

Choose Useful Room Sizes: Planning for Small Schools or Community Center Buildings

Build Simple Inc.; www.BuildSimple.org

Patti Stouter, simple_earth@yahoo.com, Albuquerque, NM

April 5, 2012

Making Good Spaces

- 1 Our Sense of Space
- 1 Personal Distance
- 2 Social Distance
- 2 Places for Getting to Know Others

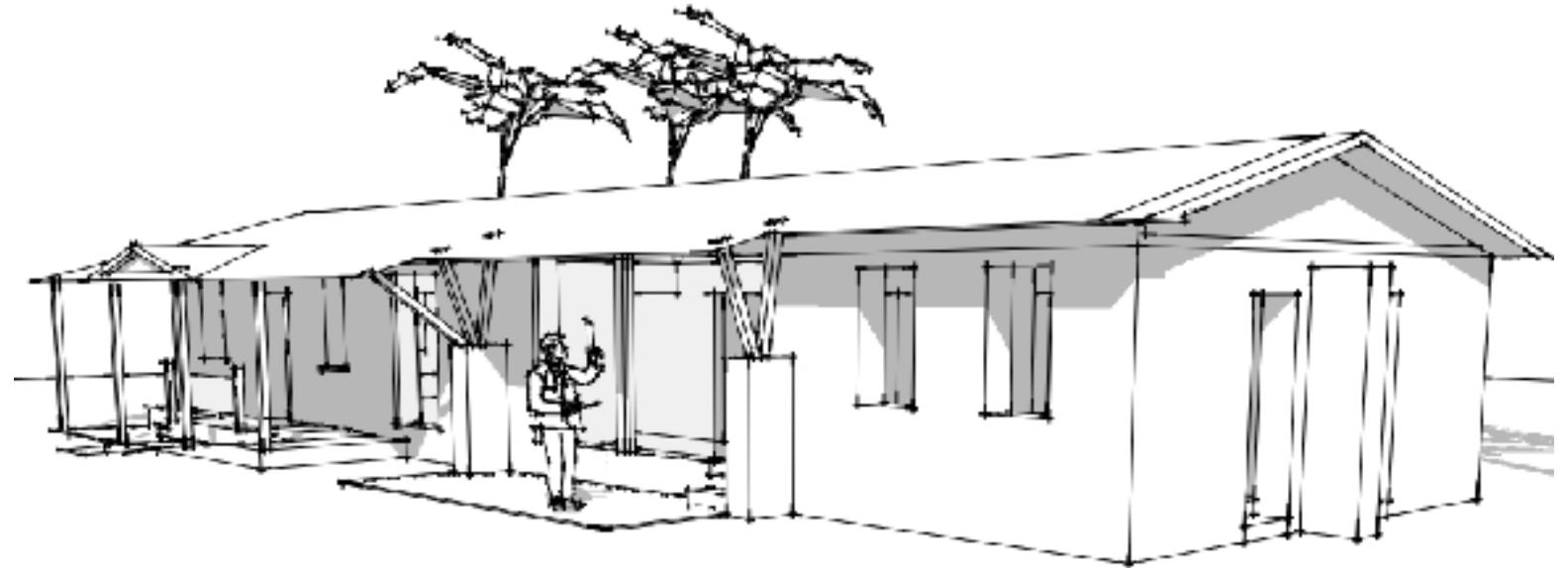
Typical Room Sizes

Spaces to Work and Learn

- 4 Offices
- 5 Reception Rooms
- 10 Conference Halls and Classrooms
- 14 Other Spaces

Spaces for Guests

- 15 Guestrooms
- 15 Kitchens
- 15 Others



More Information

Making Good Spaces

We shape our buildings and afterwards our buildings shape us. - Winston Churchill 1943

Buildings influence us. Rooms and outdoor spaces are the settings for our actions. They determine our responses to each other.

The shape and relationships between rooms enable or prevent the formation of friendships.

We work alone or next to others. We speak as equals or as boss and worker. We share or keep private information on papers and computer screens. Large or small groups share or restrict the use of tools, books, and work tables.

Our Sense of Space

Everyone perceives intuitively the meaning of each space. The locations of the entrance, the furniture, and the windows show the hierarchical levels of the people using a room.

Some meanings of space are similar in many cultures. Often people feel uncomfortable sitting where others face their side. Someone seated where they look at the side of another appears to have responsibility for them. In public spaces, most people prefer to sit facing others directly.

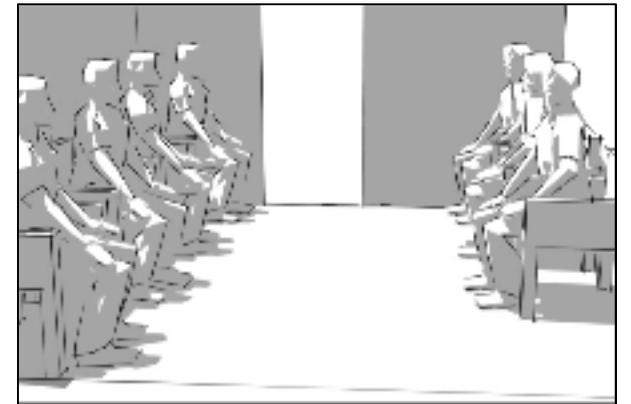
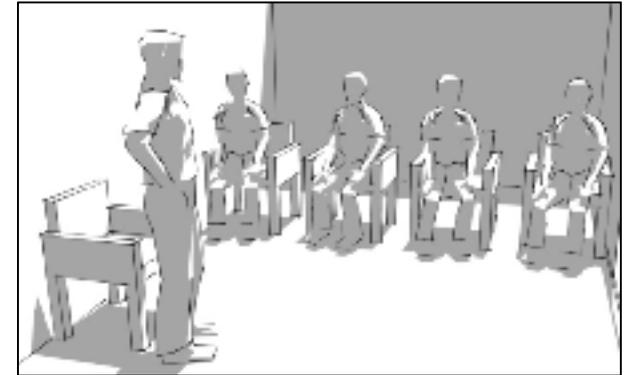
Upper right :The feeling of being overlooked

The sense of space can differ in different cultures. In some groups people avoid touching each other. Americans in public spaces choose seats as far separated from others as possible. This is felt to be polite. This body language signals that they do not intend to intrude. Public etiquette is very different in other cultures.

Personal Distance

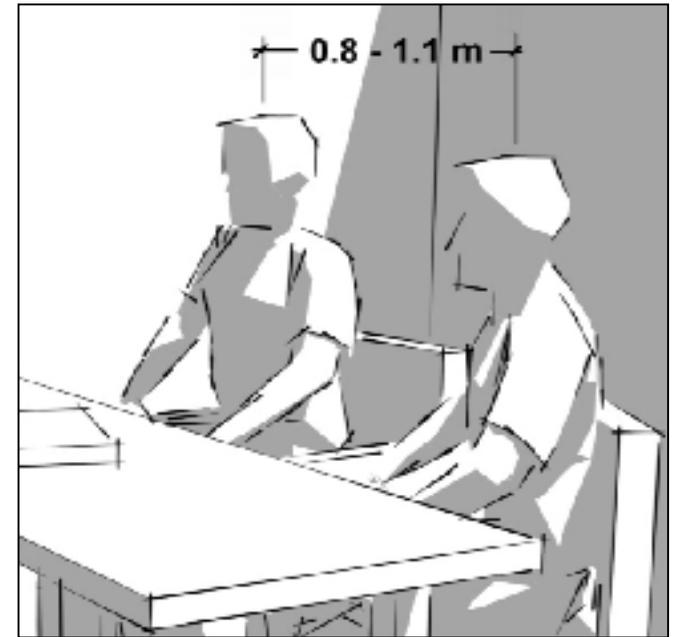
Each culture has a standard size of private area around each person. This space permits and defines all our different interactions. The exact dimensions vary from group to group, but within each group individuals recognize exactly how big their own space is. Your culture may use dimensions a lot bigger or smaller than the ones described here. These differences might change the sizes needed for your rooms.

Families, friends and co-workers usually stay within personal distance of each other, between 18 and 45" (50- 110 cm) apart. This distance is close enough to perceive a lot about the person you're talking to.

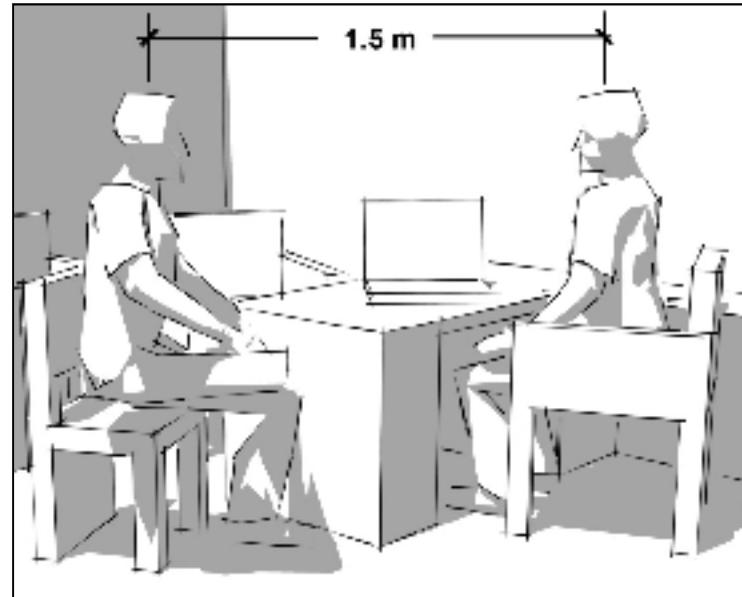


When sharing a task, often coworkers stay an arm's length away, 30- 45" (80- 110 cm) apart. This is at arm's length, where one could barely touch the other. At this distance it is easy to share documents and read together.

Right : Coworkers share a task at arm's length



Social Distance



Social distance is less private, when two people are 5 to 6' (1.5- 1.8 m) apart. Often they stay at this distance during a social gathering or when employees chat in passing. A visitor usually sits this close to an office worker to give the worker their information.

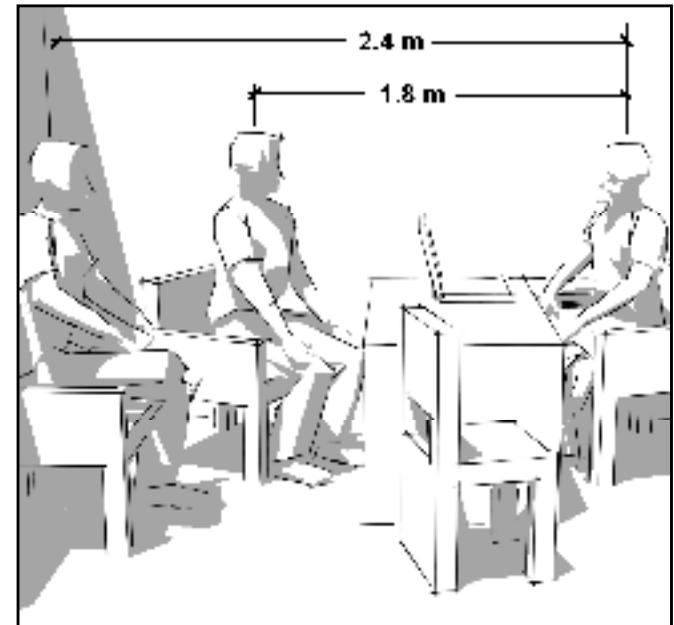
In cultures that emphasize honor and formality, even friends stay at this distance from each other.

Left : Social distance

Strangers or subordinates may stay a little further apart, around 7 to 8' (2.1- 2.4 m) apart.

In a very formal culture, acquaintances will stay this far apart to show each other respect.

Right : Larger social distance



People must be close enough together for many activities. Musicians must be close enough to keep time together, and discussion groups have a similar need. In workshops people often face each other, but if seated more than 10' apart, they don't become a unified group. Neighbors will chat quietly with each other, and this will distract or side-track the group.

