

DETAILED ESTIMATE

- This estimate is an accurate and is based on the plans of the building.
- The quantity of items under each sub head of work are calculated from the dimensions taken from drawing and then total cost is worked out in a form called abstract of cost.

This includes the detailed particulars for the quantities, rate and cost of all the items involved for satisfactory completion of a project.

Quantities of all items of work are calculated from their respective dimension or number on the drawing on a measurement sheet .multiplying these quantities by their respective rate in separate sheet, the cost of all items of work are worked out individually and then summarized

A detail estimate is accompanied by

- Reports
- Specifications
- Detailed drawings showing plane Design data and calculations
- Basis of rates adopted in the estimate

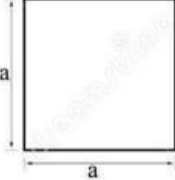
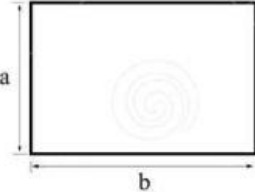
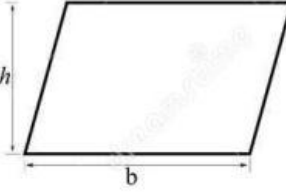
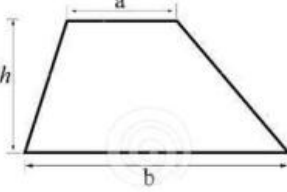
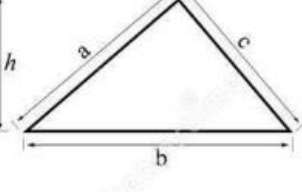
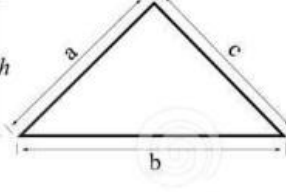
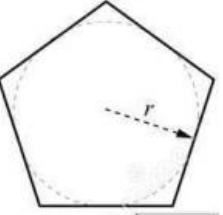
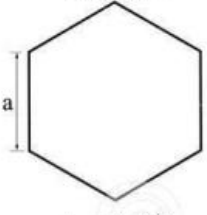
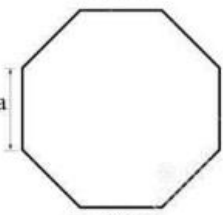
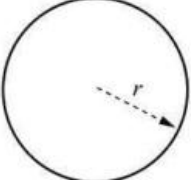
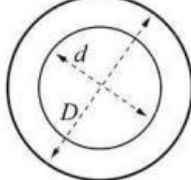
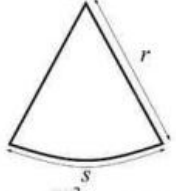
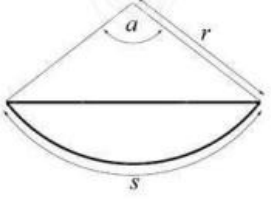
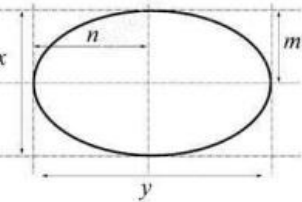
*يتم اعداد التخمينات التفصيلية للمنشأ بعد تقسيمه الى فقرات و تخمين كلفة هذه الفقرات بعد تحليل كلفتها الى كلفة المواد و العمال و المكائن اضافة الى الكلف الاضافية المتوقعة .

فيما يلي جدول ببعض الفقرات للبناء و الوحدات المستخدمة في حسابها.

