

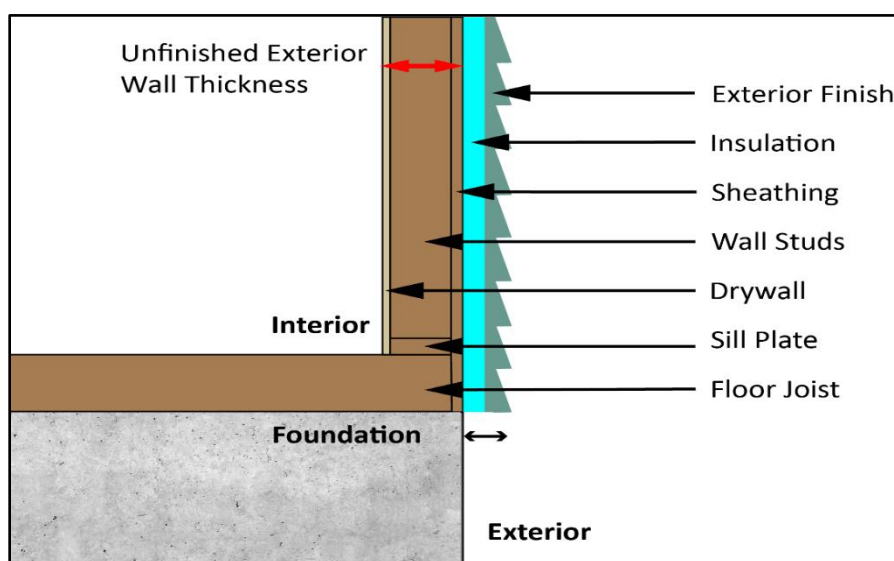
## TIPSHEET: EXTRAPOLATING EXTERIOR MEASUREMENTS

### Exterior Wall Construction

Principle 3 requires detached properties to be measured using the exterior wall at the foundation. As the unfinished exterior wall lines up with the foundation surface, it becomes possible to extrapolate to the edge of the foundation by calculating the thickness of the unfinished exterior wall.

Exterior measurements can be extrapolated from interior measurements by adding the unfinished exterior wall thickness. The following diagram illustrates the typical layers of building materials used to construct exterior walls for residential properties.

### CROSS SECTION OF EXTERIOR WALL IN RESIDENTIAL CONSTRUCTION



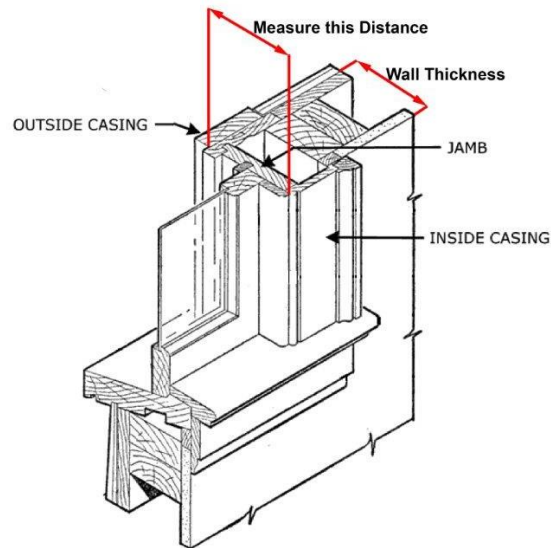
The exterior wall measurement should include the exterior sheathing, but not the exterior insulation and the exterior finish (e.g. vinyl siding, aluminum siding, clapboard, stucco, brick or stone veneer).

The thickness of exterior walls can vary based on the thicknesses of the standard building materials used in their construction. In Alberta, wood frame construction is commonly used to build residential properties. Typically, the exterior walls are composed of the framing studs, the sheathing, and the drywall. These materials have standard dimensions that include standard thicknesses. This makes it possible to calculate the distance from the interior measurement to the exterior surface of the sheathing.

Most residential properties have been built with wood frame construction. Framing lumber comes in standard measurements identified by their width and thickness, such as 2 x 4, 2 x 6, or 2 x 8. However, the actual width measurement is slightly smaller. For example, 2 x 4 framing studs are actually 3.5 inches wide. Drywall and sheathing also come in standard thicknesses. Together the thickness of the 2 x 4, the sheathing, and the dry wall will be approximately 4.5 inches. Drywall and sheathing can come in various thicknesses but a difference of a 1/4 inch or a 1/3 of an inch will be inconsequential.