Places for Getting to Know Others

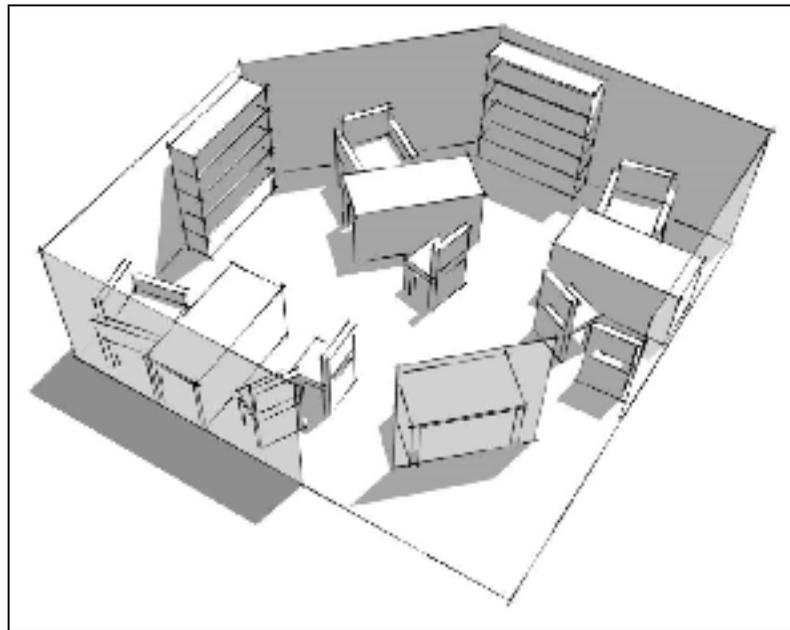
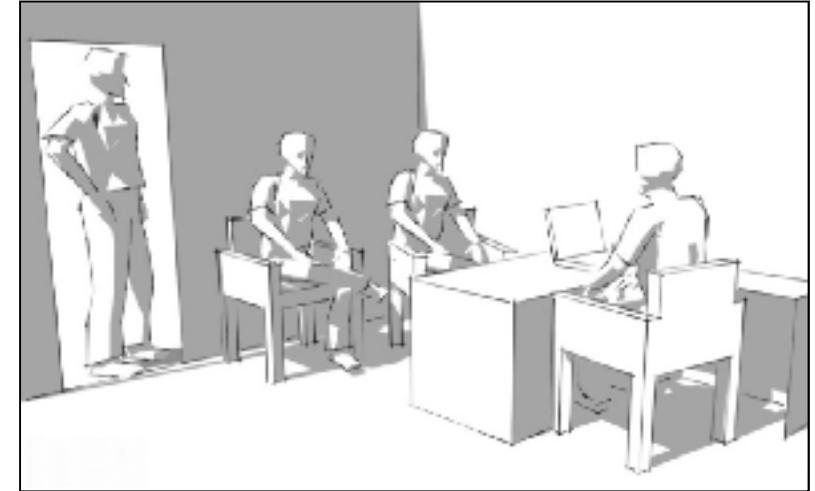
Structures influence our friendships. People who share the same space get to know each other. Common rooms grouped around an entrance make it easier to meet others.

A room should make visitors feel welcome. They should see an obvious and attractive pathway. Everyone likes to walk towards the light, towards less crowded spaces, and towards someone who looks at us. No one wants to approach another from the rear.

The way we greet visitors says a lot about the status of the employee and of the visitor. Some workers (and everyone in some types of culture) ought to face the entrance to their room.

Upper right : Desk facing the doorway
Lower right : Doorway behind the desks

But separations between groups are important when very different groups use the same building. A constant flow of visitors distracts permanent office workers. In some cultures men and women are separated in public. A screen between different parts of shared rooms can give an important sense of semi-private spaces for separate groups.



Typical Room Sizes

All of the example rooms that follow show the smallest sizes that can work.

When rooms are fitted together into a building, some will become larger than the minimum. But they must not become smaller than the size needed for the best arrangement.

Left :Cubicles in a shared space



Places to Work and Learn:

Offices

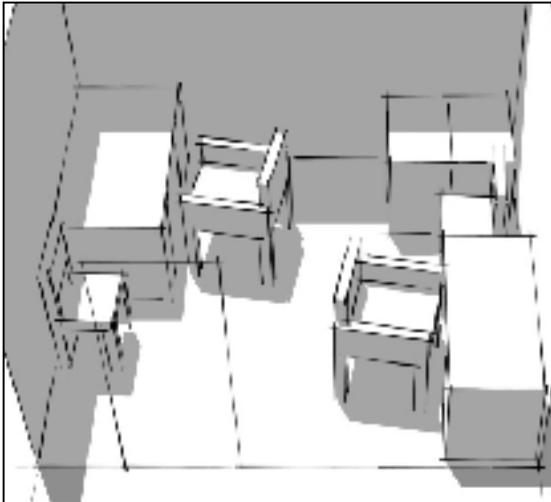
Workers read and write alone. Two workers plan something together. Someone shows a presentation to two visitors. Multiple volunteers assemble a booklet. A team of four to eight plans together for a project.

Left :Two can work together facing the wall

The smallest offices have desks that face towards the wall. Two workers can work side by side, and view maps and diagrams on the wall.

This type of arrangement uses the least area per person. The space can be as small as one cubicle of 43 sf (4 m²) per person in a shared room. Workers who don't need silence will develop a sense of belonging together and helping each other.

Below : One desk turns its side to the doorway, another faces away



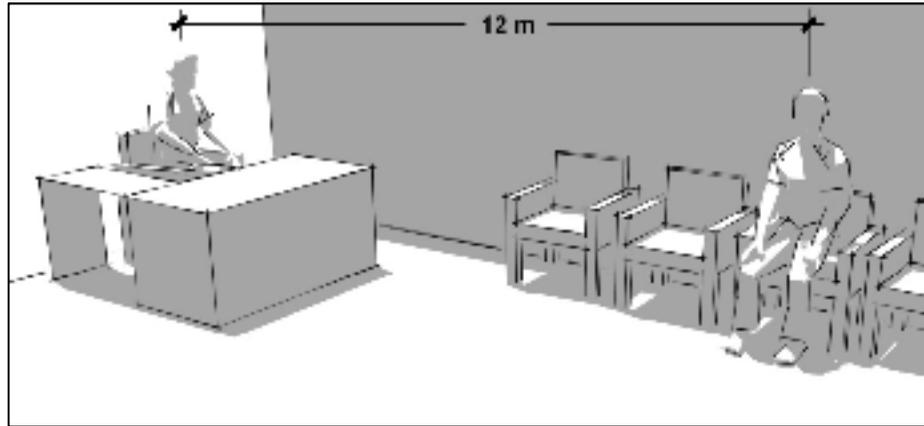
If workers must meet with groups from time to time, several can share a separate conference room.

For those in a shared space who often work with visitors, it is important that desks face towards the doorway. The worker can also protect his computer screen from the view of visitors.

Reception Rooms

In many cultures it is not polite to ignore someone who is closer than 12' (3.6 m) from us.

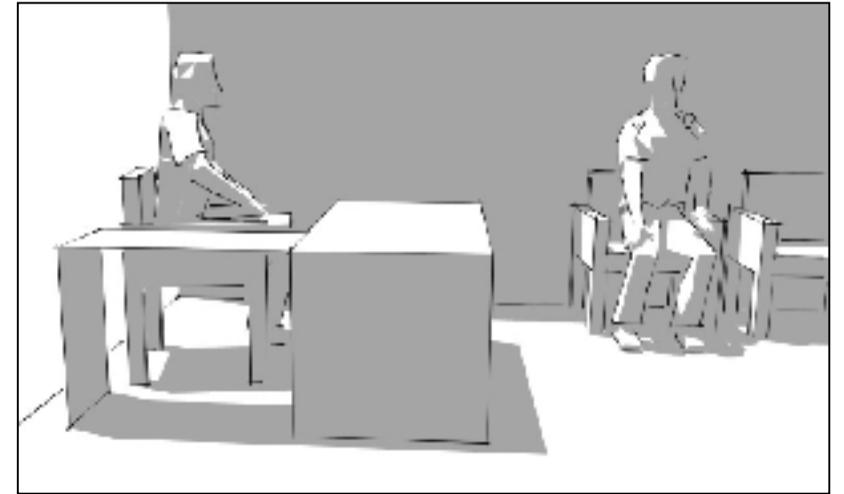
Two workers in a small room will feel obliged to talk. A receptionist in a small waiting room must chat with visitors.



Left: A visitor far enough from a receptionist

Right: A visitor too close to a receptionist

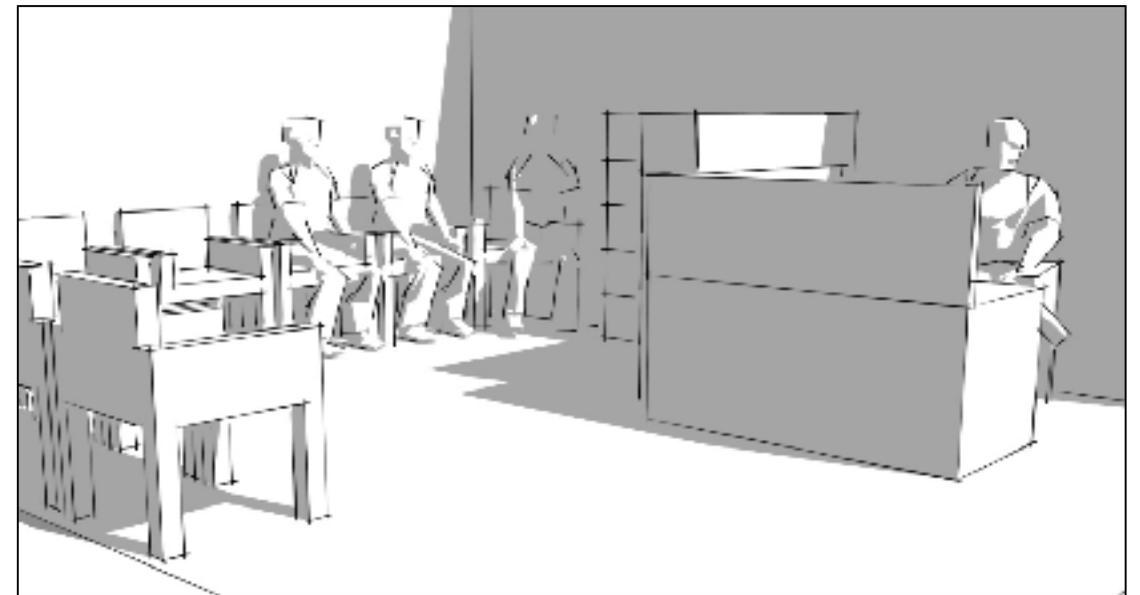
Most visitors will first take the chairs further away. When all the chairs, including those too close, are taken, it will be difficult for the receptionist to concentrate on other work without being rude.



Put the visitor's chairs at least 12' (3.6 m) from a receptionist's desk. Or screen the receptionist from full view with a half-height partition. This will increase the worker's sense of privacy. A reception area in a corner or a separate room will facilitate more work and offer some privacy to visitors.

Many other work situations also require some privacy. Supervisors need privacy for individual discussions. Translators listen carefully to groups of assistants, therefore they often need quiet private rooms.

Right: A screened desk



Illustrations of different types and sizes of offices follow.

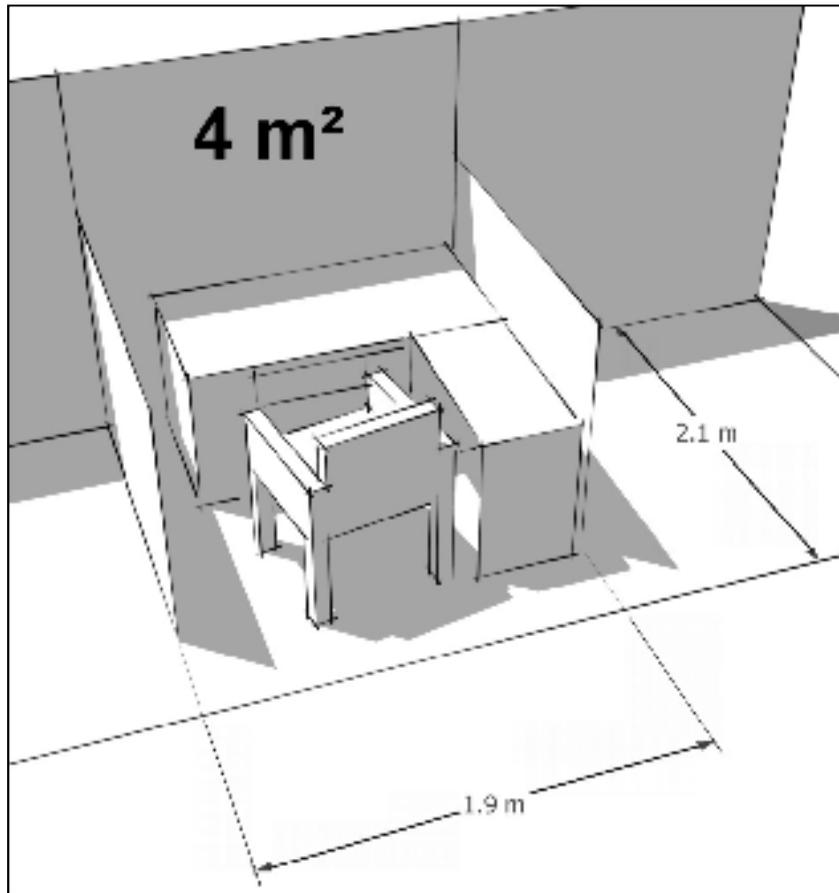
A- Work Cubicle

Desk faces the wall

A little crowded

43 sf (4 m²) 6'- 3 x 6'- 11 (1.9 x 2.1 m)

