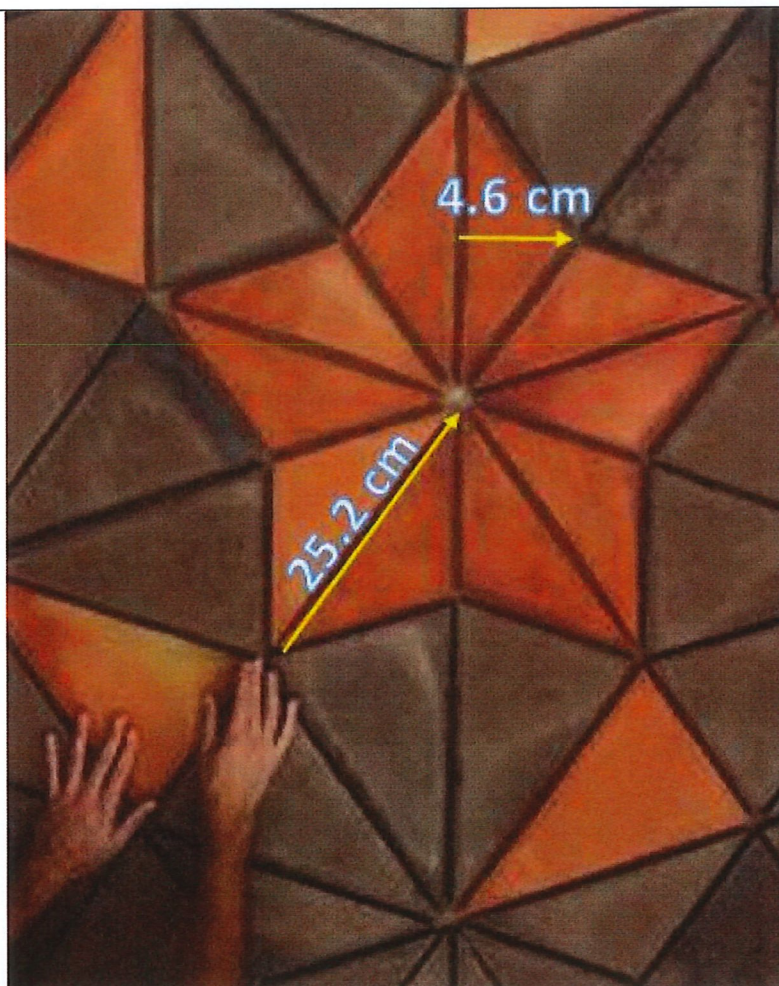


Vlad's-Dungeon-Set [7] Knock, Knock?

Nobby Nobiddy is buying some cool double doors for his new tree hut mansion.

The doors will be 225.5 millimetres high. One door, on its own, is 115.5 millimetres wide.

- What is the total area of the double doors that Nobby will buy?



Vlad's-Dungeon-Set [8] You're a Star!


Each triangular tile is 4.6 cm high, and 25.2 cm along its base.


- Calculate the area of the whole orange star shown.