**Practice Tip:** Real estate professionals may need to make adjustments if the exterior walls of a residential property are composed of different building materials than typically used for wood frame construction. Cinder block construction would be an example of this.

The thickness of the exterior walls can be determined by its exterior door casings and/or window casings. For the purpose of this course, the term casing refers to the framework around the exterior door or window, minus the exterior finish. The following example represents exterior window casings.



When extrapolating exterior measurements, add the applicable exterior wall thickness to the interior measurements. The variance in the exterior wall building materials can be addressed as follows:

- If the exterior wall measures less than 6 in. (.15 m), add 4.5 in. (.11 m)
- If the exterior wall measures 6 in. (.15 m) but less than 8 in. (.20 m), add 6.5 in. (.17 m)
- If the exterior wall measures 8 in. (.20 m) or more, add 8.5 in. (.22 m)

In most instances, the casing measurements will be 4.5 in., 6.5 in., 8.5 in., or slightly larger.

When measuring the width of the casing do not include the moldings affixed from the door or window casing to the wall. The following photograph is an example of an exterior door casing measurement of a house with 2 x 6 construction. The casing measures 15.8 cm or 6.2 inches. Note that the exterior and interior moldings were not included in the measurement:



Although these measurement adjustments for unfinished exterior wall thickness are provided as guidelines, real estate professionals should still exercise care. For example, additional exterior wall insulation and exterior finishing may have been added to the exterior wall. Typically, the window and door casing stay the same, but if it appears that the door or window casing was modified to facilitate the exterior wall finish, real estate professionals will need to adjust the measurement accordingly. You can usually determine when additional insulation or finish has been added at the interface of the wall with the foundation.

The following picture is an example of where an additional exterior finish was affixed to the property:



**Practice Tip:** The exterior wall thickness of residential property is typically uniform. However, there may be instances where this is not the case. For example, an older property may have been built using 2 x 4 framing studs for the exterior walls after which, a new addition to the property was built using 2 x 6 framing studs for the exterior walls. Real estate professionals must be aware of the different wall thicknesses and make the applicable adjustments. This will result in adding different measurements to account for the different exterior wall thicknesses.

In Alberta other forms of wall construction, such as brick, concrete block, concrete or log are uncommon. If you come across one of these construction types, you will need to calculate the thickness of the wall material in reference to the outside surface of the foundation.

### **Extrapolating Exterior Measurements for Detached Properties**

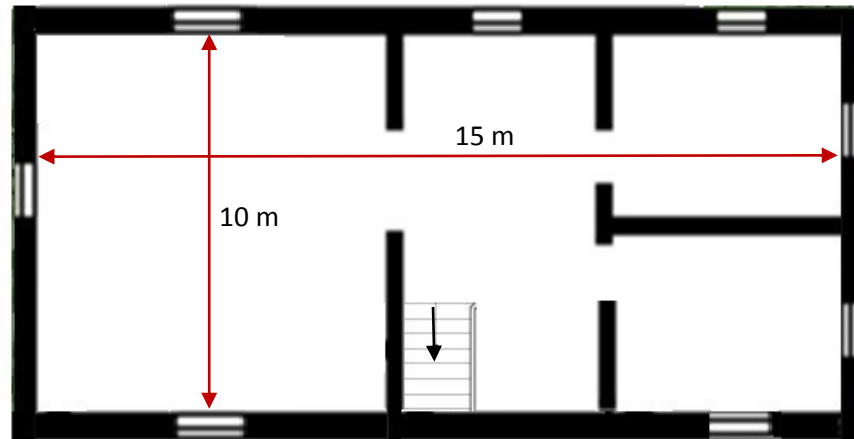
When measuring detached properties, direct measurement of the exterior wall(s) at the foundation may not always be possible. This can be due to grade, structures, landscaping, or other obstacles. It can also occur when measuring a multi-level property and the upper level is not the same size as the main level.