No room for visitors



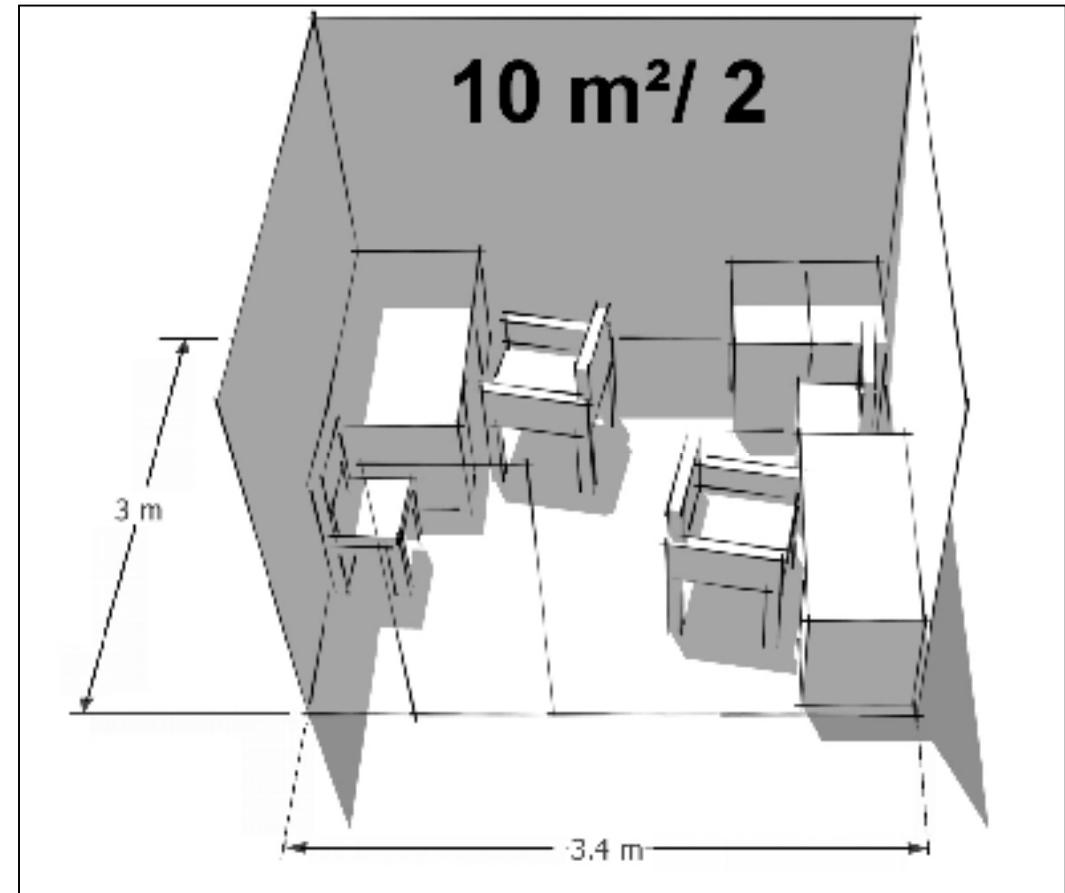
B- Small Shared Office

Desks face the wall

A little crowded

54 sf (5 m²) each 9'- 11 x 11'- 2 (3 m x 3.4 m) for both

Visitors close at the side



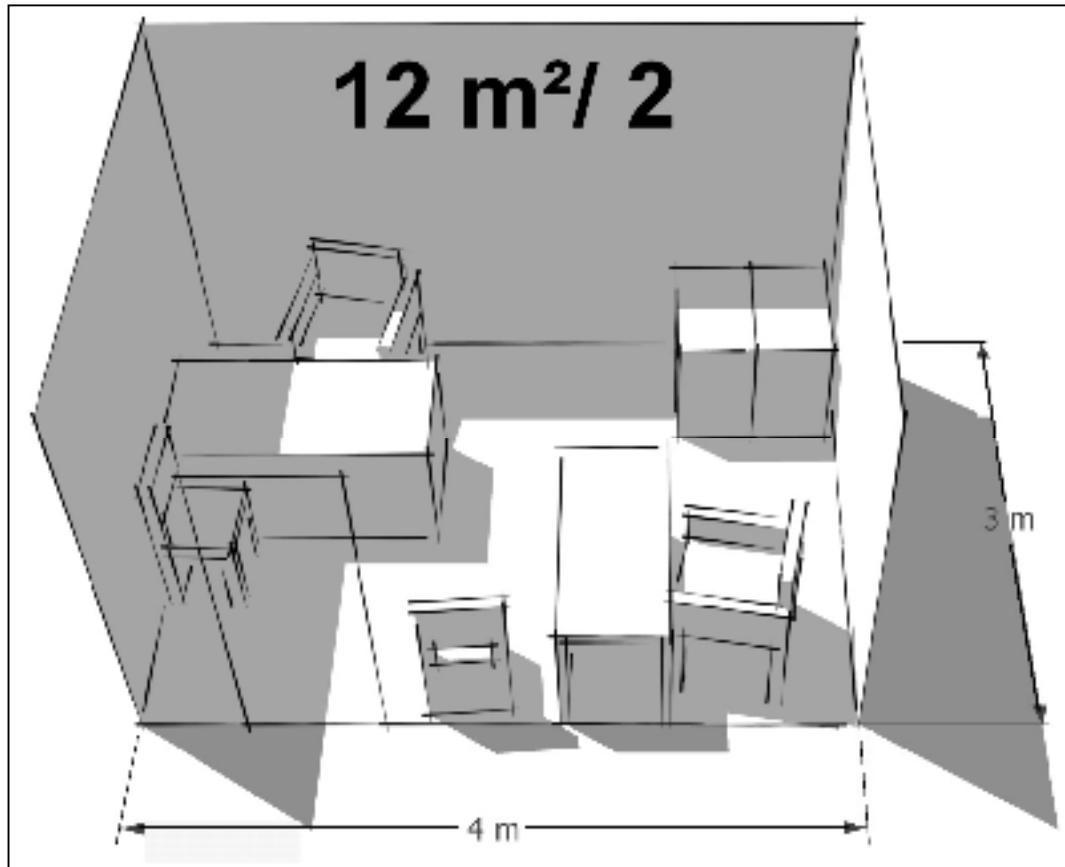
C- Medium Shared Office

Desks face the doorway

Minimal size

65 sf (6 m²) each 9'- 11 x 13'- 1 (3 m x 4 m) for two

Visitors across the desk



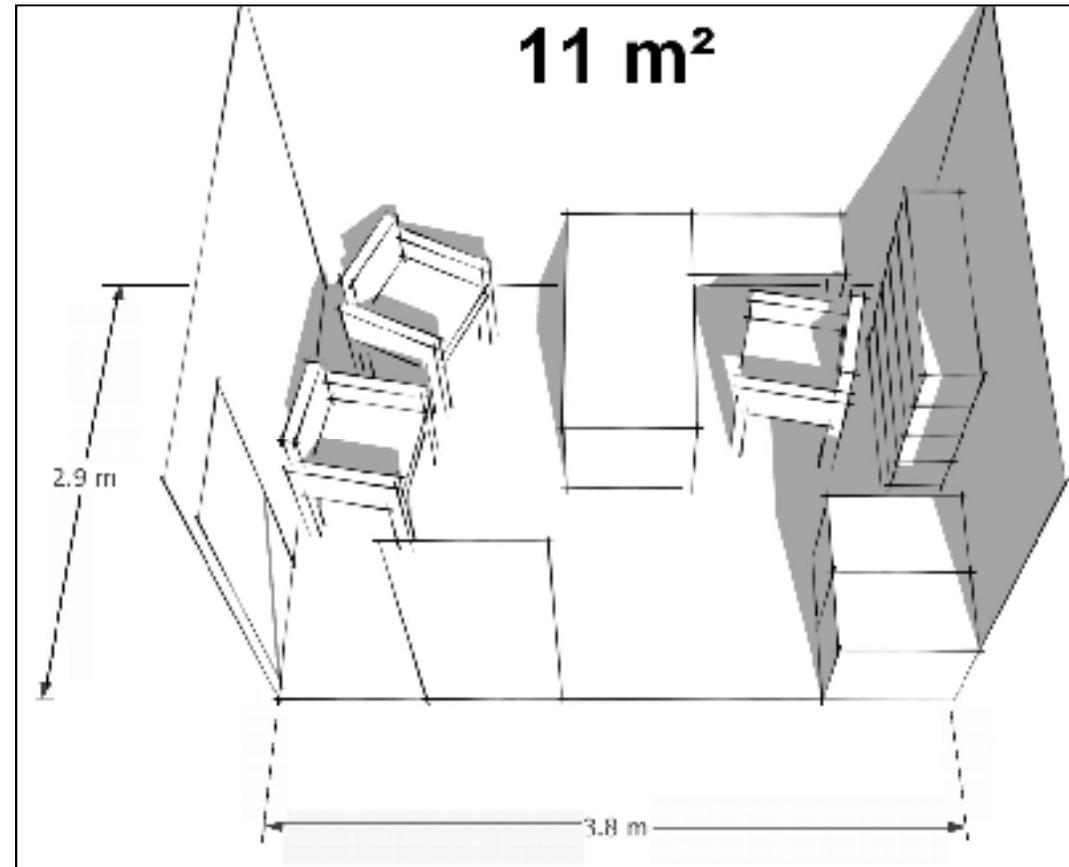
D- Small Private Office

Desk faces the doorway

118 sf (11 m²) 9'- 6 x 12'- 6 (2.9 m x 3.8 m)

Visitors close beside or across the desk

Doors near the corner



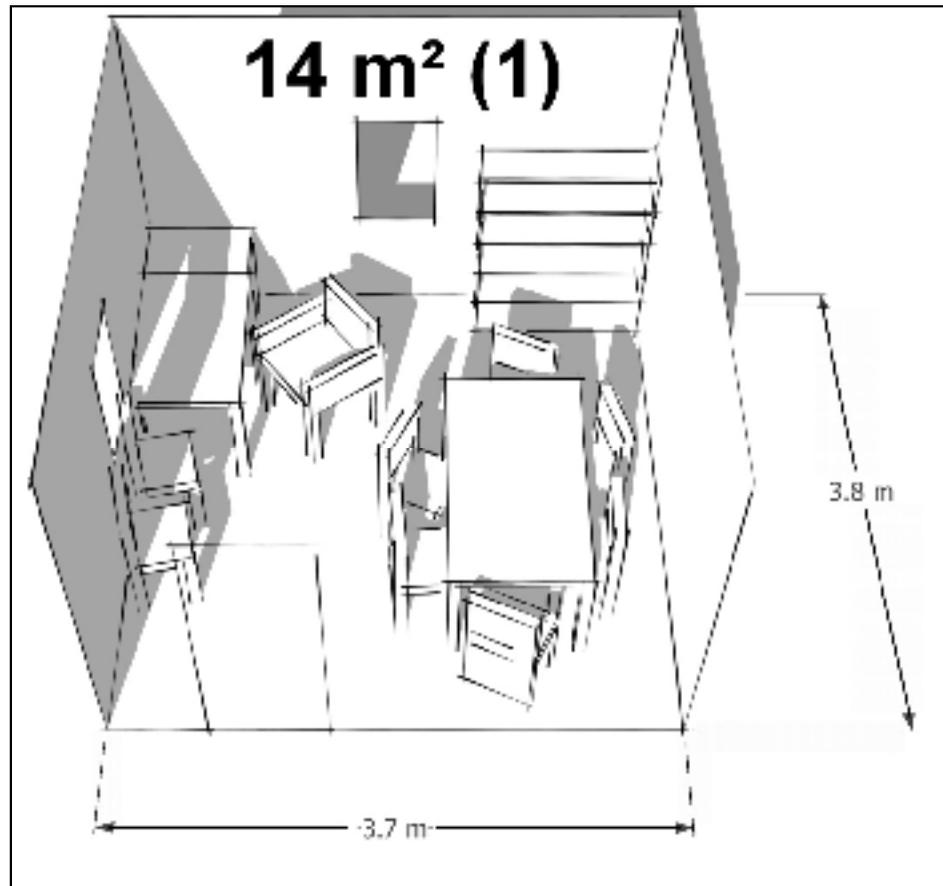
E- Square Office (1st)

Desk faces the wall

150 sf (14 m²) 12'- 2 x 12'- 6 (3.7 m x 3.8 m)

Visitors close beside or at a table for 6

Doors near the corner



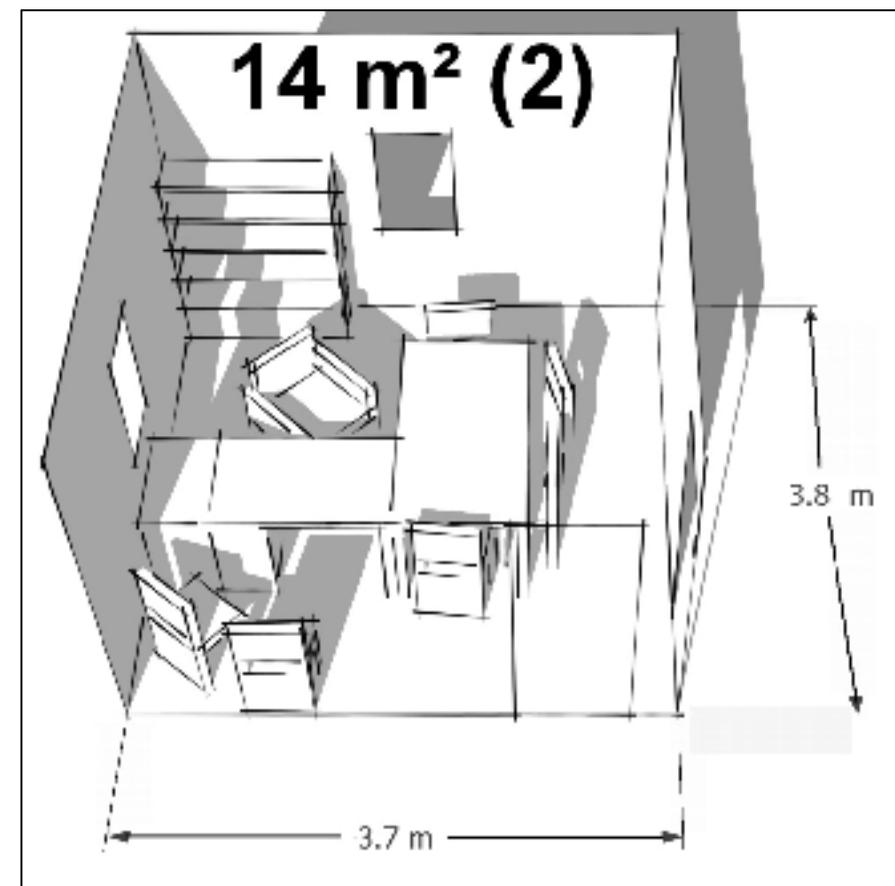
F- Square Office (2nd)