Problem Solving – VLAD'S DUNGEON Set

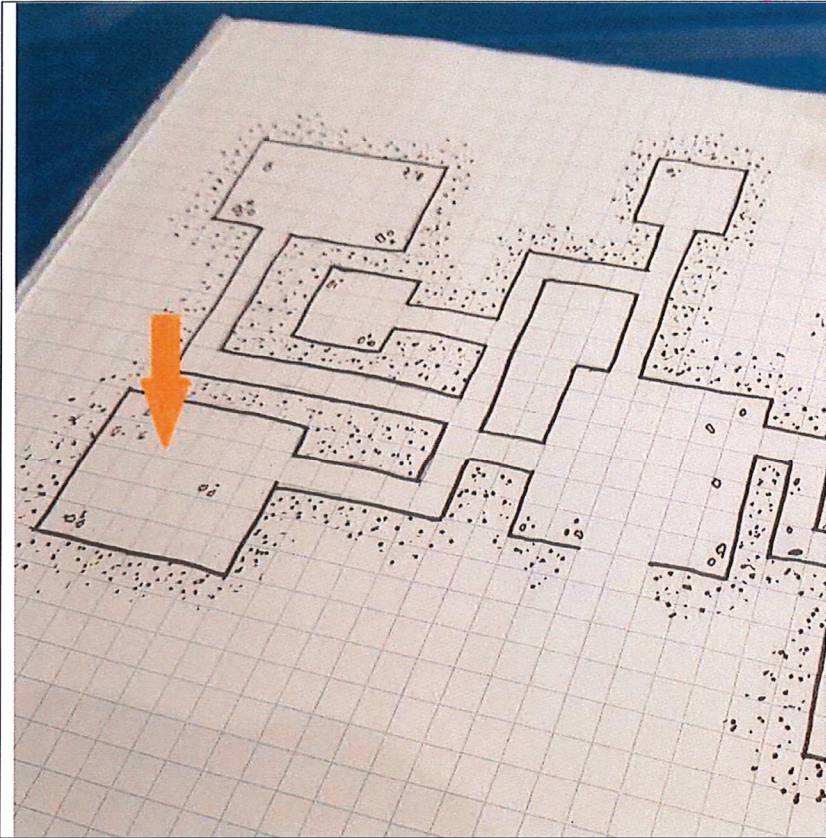
Area, surface area, volume, circumference

<http://www.learnersgrid.com>

 <p>15.6 cm</p> <p>BY AIR MAIL PAR AVION</p> <p>Messrs A.C. Morrison (Engineers) Ltd., Loughborough, ENGLAND.</p> <p>CHARLES A. MICALF & CO. LTD. 292, KINGSDOWN, VALLETTA MALTA G.P. TEL. CENTRAL 4313</p> <p>?</p>	<p>Vlad's-Dungeon-Set [9] The Letter (Part 1)</p> <p>Jingo Barristoy is sending a letter to an engineering company in jolly old England. He is up to something, no doubt!</p> <p>The area of the envelope is 138.84 cm^2.</p> <p>The length of the envelope is 15.6 cm.</p> <ul style="list-style-type: none">• What is the width of the envelope?
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 <p>15.6 cm</p> <p>BY AIR MAIL PAR AVION</p> <p>Messrs A.C. Morrison (Engineers) Ltd., Loughborough, ENGLAND.</p> <p>CHARLES A. MICALF & CO. LTD. 292, KINGSDOWN, VALLETTA MALTA G.P. TEL. CENTRAL 4313</p> <p>?</p>	<p>Vlad's-Dungeon-Set [10] The Letter (Part 2)</p> <p>If you look carefully at Jingo Barristoy's letter, you will notice he has attached a stamp.</p> <p>The stamp is 2.9 cm high and 4.5 cm long.</p> <ul style="list-style-type: none">• How much of the envelope's area is NOT covered up by the stamp?
--	---

ANSWERS



[1] The Dungeon

This is part of a map of the dungeons beneath the castle of Vlad the Impaler, a fifteenth century noble from what is now Romania.

Look carefully at the room indicated by the orange arrow. It is a treasure room.

Each square represents 2 metres.

Give the ^{area} size of this room.

$$= 2(6) = 12$$

$$= 2(5) = 10$$

$$A = LW$$

$$A = (12)(10)$$

$$A = 120m^2$$

$$\text{Area} = 67.62 \text{ cm}^2$$



4.2 cm

$$\text{AREA} = 67.84 \text{ cm}^2$$



12.3 cm

[2] Money, Money, Money!

Look at the two banknotes to the left. One is Canadian, one is Australian.

- Which banknote is longest?

Canada

- Give this banknotes' length:

$$A = LW$$

$$67.62 = (4.2)(x)$$

$$\frac{67.62}{4.2} = \frac{4.2x}{4.2}$$

$$16.1 = x$$

$$16.1 \text{ cm}$$

- Which banknote is widest?