The diagram below is a sketch of an upper level, 2 storey property. The real estate professional is unable to measure the exterior walls at the foundation for the upper level. In addition, the level to be measured is a different size than the main level. Therefore, the real estate professional needs to extrapolate exterior measurements by taking interior measurements and adding the thickness of the exterior wall. The thickness

of the exterior wall can be determined by measuring the thickness of the exterior door casings and/or exterior window casings. The thickness of the exterior window casing is 6 in. (.15 m). Once the exterior wall thickness has been determined, add the applicable adjustment to the interior measurements.

These adjustments are as follows:

- If the exterior wall measures less than 6 in. (.15 m), add 4.5 in. (.11 m)
- If the exterior wall measures 6 in. (.15 m) but less than 8 in. (.20 m), add 6.5 in. (.17 m)
- If the exterior wall measures 8 in. (.20 m) or more, add 8.5 in. (.22 m)



### Calculate the Area

The area for the upper level of this property is calculated by measuring the width and length and adding the wall thickness to both ends of the dimensions:

Width (W) = 15 m (longest run), Length (L) = 10 m (longest run), Wall thickness (T) = .17 m

Area = (W + (2T)) x (L + (2T))

Area = (15 + .34) x (10 + .34)

Area = 15.34 x 10.34

Area = 158.62 sq. m. (1,706.75 sq. ft.)

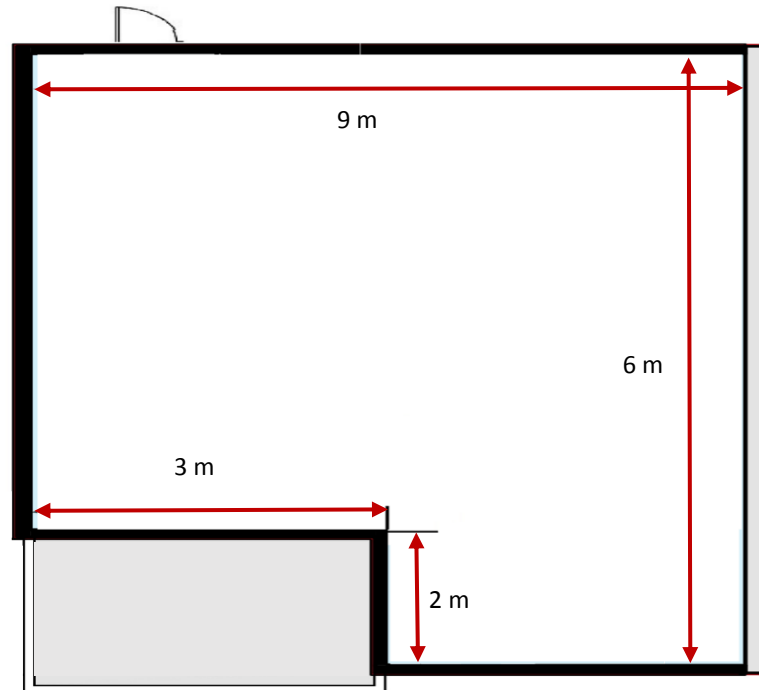
**Remember:** If extrapolating exterior measurements for detached properties, the extrapolated measurements form part of the total RMS area. This means the real estate professional does not need to describe it as an extrapolated measurement or explain their assumptions. However, they must include their notes, sketches, and calculations in the client's brokerage file in case they are required in the future and to meet the brokerage's record-keeping obligations under the Rules.

### Extrapolating Exterior Measurements for Attached Properties

Extrapolating exterior measurements may be needed if a client wishes to compare the size of an attached or semi-detached property to a detached property. By extrapolating exterior measurements, real estate professionals can provide an additional measurement for the attached or semi-detached property.

The diagram below is a sketch of a semi-detached townhouse. The seller is competing with bare land condominiums and wants to compare its size to that of the detached bare land condominium. The exterior door casing measures 7 in. (.18 m). Therefore, the real estate professional adds .17 m to the interior area measurements based on the following:

- If the exterior wall measures less than 6 in. (.15 m), add 4.5 in. (.11 m)
- If the exterior wall measures 6 in. (.15 m) but less than 8 in. (.20 m), add 6.5 in. (.17 m)
- If the exterior wall measures 8 in. (.20 m) or more, add 8.5 in. (.22 m)