Desk faces the doorway

150 sf (14 m²) 12'- 2 x 12'- 6 (3.7 x 3.8 m)

Visitors across the desk or at a table for 4- 5

Doors near the corner or the middle of the wall



G- Oblong Bureau (3rd 14m²)

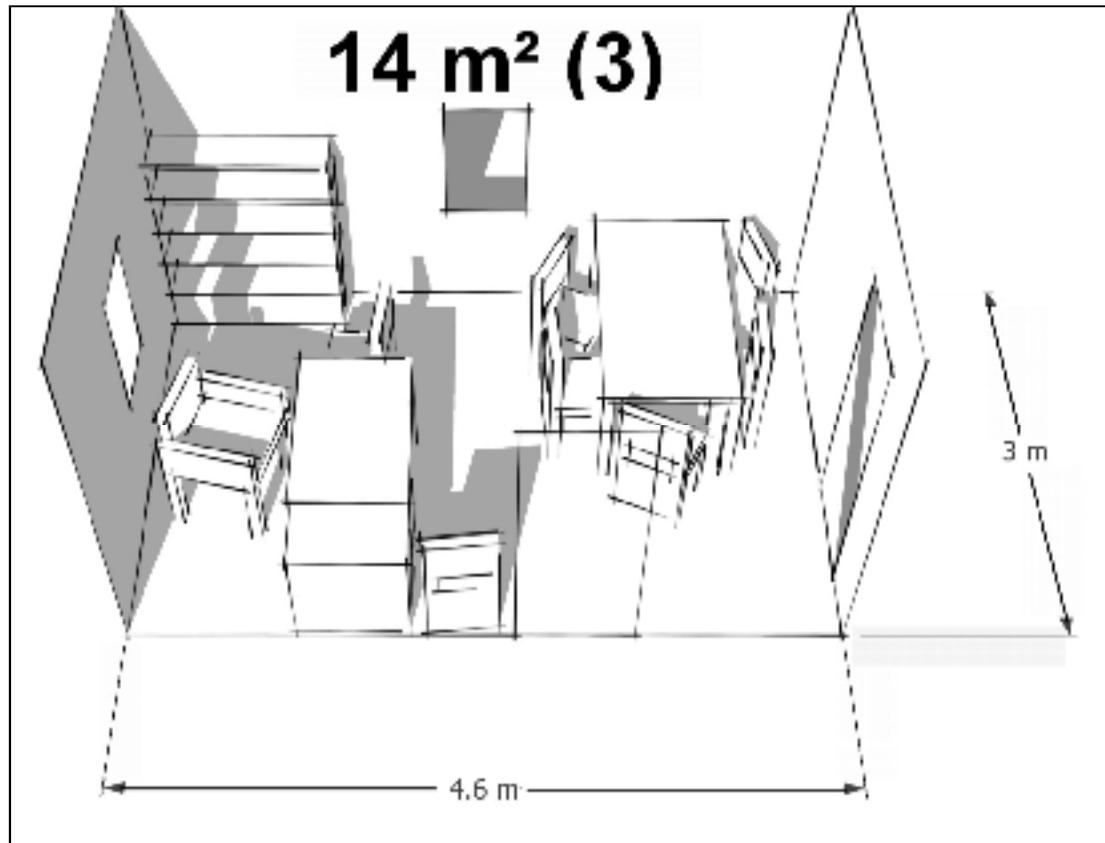
Desk faces the doorway

150 sf (14 m²) 9'- 11 x 15'- 1 (3 m x 4.6 m)

Visitors close by or across the desk

Table for a group of 4- 5 against the wall

Doors near the corner or the middle of the wall



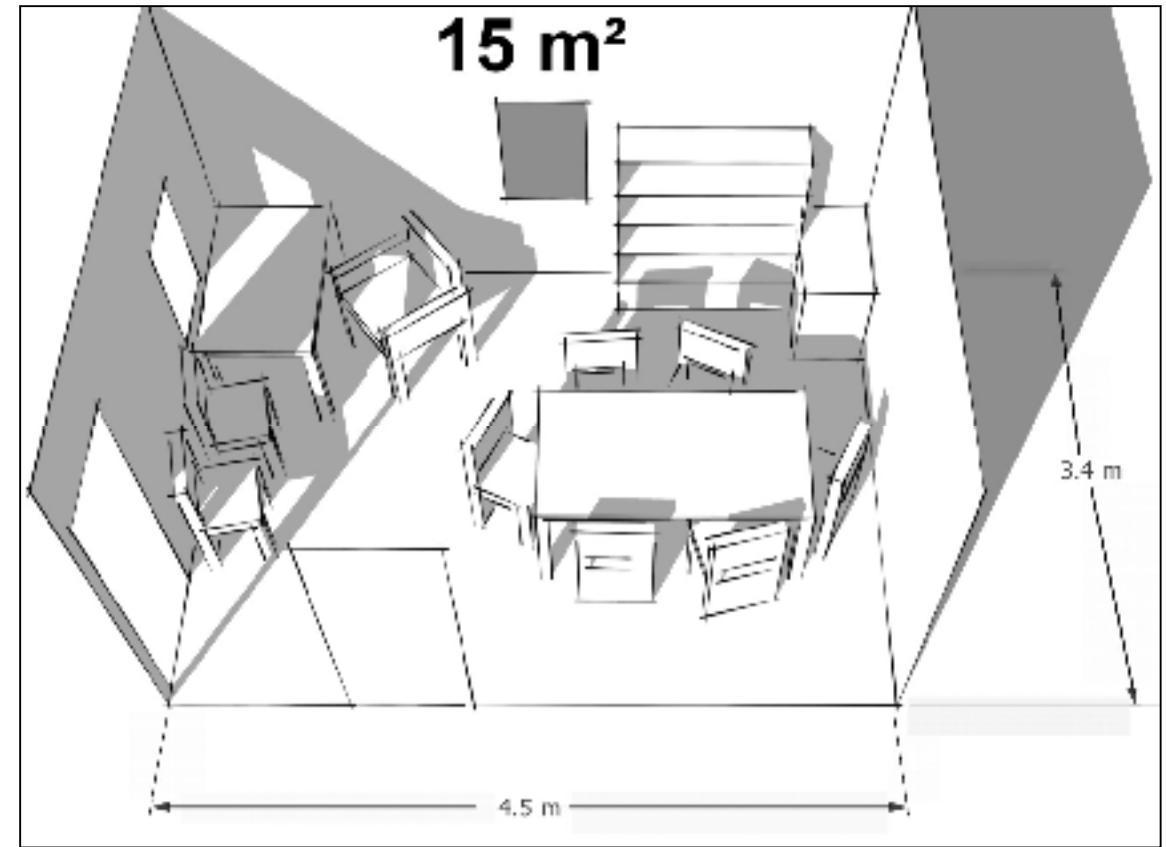
H- Better Private Office

Desk faces the wall or turns its side towards the doorway

160 sf (14.9 m²) 11'- 2 x 14'- 9 (3.4 m x 4.5 m)

Visitors close by and table for a group of 6

Doors near the corner

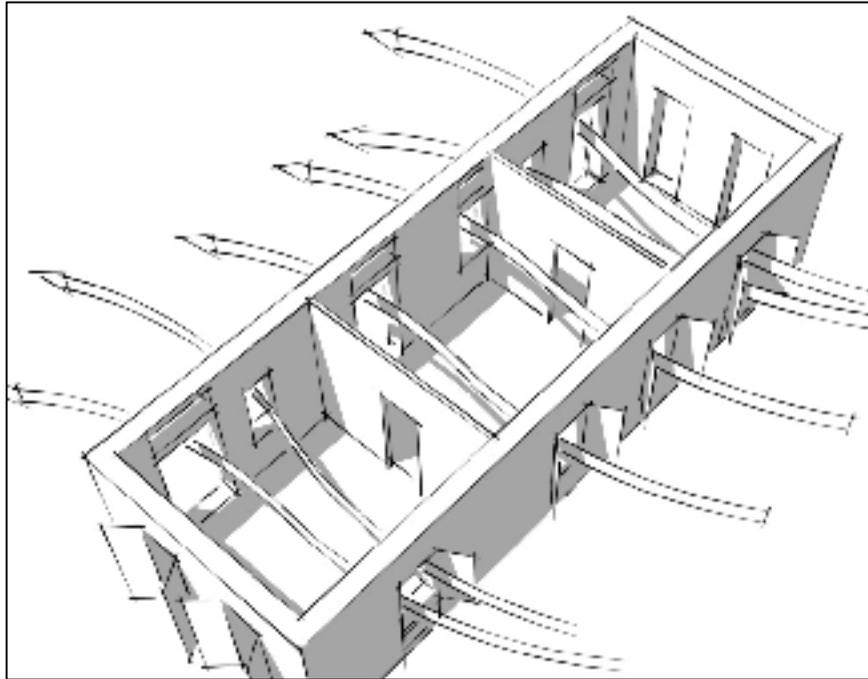


Spaces to Learn and Work:

Conference Halls and Classrooms

The room location is important. In warm climates breezes are critical to keep groups from overheating.

Room shapes will help or hinder: a classroom should be more square than deep, so all the students can hear the teacher well.



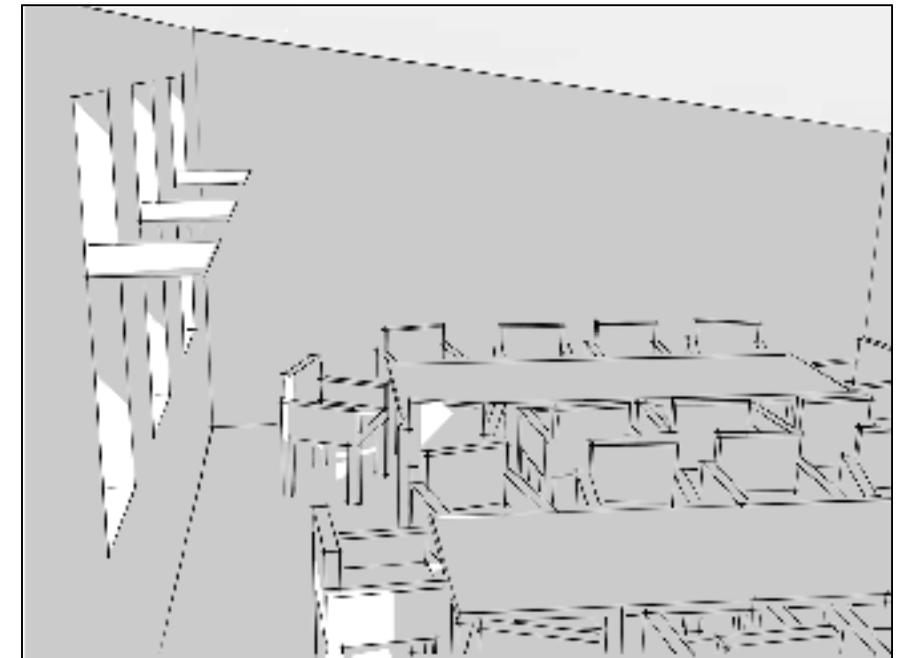
Several windows higher than wide allow daylight in. The light from one side should be able to penetrate deeply into the room. Tables or shelves near or in the windows, combined with a sloping white ceiling, will help to distribute the light.

Windows without glass will also allow noise to enter. The walls with windows should not face uses that are noisy, like dining halls or parking areas.

Large classrooms need a lot of ventilation because large groups easily overheat. Open doors and vents under the windows will help. The openings should have more area on the breeze outlet side than on the inlet.

If a porch is quiet enough and protected from blowing rain, it can function as an extra workshop space.

In a workshop people often sit around a table to allow discussions. The sizes of rooms may be determined by the sizes of tables that are available or can easily be built. Always leave at least 30" (75 cm) between a table and the wall. Leave at least 36" (90 cm) between two tables. If a desk is also necessary, leave at least 6'-6" (2 m) more.