Australian

- Give this banknotes' width:

$$A = LW$$

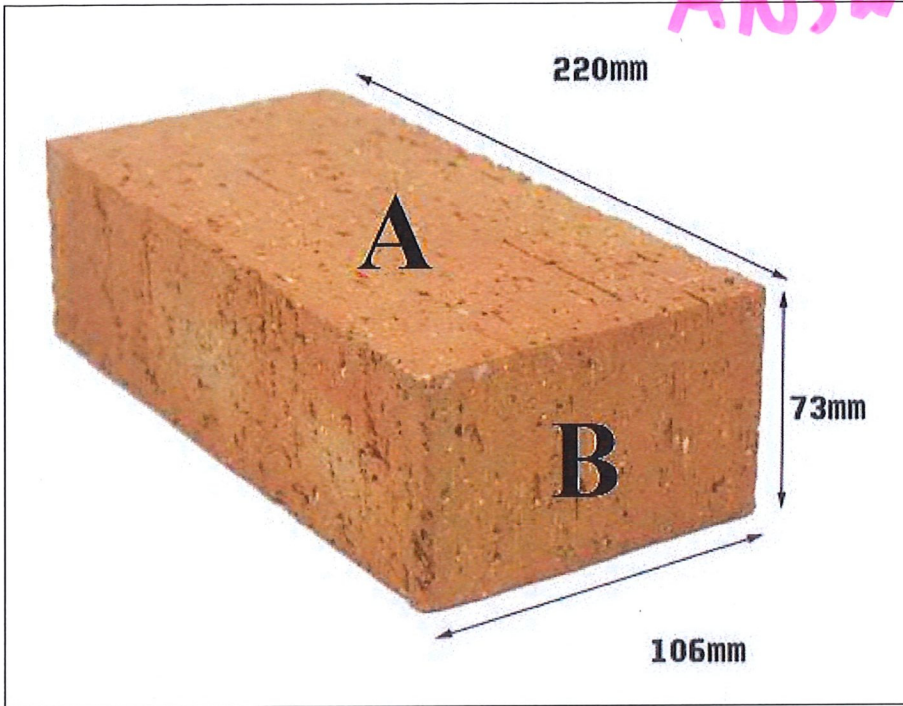
$$67.84 = (12.3)(x)$$

$$\frac{67.84}{12.3} = \frac{12.3x}{12.3}$$

$$5.52 = x$$

$$5.52 \text{ cm}$$

ANSWERS



[3] Its a Brick!

To the left, you can see a lovely brick.

It is a brick that was recovered from the tomb of the pharaoh, Neferwiti. It is said to be cursed.

- Give the area of side A:

$$A = LW$$
$$A = (220)(106)$$
$$A = 23,320 \text{ mm}^2$$

- Give the area of side B:

$$A = (106)(73)$$
$$A = 7,738 \text{ mm}^2$$



[4] Happy Kite!

To the left, you can see a lovely kite – very happy and very lovely. Just look at it! Doesn't it make you happy?!

Anyway... moving on...

At its widest point, this kite is 78 cm wide.

- Use all the measurements given to calculate the area of this kite.

$$A = \frac{bh}{2}$$
$$A = \frac{(30)(78)}{2}$$
$$A = \frac{2340}{2}$$
$$A = 1170 \text{ cm}^2$$

↑
top triangle

$$A = \frac{bh}{2}$$
$$A = \frac{(78)(92)}{2}$$
$$A = \frac{7176}{2}$$
$$A = 3588 \text{ cm}^2$$

↑
bottom triangle.

$$\text{AREA} = 1170$$

$$+ 3588$$

$$\boxed{4758 \text{ cm}^2}$$

ANSWERS

Hotel Dance Floor



[5] Boogie Time!

A lounge in a hotel is rectangular in shape and measures 25m by 18m.

In the centre of the floor, a large rectangular area measuring 7m by 5m has been tiled for some funky dancing.

The rest of the floor is carpeted.

- Calculate the area of the carpet.

$$A = (25)(18)$$
$$A = 450$$

$$A = (7)(5)$$
$$A = 35$$

$$\begin{array}{r} 450 \\ - 35 \\ \hline \end{array}$$

$A = 415 \text{ m}^2$ carpeted area.



[6] Unbearable!

A brown bear is pushing a large see-through cube end over end as if it was a giant cubic wheel.

Bumpy ride for poor old Norihito inside!

The area of one face of the cube is 3.24 m^2 .

Imagine the bear flips the cube over 5 times.