### Calculate the Area

$$\begin{aligned} \text{Area} &= (W \times L) - (\text{excluded area}) \\ \text{Area} &= (9 \times 6) - (3 \times 2) \\ \text{Area} &= 48 \text{ sq. m. (516.48 sq. ft)} \end{aligned}$$

### Calculate the Assumed Exterior Measurement

Exterior wall thickness (T) = .18 m. Based on this thickness, add .17 m to the interior measurements for both ends of the width and length dimensions.

$$\begin{aligned} \text{Area} &= (W + (2T)) \times (L + (2T)) - (\text{excluded area}) \\ \text{Area} &= (9 + .34) \times (6 + .34) - (3 \times 2) \\ \text{Area} &= (9.34 \times 6.34) - 6 \\ \text{Area} &= 53.22 \text{ sq. m. (572.65 sq. ft.)} \end{aligned}$$

Once the measurements and calculations have been done, the real estate professional describes the RMS area as 48 sq. m. The additional measurement is also included with the following statement, ‘assuming a wall thickness of .17 metres, the exterior measurement is 53.22 sq. m.’ Thickness was not added to this

measurement as the measurement includes one wall thickness. This will be discussed in more detail in the following section.

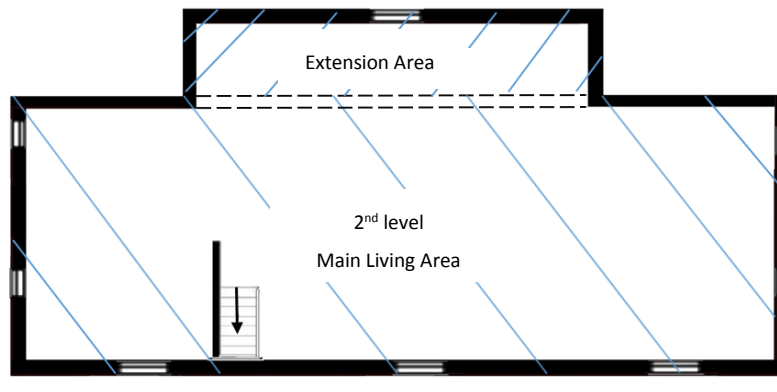
### Extrapolating Exterior Measurements for Extensions

Most often the wall thickness will need to be added twice to obtain the extrapolated exterior measurement. However, there are circumstances, such as when measuring extensions, where adding the wall thickness twice will not apply. This typically happens when one end of the interior measurement includes the wall thickness.

The diagram below is a sketch of the second level of a detached property with an extension. As this is a second level we will need to take interior measurements and include the wall thickness to get the extrapolated exterior dimensions. The floor of the extension is a walkable floor with the main level and it meets the RMS minimum floor-to-ceiling height requirements. As a result, the RMS area for the second level of this property is the sum of the main living area and the extension area plus the exterior wall thickness. The exterior wall thickness can be determined by measuring the thickness of the exterior door casings and/or exterior window casings. In this case it will be a window casing.

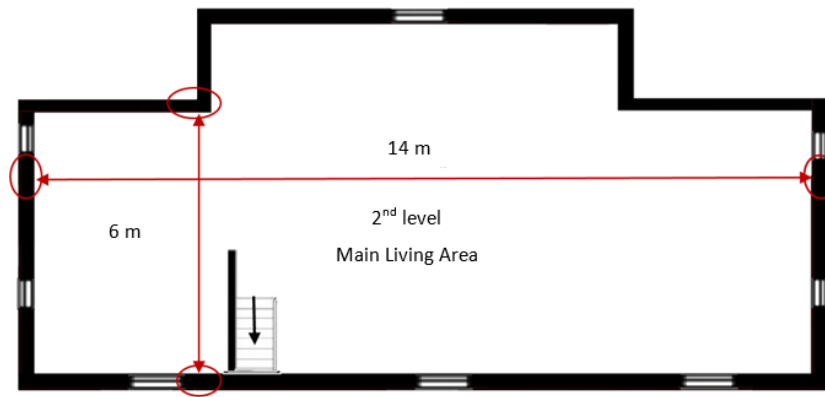
The thickness of the exterior window casing is 5.5 in. (.14 m). Based on the chart below, .11 m is added to the interior area measurements:

- If the exterior wall measures less than 6 in. (.15 m), add 4.5 in. (.11 m)
- If the exterior wall measures 6 in. (.15 m) but less than 8 in. (.20 m), add 6.5 in. (.17 m)
- If the exterior wall measures 8 in. (.20 m) or more, add 8.5 in. (.22 m)



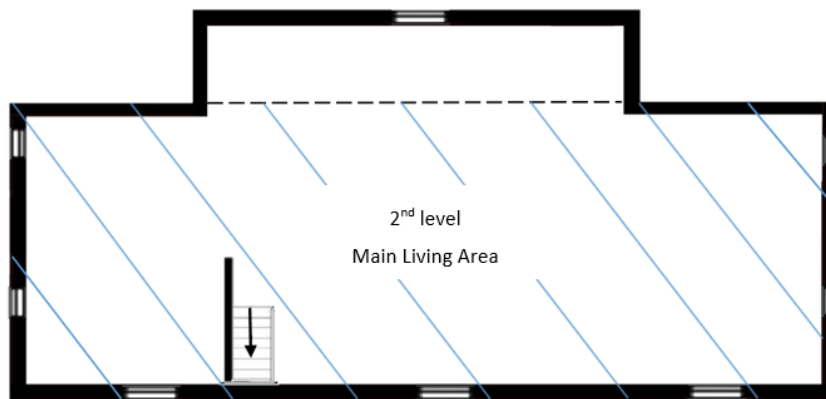
### Measure and Calculate the Main Living Area

The main living area is measured using the width and length and adding the wall thickness to both ends of the dimensions.



Width (W) = 14 m (longest run), Length (L) = 6 m (longest run), Wall thickness (T) = .11 m  
 Area = (W + (2T)) x (L + (2T))  
 Area = (14 + .22) x (6 + .22)  
 Area = 14.22 x 6.22  
 Area = 88.45 sq. m. (951.72 sq. ft.)

Measuring the main living area and adding the wall thickness to both ends of the dimensions results in the following area being measured:

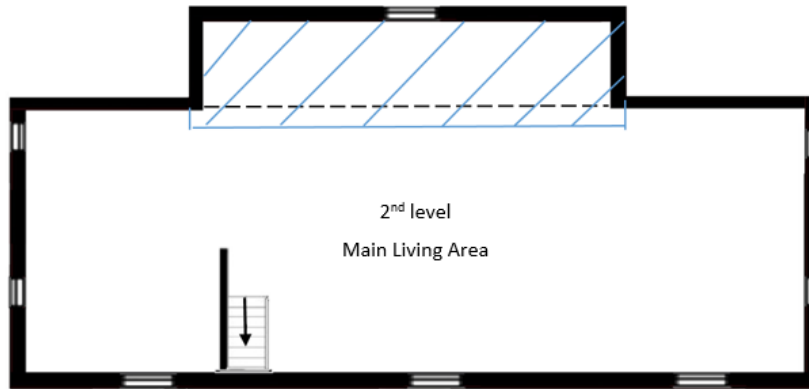


**Measure and Calculate the Extension Area**

The extension area is also measured using the width and length dimensions. However, real estate professionals will have a tendency to measure the length of the extension from point A to point B and add the wall thickness to both ends of the dimensions.



If the length is measured in this manner, the wall thickness is added twice. This has the effect of including a portion of the main living area which has already been measured.



To avoid including a portion of the main living area which has already been measured, you have 2 options to measure the extension area. These options are explained as follows:

**Option 1:** Measure the length dimension (point A to point B), add the wall thickness (WT) at point B, and subtract the WT at point A. When measuring the width dimension, add the WT to both ends of this dimension.



**Option 2:** This option is easier and less likely to result in errors. Instead of adding and subtracting the wall thickness (WT) to the length dimension, just measure the interior length (point A to point B). When measuring the width dimension, add the WT to both ends of this dimension.



You can also consider this approach when deducting areas from the level.

**Remember:** If extrapolating exterior measurements to compare attached/semi-detached properties to detached properties, real estate professionals must make it clear that the additional measurement is not the RMS area for the property. They must describe it as an extrapolated measurement and explain their assumptions. They must also include their notes, sketches, and calculations in the client's brokerage file in case they are required in the future and to meet the brokerage's record-keeping obligations under the Rules.

### Calculate the RMS Area

To calculate the total RMS area for the second level, add the main living area and the extension area.