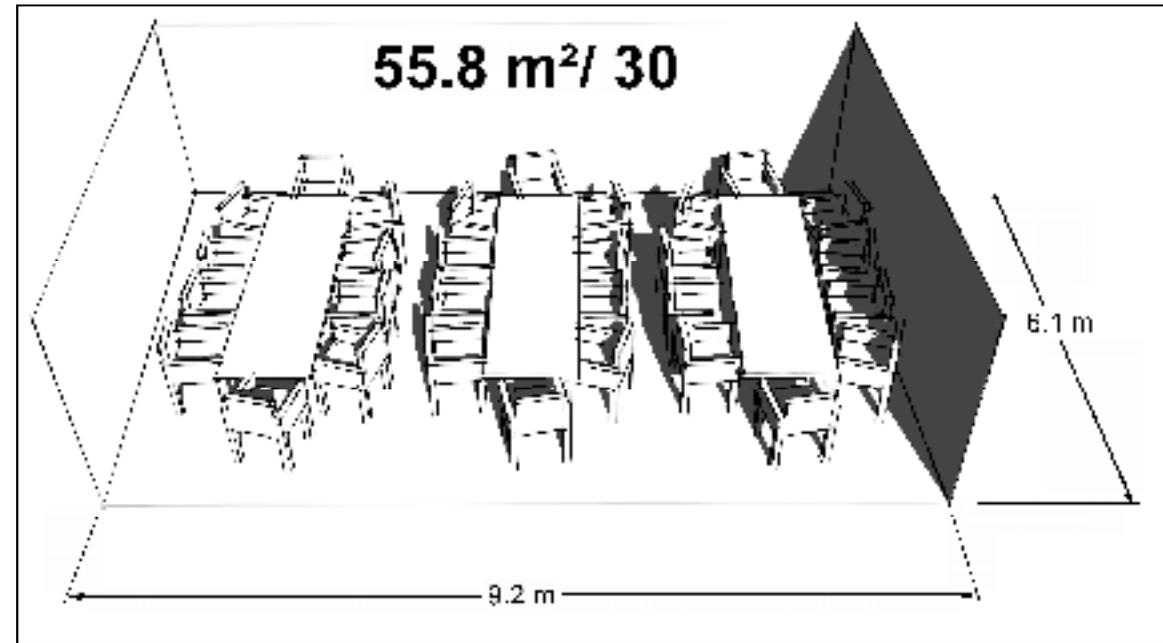


The following pictures show how many seats are possible in different-sized rooms. The pictures show generous office armchairs. If ordinary chairs are used, the smaller rooms will be a little less crowded. If benches or school desks are used, each room can serve one and a half times as many learners.

I- Large Workshop for 30

600 sf (55.8 m²) total 20' x 30'- 2 (6.1 x 9.2 m) without a desk
 A little crowded; Doors only on the long walls

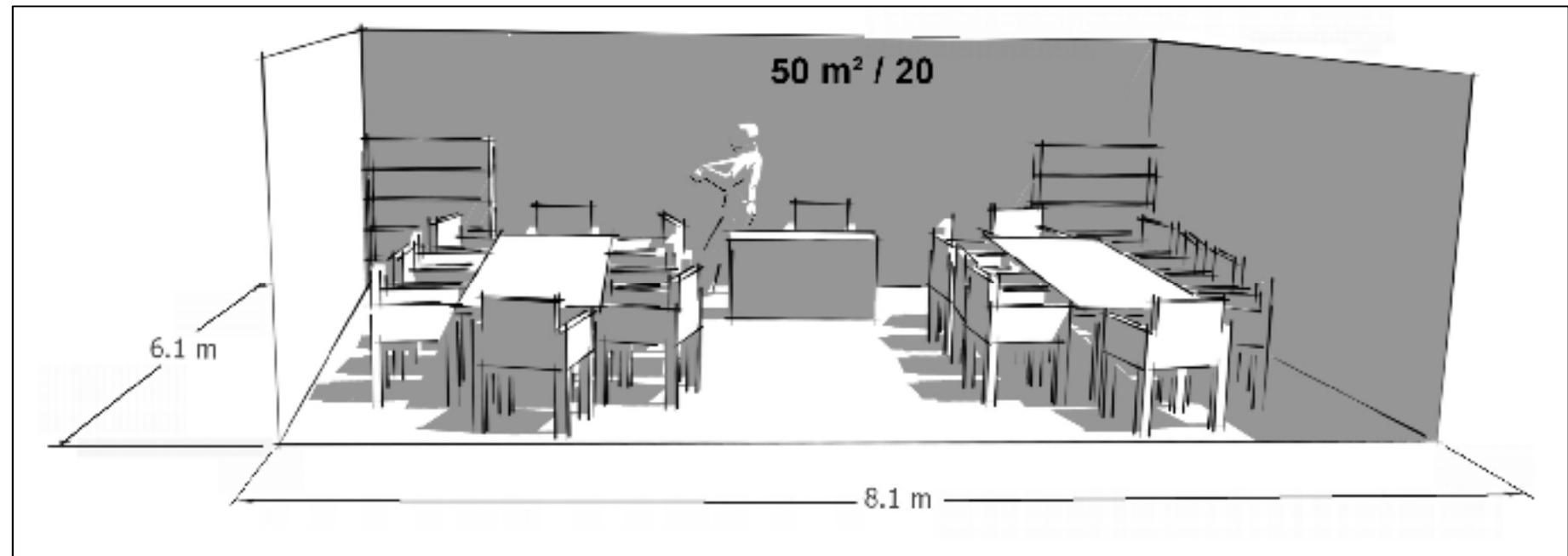
I+ 730 sf (68 m²) total 26'- 7 x 30'- 2 (8.1 x 9.2 m) with a desk
 Doors on the long walls or at the corners



J- Workshop for 20

420 sf (39 m²) total
 20' x 21' (6.1 m x 6.4 m)
 without desk
 Doors on the long walls

J+ 540 sf (50 m²) total
 20' x 26'- 7 (6.1 x 8.1 m) with
 desk
 Doors on the long walls or at
 the corners

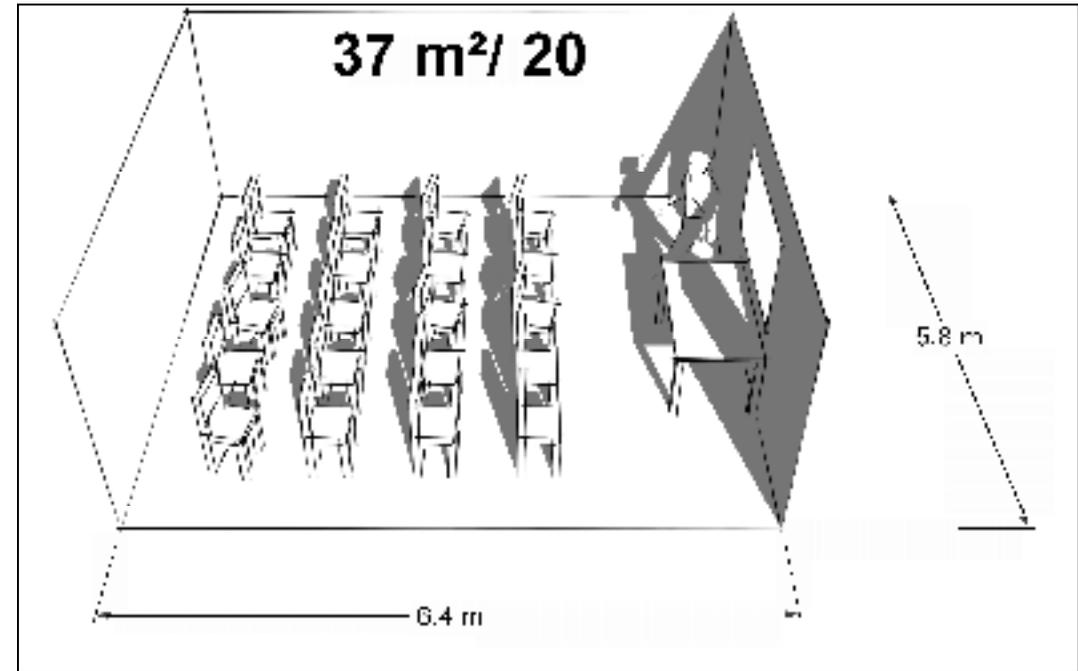


K- Classroom for 20

400 (37 m²) total

19' x 21' (5.8 x 6.4 m) with desk

Doorways near the corners



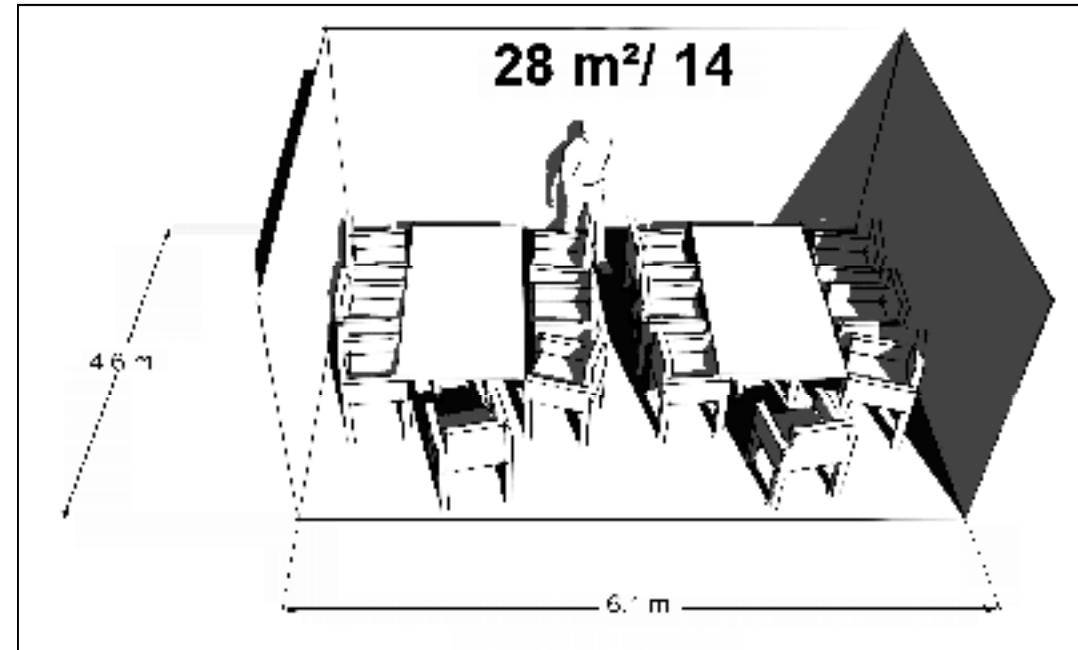
L- Classroom for 14

300 sf (27.9 m²) total

15'- 2 x 20' (4.6 x 6.1 m) without desk

A little crowded

Doorways at corners

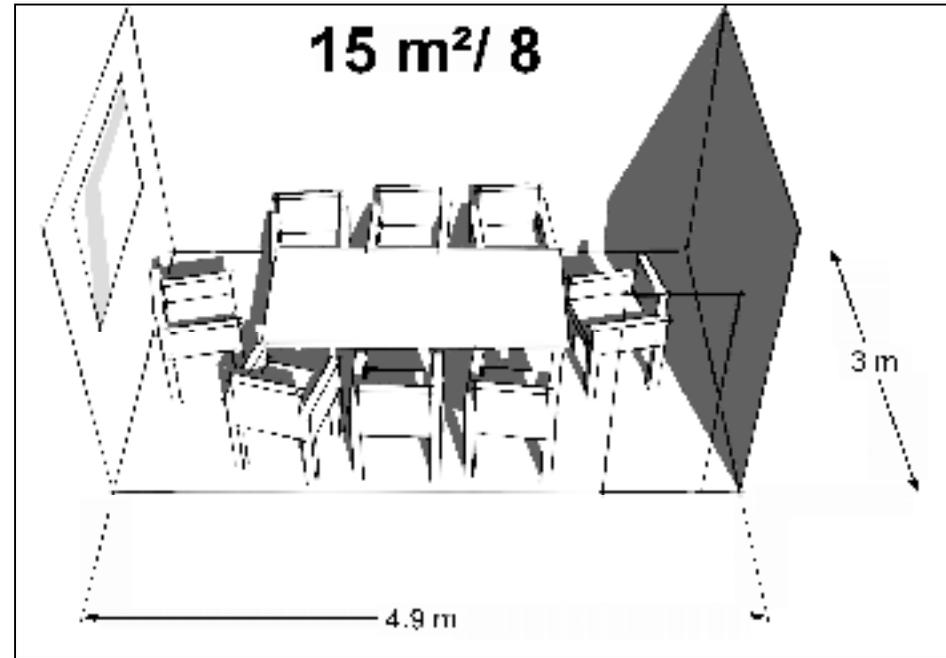


M- Small Classroom for 8

160 sf (15 m²) total

9'- 11 x 16' (3 x 4.9 m) without desk

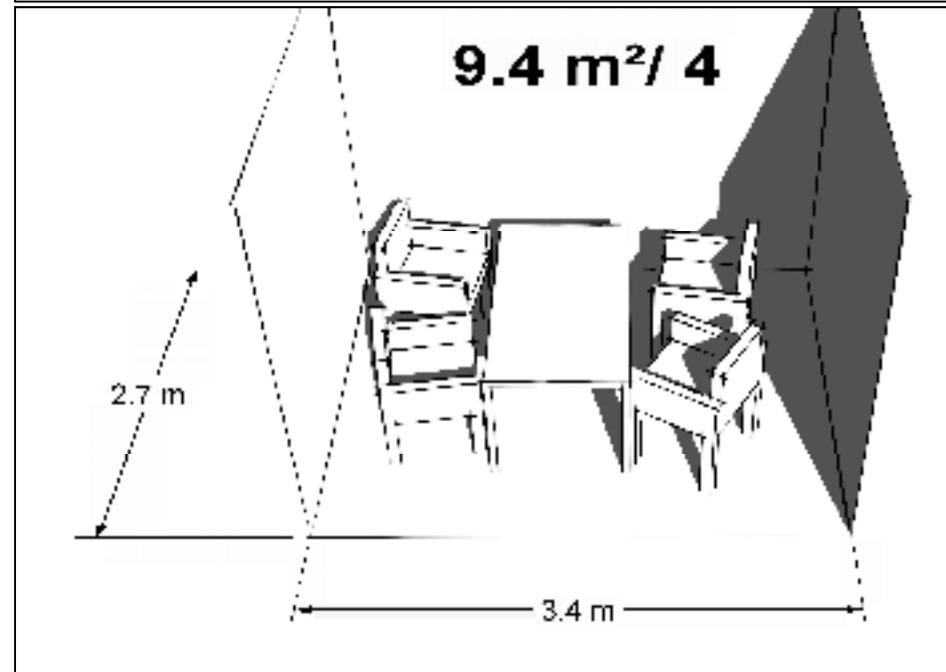
Doorways at corners



M+ 265 sf (24.5 m²) total

16' x 16'- 5 (4.9 x 5 m) with desk

Several possible doorways



N- Small Room for 4

100 sf (9.3 m²)