Item	Unit	الوحدة	الفقرة	ت
Earth work (Excavation/ filling)	Cum	متر مكعب	اعمال الارض (الحفريات)	1
Concrete work (casting)	Cum	متر مكعب	اعمال الخرسانة (الصب)	2
brick work	Cum	متر مكعب	اعمال الطابوق	3
Finishing of walls	Sqm	متر مربع	انهايتات الجدران	4
Finishing of floors	Sqm	متر مربع	انهايتات الارضيات	5
Roofing	Sqm	متر مربع	التسطيح	6
Doors and windows	Quantity (with mention the dimensions)	عدد مع ذكر الابعاد	الابواب و الشبابيك	7
Water or wastewater pipes	Length (m)	متر طول	انابيب الماء او المجاري	8

The following is area formula for variant shapes:

Areas of 2D shapes

<p>Square</p>  <p>$A = a^2$</p>	<p>Rectangle</p>  <p>$A = ab$</p>	<p>Parallelogram</p>  <p>$A = hb$</p>
<p>Trapezium</p>  <p>$A = 0.5h(a+b)$</p>	<p>Triangle</p>  <p>$A = 0.5bh$</p>	<p>Equilateral triangle</p>  <p>$A = b^2 \times \frac{1}{4} \times \sqrt{3}$</p>
<p>Pentagon</p>  <p>$A = \frac{5}{8} \times r^2 \times \sqrt{10+2\sqrt{5}}$</p>	<p>Hexagon</p>  <p>$A = 1.5a^2\sqrt{3}$</p>	<p>Octagon</p>  <p>$A = 6.64a$</p>
<p>Circle</p>  <p>$A = \pi r^2$</p>	<p>Annulus</p>  <p>$A = \pi/4 (D^2 - d^2)$</p>	<p>Sector of a circle</p>  <p>$A = \frac{\pi r^2 s}{360^\circ} = 0.5sr$</p>
<p>Segment of a circle</p>  <p>$A = 2r \cdot \sin 0.5a$</p>	<p>Ellipse</p>  <p>$A = \pi/4yx = \pi mn$</p>	

Methods of taking out quantities : (طرق الحصول على مقدار الكميات)

a) Geometrical shapes method:

This method depends on dividing the walls into geometrical shapes (usually rectangles) and calculates the area of each part then calculates the volume by multiplying the area of each part by the perpendicular length (the height).

- تعتمد هذه الطريقة على تقسيم الخارطة الى اشكال هندسية ثم حساب مساحة او حجم كل منها.

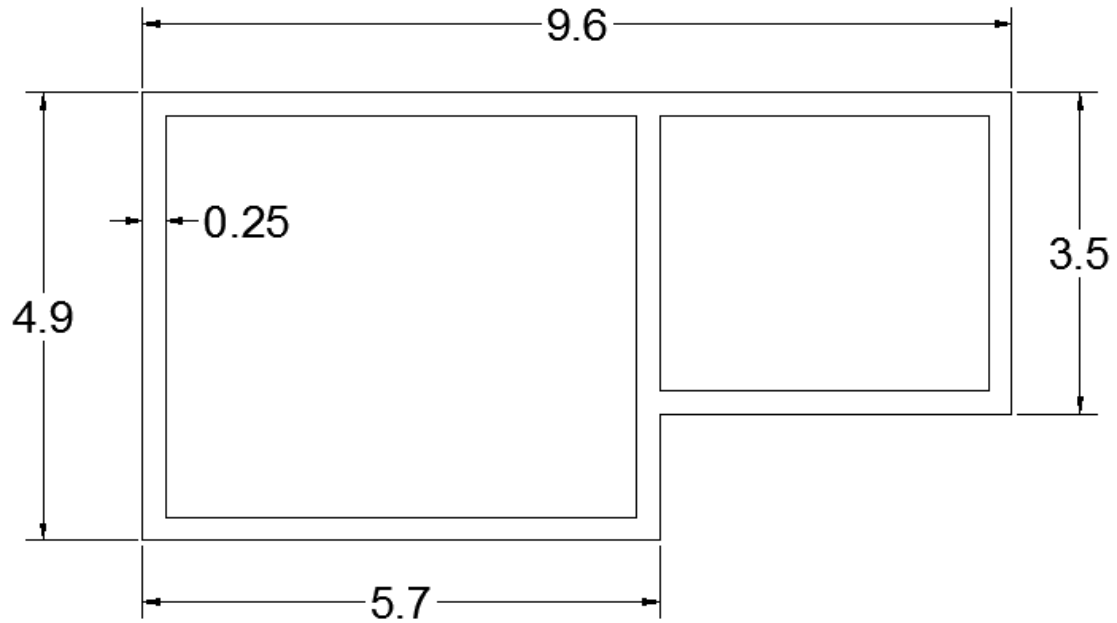
b) Centre line method:

This method is suitable for walls of similar cross sections. Here the total center line length is multiplied by width and depth of respective item to get the total quantity. When cross walls join with other wall, the center line length gets reduced by half of width for each junction. such junction or joints are studied carefully while calculating total center line length. The estimates prepared by this method are most accurate and quick

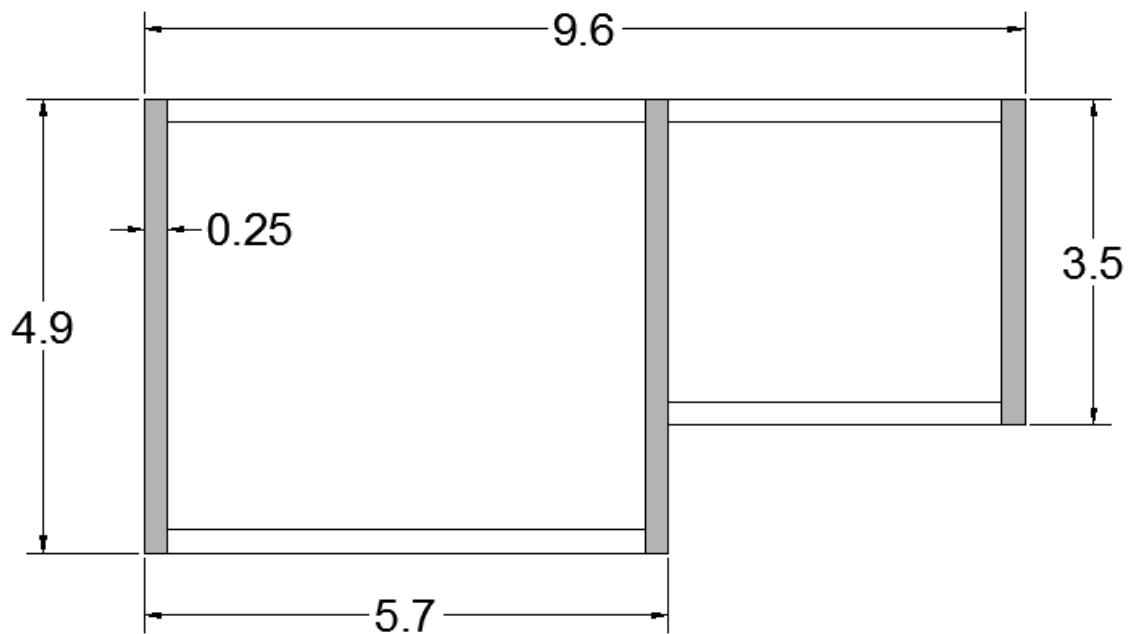
- في هذه الطريقة يتم احتساب اطوال مراكز الجدران و يتم انقاص طول المركز بمقدار نصف عرض الجدار لكل منطقة تلاقي مع جدار اخر .

Example:

For the following plan view, calculate the total volume of walls if the height is 3 m.