- How far does the cube (and Norihito) travel?

$$A = s^2$$

$$\sqrt{3.24} = \sqrt{s^2}$$

$$1.8 = s$$

$$s = 1.8 \text{ m}$$

$$\begin{array}{r} 1.8 \\ \times 5 \\ \hline 9.0 \end{array}$$

$$\text{Distance} = 9 \text{ m}$$

ANSWERS



[7] Knock, Knock?

Nobby Nobiddy is buying some cool double doors for his new tree hut mansion.

The doors will be 225.5 millimetres high. One door, on its own, is 115.5 millimetres wide.

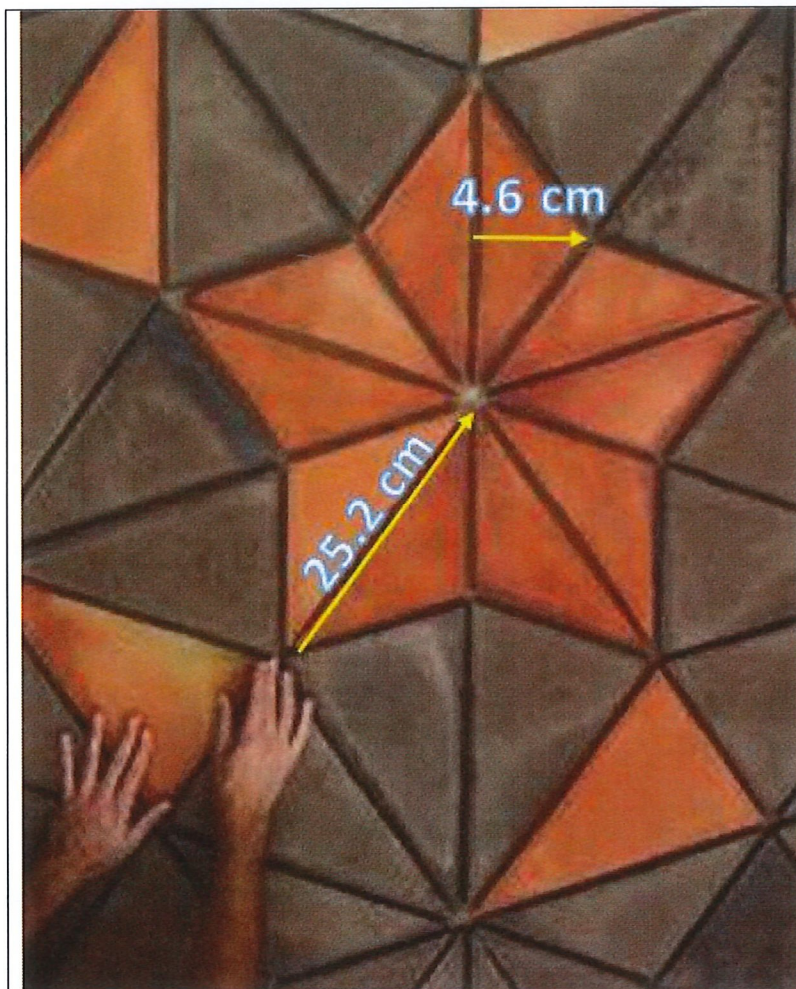
- What is the total area of the double doors that Nobby will buy?

$$A = (225.5)(115.5)$$
$$A = 26045.25$$

" one door

$$2 \text{ doors} = 2(26045.25)$$

$$A = 52090.5 \text{ mm}^2$$



[8] You're a Star!

Each triangular tile is 4.6 cm high, and 25.2 cm along its base.

- Calculate the area of the whole orange star shown.