8'- 10 x 11'- 2 (2.7 x 3.4 m)

A little crowded

Doorway on the long wall

Spaces to Work and Learn :

Other Spaces

Who will welcome and direct visitors ? An office near the main pathway, or a cubicle in a larger space? The desk can be in a protected corner of a waiting room, or overlooking a large porch by a window or doorway.

Often the receptionist oversees the use of the copier, a computer available for visitor emails, and the borrowing of reference books. A small library area for researchers can occupy a wider corridor near the reception area.

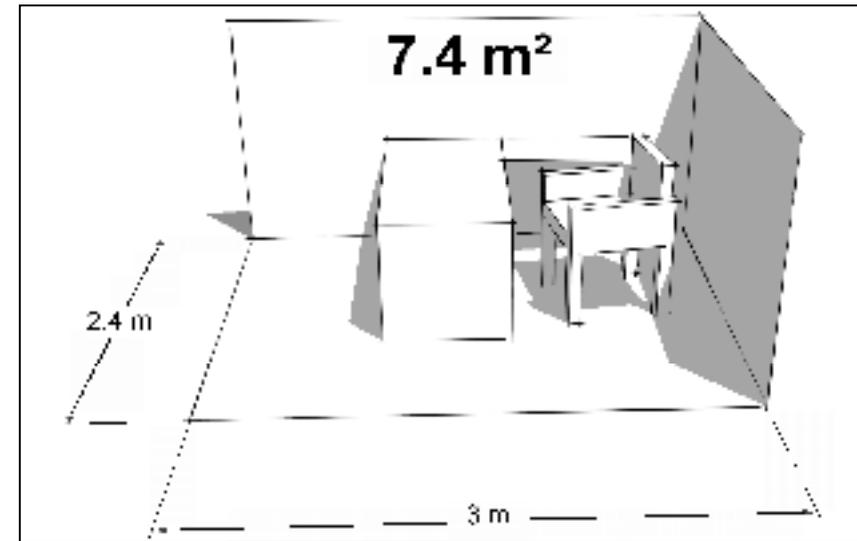
A large shared worktop may be needed to collate booklets. If it is located near the porch or a large classroom, it can serve also as a serving table for tea or lunch.

O- Reception Desk (top)

80 sf (7.4 m²) total 7'- 10 x 9'- 11 (2.4 x 3 m)

Somes pace for privacy

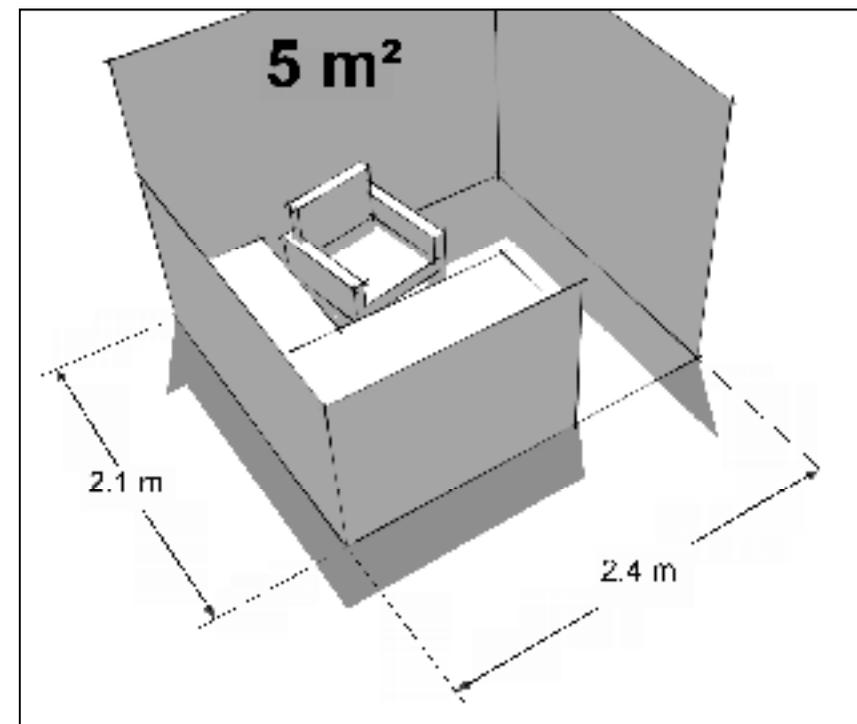
Overlooking a waiting room or porch



P- Reception Corner (right)

54 sf (5 m²) total 6'- 11 x 7'- 10 (2.1 x 2.4 m)

Less private



Spaces for Guests:

Guestrooms

The size of guestrooms depends on the size of the bed. The pictures that follow show two twin beds. Larger rooms will be needed if bunk beds are used.

Rooms that share more walls are cheaper to build. But a single row of rooms allows good ventilation, from one side to the other. In warm climates guestrooms built of heavy materials (thick walls of stone or earth) and protected from the afternoon sun will not need as much ventilation. Four rooms forming a small building can have cross ventilation from one wall to the adjoining one.

Storage cabinets cost less than closets. If closets or private showers are needed, they are grouped between the rooms.

Kitchen

Often in the tropics everything is cooked outside over a fire, or food is brought in. A butler's pantry or small kitchenette inside can hold plates and supplies. It should be located near a large porch or classroom to facilitate serving tea or lunches. This kind of storage can also be located outside and locked with a door, grill-work, or small overhead door.

Others :

Storage

Storage areas are easier to maintain if divided and located near the offices using them. Storage for general supplies can be combined with space for a copier or other shared equipment.

Bathrooms

Flush toilets are either western type (called WC) or the floor-mounted turkish bucket flush type which use much less water. Both of these can be located in buildings but require plumbing and a septic tank and/ or system. Some dry (or composting) toilets can be located in buildings, especially if there are good supplies of sawdust, wood shavings, or straw in the area. This will need a tank, pit protected from the rain, or sealed drums, to store the waste safely until it decomposes and becomes safe to handle. The system needs some supervision to prevent problems.

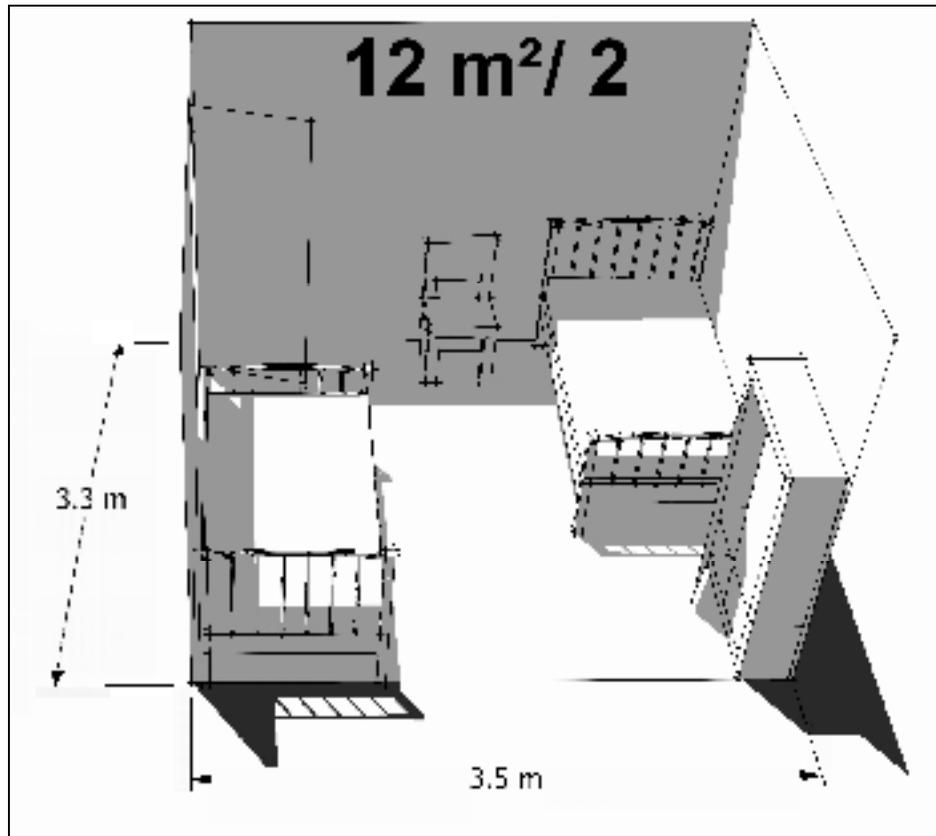
Latrines are very simple, but require large holes and a floor strong enough to span the opening. They sometimes contaminate the groundwater, and if well-ventilated may not smell too foul. They should be located at least 30 m from the building.

A smaller septic pit used for fertilizer is called an arbor-loo. It works well for small groups in rural areas with dry subsoil. The hole is only 1m deep and 1 m wide, requiring a floor that is easy and cheap to cast of concrete. Ashes or sawdust are added in the hole. When full, the latrine floor and walls are moved to a new hole. The first hole is topped off with soil and the owner plants a fruit tree or vine in it.

Q- Small Guestroom

130 sf (12 m²)

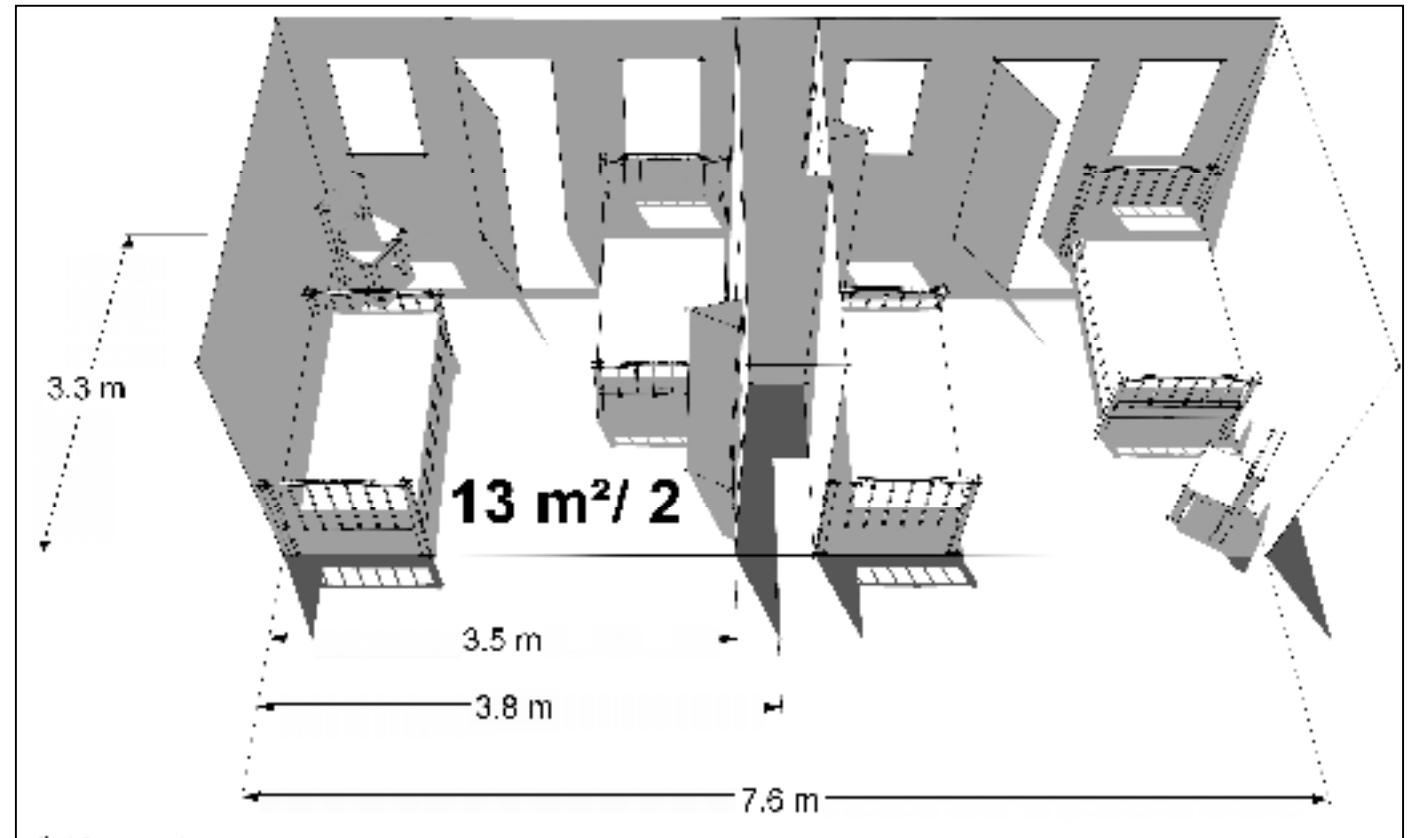
10'- 10 x 11'- 6 (3.3 x 3.5 m)