1- Geometrical method:

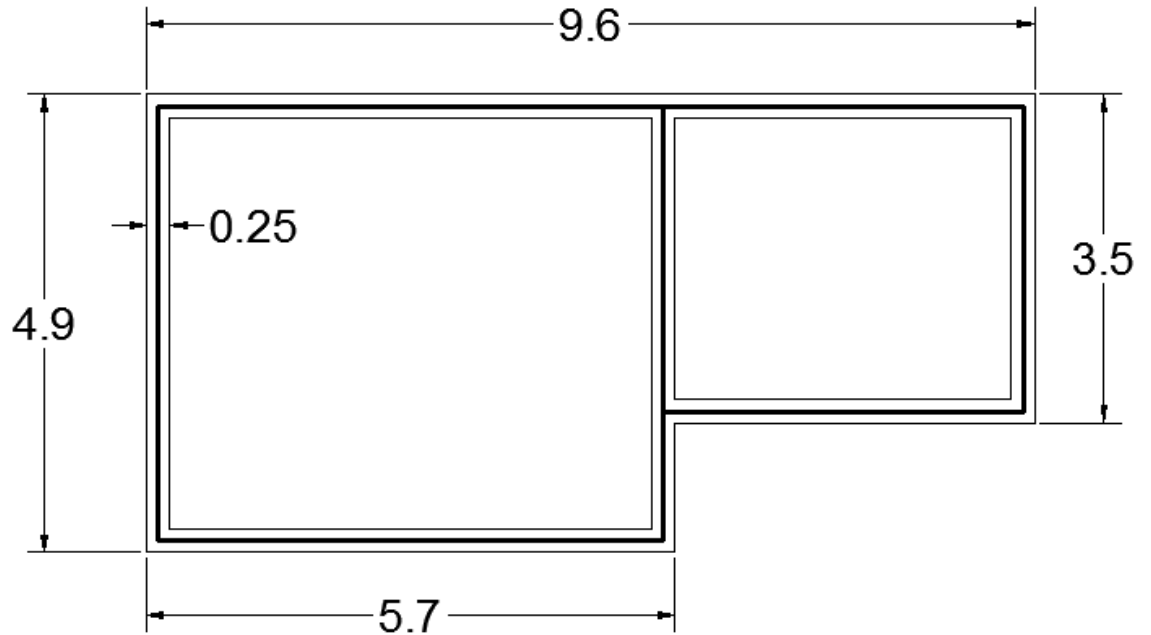


$$\text{Area of dark walls} = (4.9 \times 0.25 \times 2 + 3.5 \times 0.25) = 3.325 \text{ m}^2$$

$$\text{Area of not dark walls} = ((5.7 - 0.25 * 2) * 0.25 * 2 + (9.6 - 5.7 - 0.25) * 0.25 * 2) = 4.425 \text{ m}^2$$

$$\text{Volume} = (3.325 + 4.425) * 3 = 23.25 \text{ m}^3$$

2- Center line method:



$$\text{Center line length} = (4.9 - 0.25) * 2 + (5.7 - 0.25) * 2 + (9.6 - 5.7 - 0.125) * 2 + (3.5 - 0.25) = 31 \text{ m}$$

$$\text{Volume} = 31 * 0.25 * 3 = 23.25 \text{ m}^3$$

Estimation of construction materials : (تخمين المواد الانشائية)

1- Bricks: الطابوق

In general the dimensions of brick is 24*11.5*7.5 cm

After adding mortar (1 cm)

The dimensions will be 25*12.5*8.5 cm



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In 1m^3 the number of bricks equal to $1/(0.25 * 0.125 * 0.085) = 377$ brick
 Let we take the crushed bricks percent = 5%
 The number of bricks in $1\text{m}^3 = 1.05 * 377 = 396 \approx 400$ bricks

For previous example if there are two doors with dimensions of $1 * 2.5$ m and two windows with dimensions of $2 * 2.5$ m the number of bricks needed is :

$$\begin{aligned} \text{Number of bricks} &= \text{volume (in m}^3) * (\text{number of bricks in } 1 \text{ m}^3) \\ &= [23.25 - ((2 * 1 * 2.5 * 0.25) + (2 * 2 * 2.5 * 0.25))] * 400 \\ &= 7800 \text{ brick} \end{aligned}$$

H.W.

Find the center line of walls for the following plan view