$$A = \frac{bh}{2}$$

$$A = \frac{(25.2)(4.6)}{2}$$

$$A = \frac{115.92}{2}$$

$$A = 57.96 \text{ cm}^2 = 1 \text{ tile.}$$

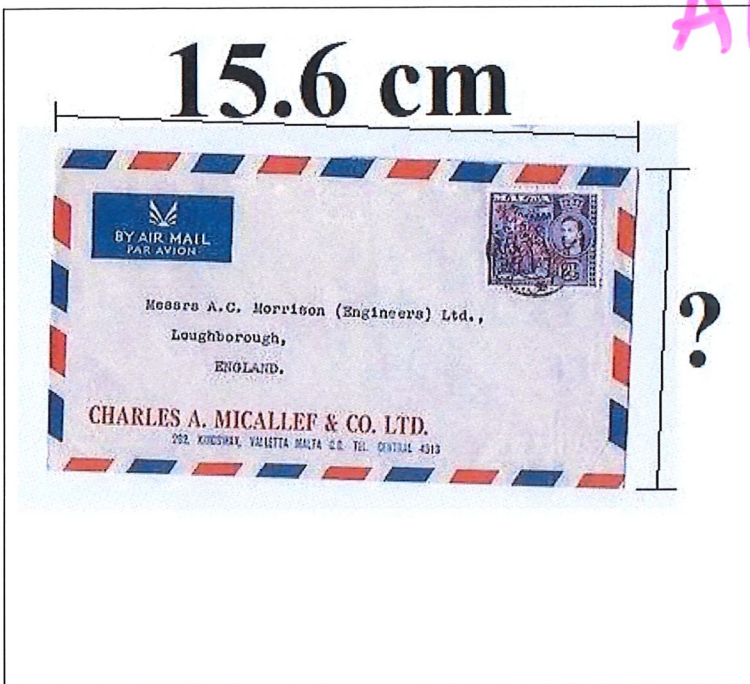
⇓

$$\begin{array}{r} 57.96 \\ \times 10 \leftarrow \text{tiles} \\ \hline \end{array}$$

$$579.6 \text{ cm}^2$$

ANSWERS

[9] The Letter (Part 1)



Jingo Barristoy is sending a letter to an engineering company in jolly old England. He is up to something, no doubt!

The area of the envelope is 138.84 cm^2 .

The length of the envelope is 15.6 cm .

- What is the width of the envelope?

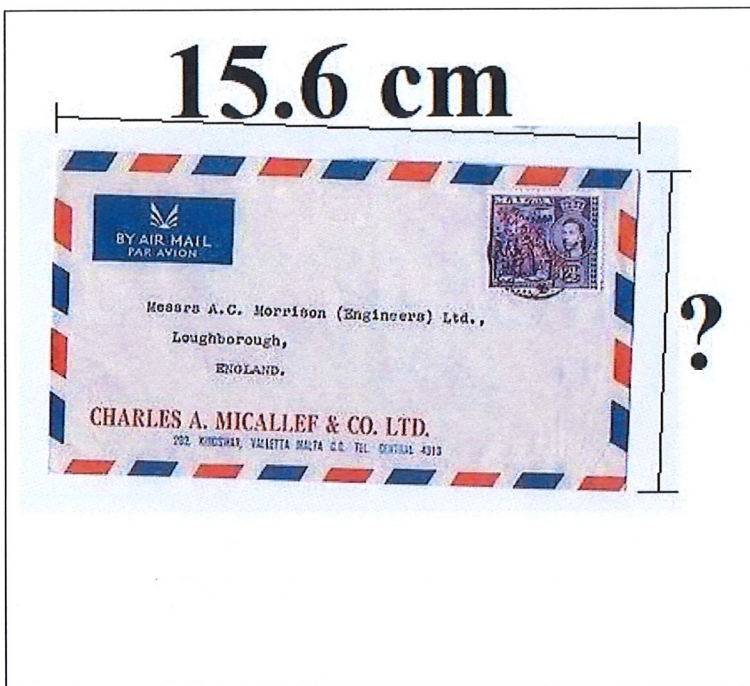
$$A = Lw$$

$$138.84 = (15.6)(x)$$

$$\frac{138.84}{15.6} = \frac{15.6x}{15.6}$$

$$8.9 = x$$

8.9 cm



[10] The Letter (Part 2)

If you look carefully at Jingo Barristoy's letter, you will notice he has attached a stamp.

The stamp is 2.9 cm high and 4.5 cm long.

- How much of the envelope's area is NOT covered up by the stamp?

$$A = (2.9)(4.5)$$

$$A = 13.05$$

$$\begin{array}{r} 138.84 \\ - 13.05 \\ \hline 125.79 \end{array}$$

A = 125.79 cm²