R- Guestroom with Closet

140 sf (13 m²) each room

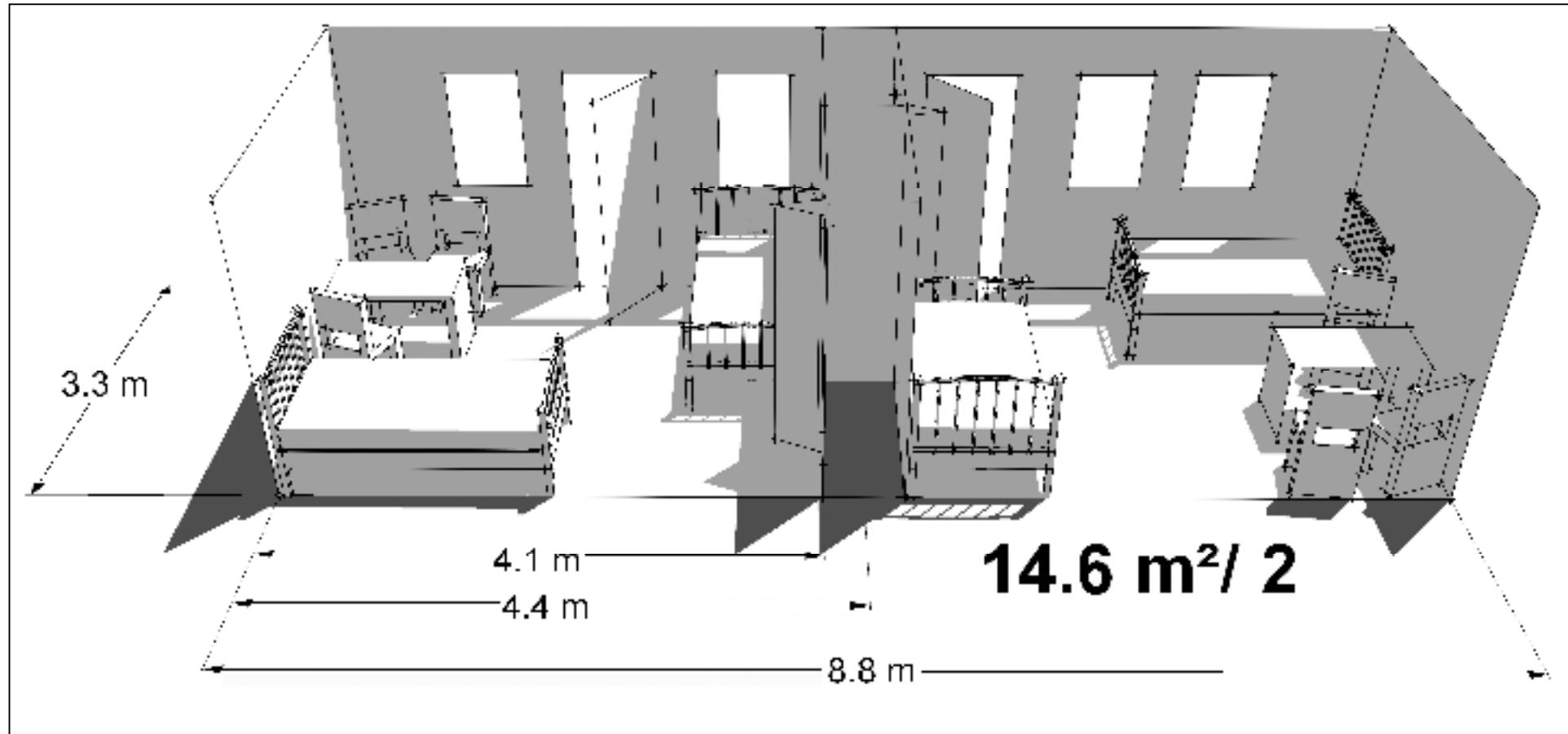
10'- 10 x 12'- 6 (3.3 x 3.8 m)



S- Guestroom with Closet and Study Table

160 sf (14.6 m²) each room

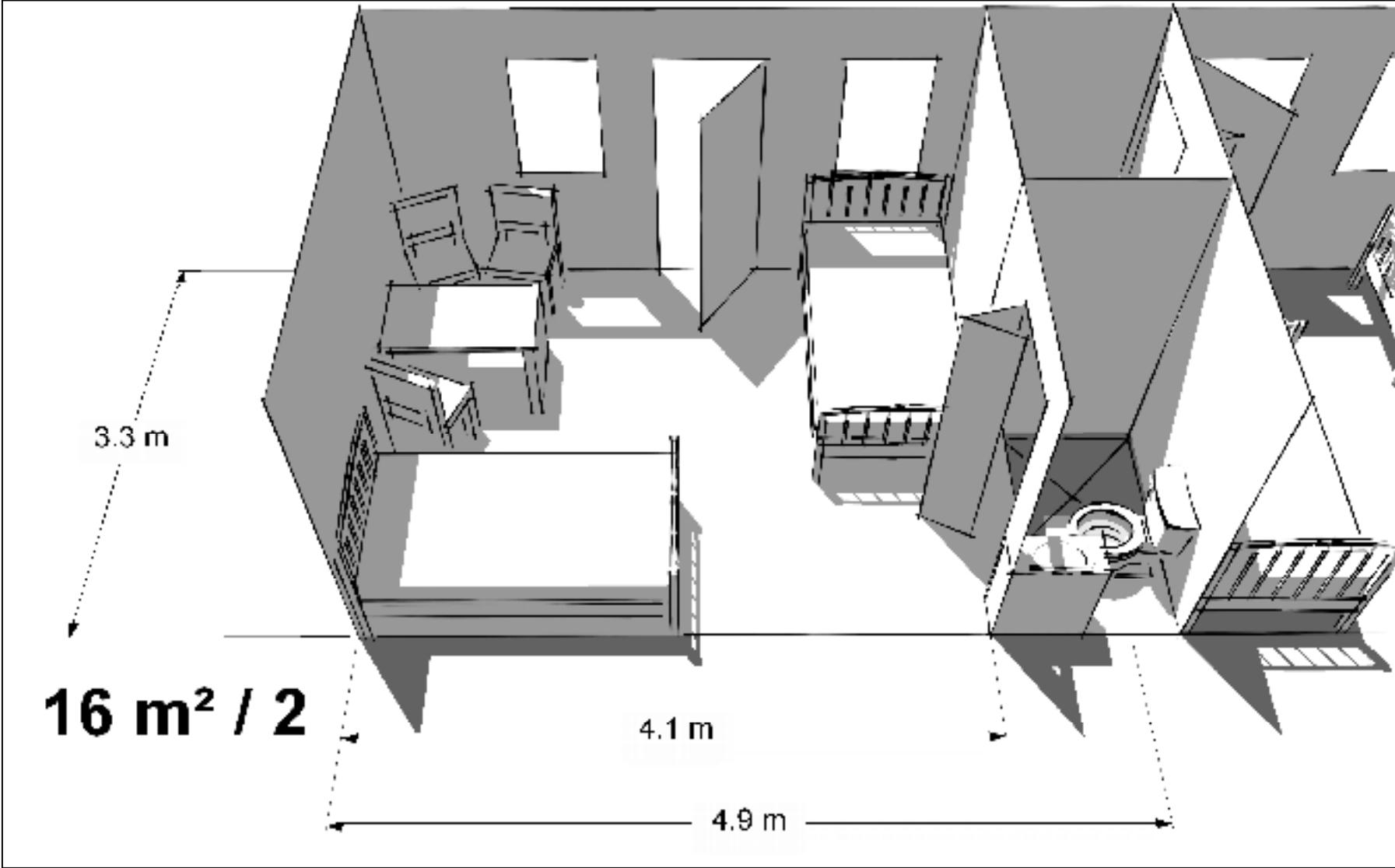
10'- 10 x 14'- 5 (3.3 x 4.4 m)



T- Guestroom with Shower

170 sf (16 m²) each room

10'- 10 x 16' (3.3 x 4.9 m)

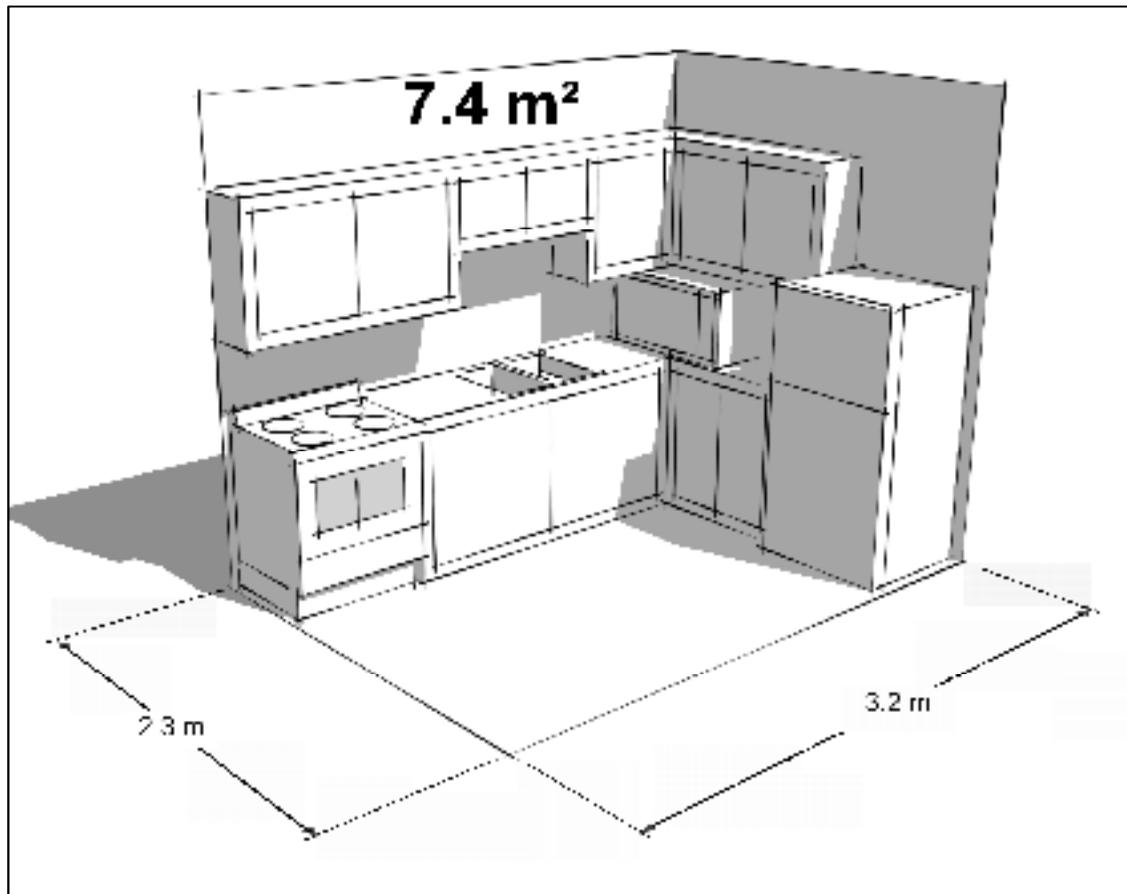


U- Full Kitchen

80 sf (7.4 m²)

7'- 7 x 10'- 6 (2.3 x 3.2 m)

Refrigerator, stove, sink, micro-wave and cupboards

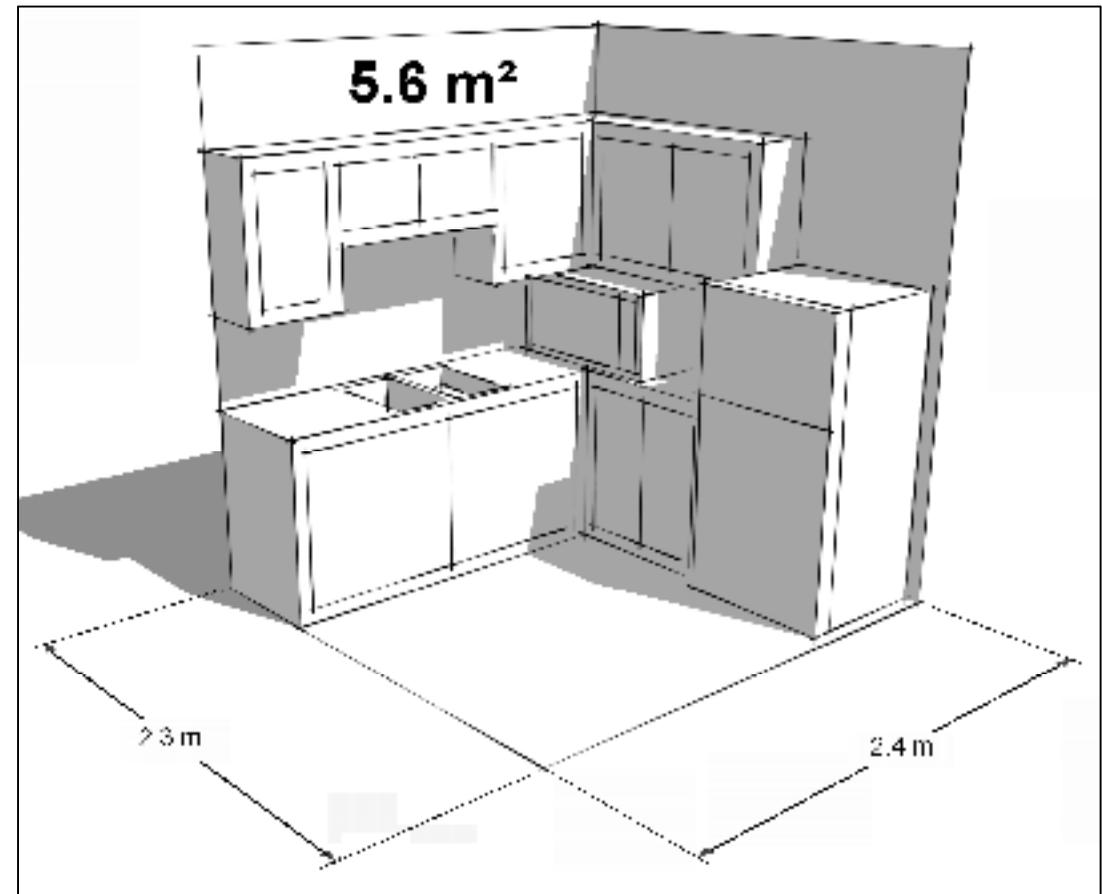


V- Kitchenette

60 sf (5.6 m²)

7'- 7 x 7'- 10 (2.3 x 2.4 m)

Refrigerator, sink, and cupboards with micro-wave, toaster oven, or hotplate

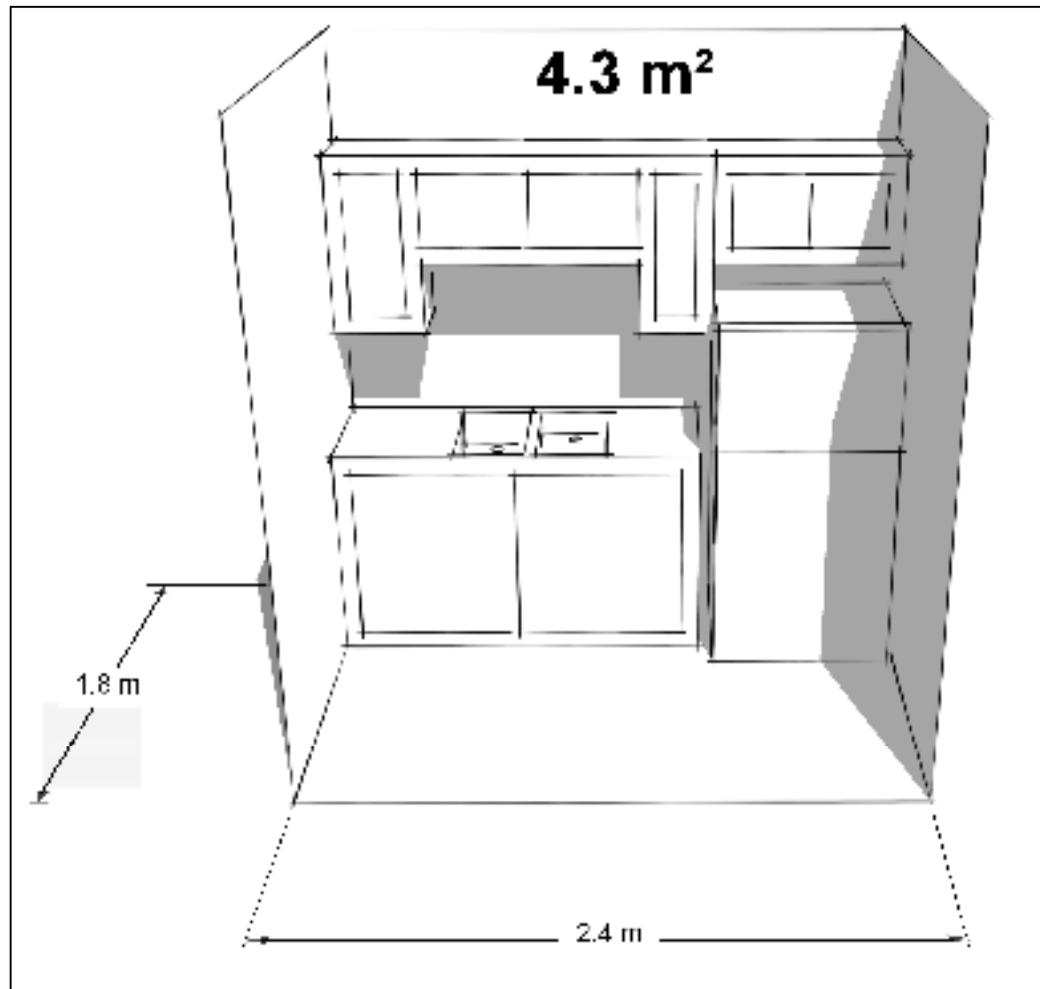


W – Butler's pantry

45 sf (4.3 m²)

5'- 11 x 7'- 10 (1.8 x 2.4 m)

Refrigerator, sink, and cupboards, (can be near a separate cooking shelter)

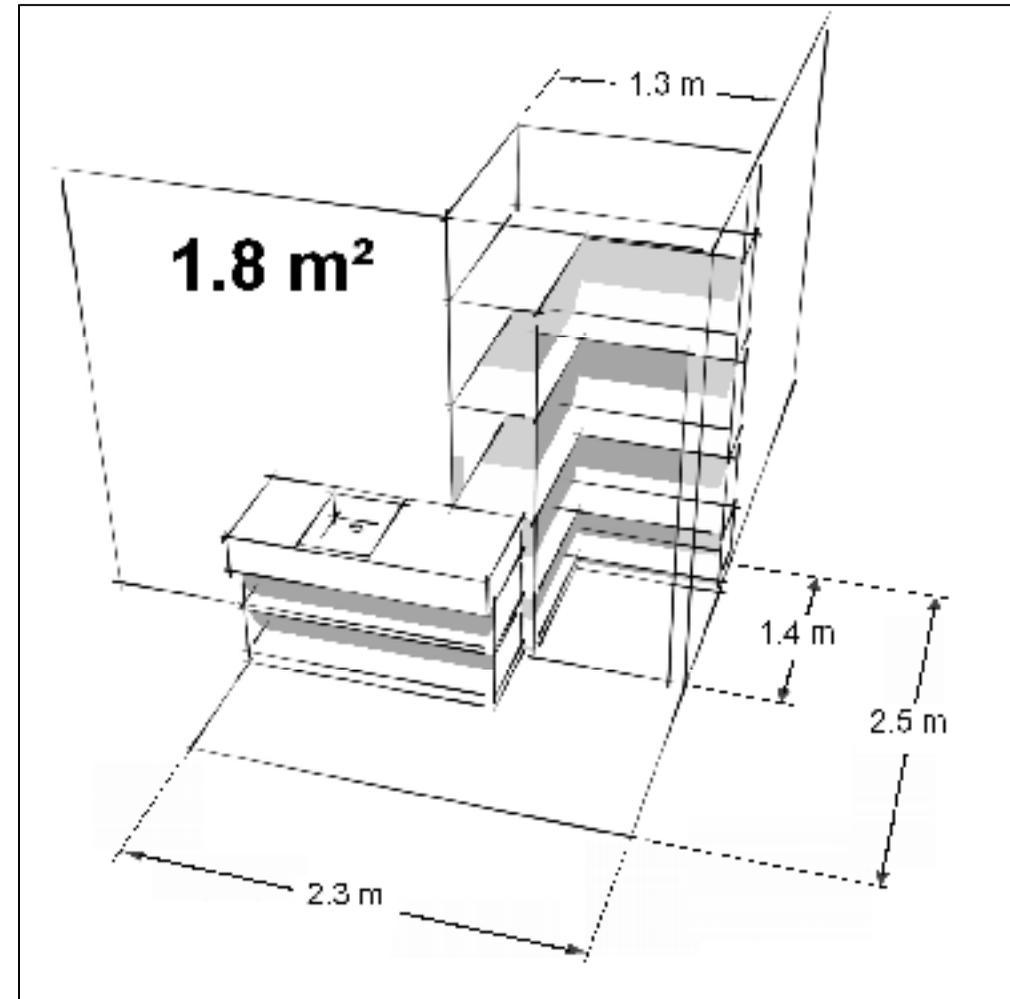


X- Patio Kitchen

20 sf (1.8 m²) in the building, 35 sf (3.2 m²) in the patio

7'- 7 x 8'- 2 (2.3 x 2.5 m) total

Sink and pantry on a building corner, near a separate cooking shelter

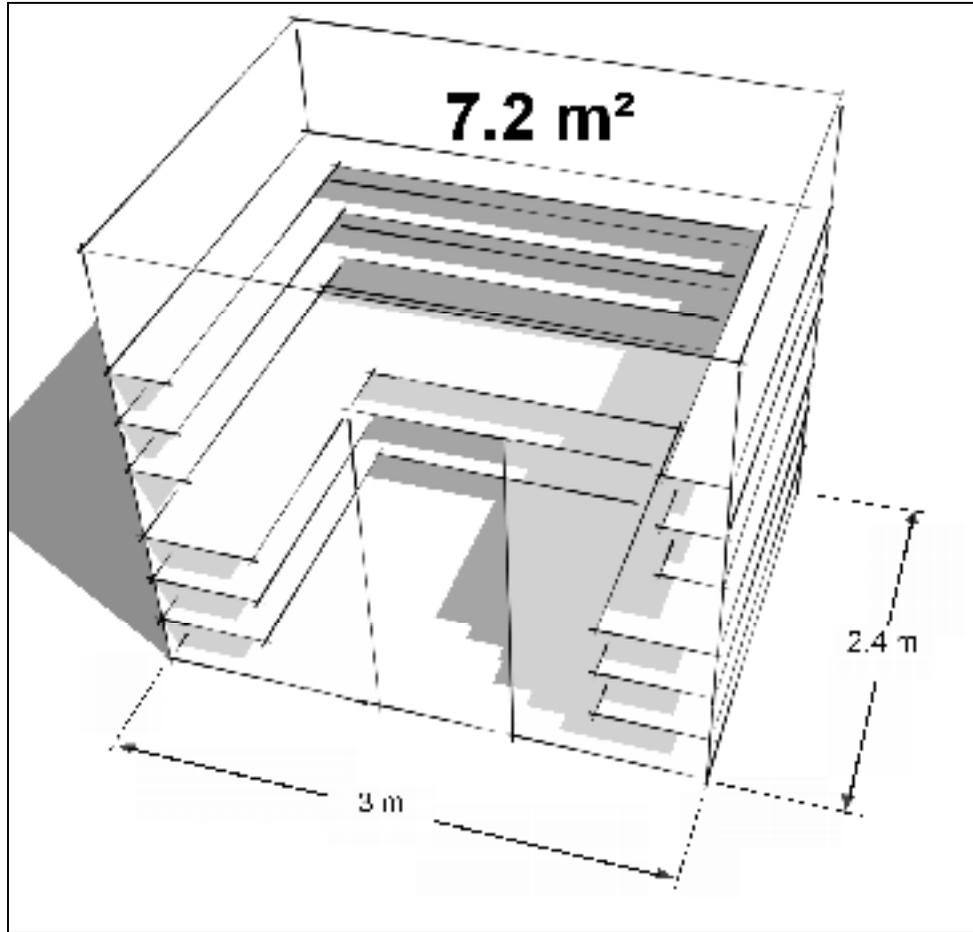


Y- Large Storage Room

80 sf (7.2 m²)

7'-10 x 9'-11 (2.4 x 3 m)

Shelves

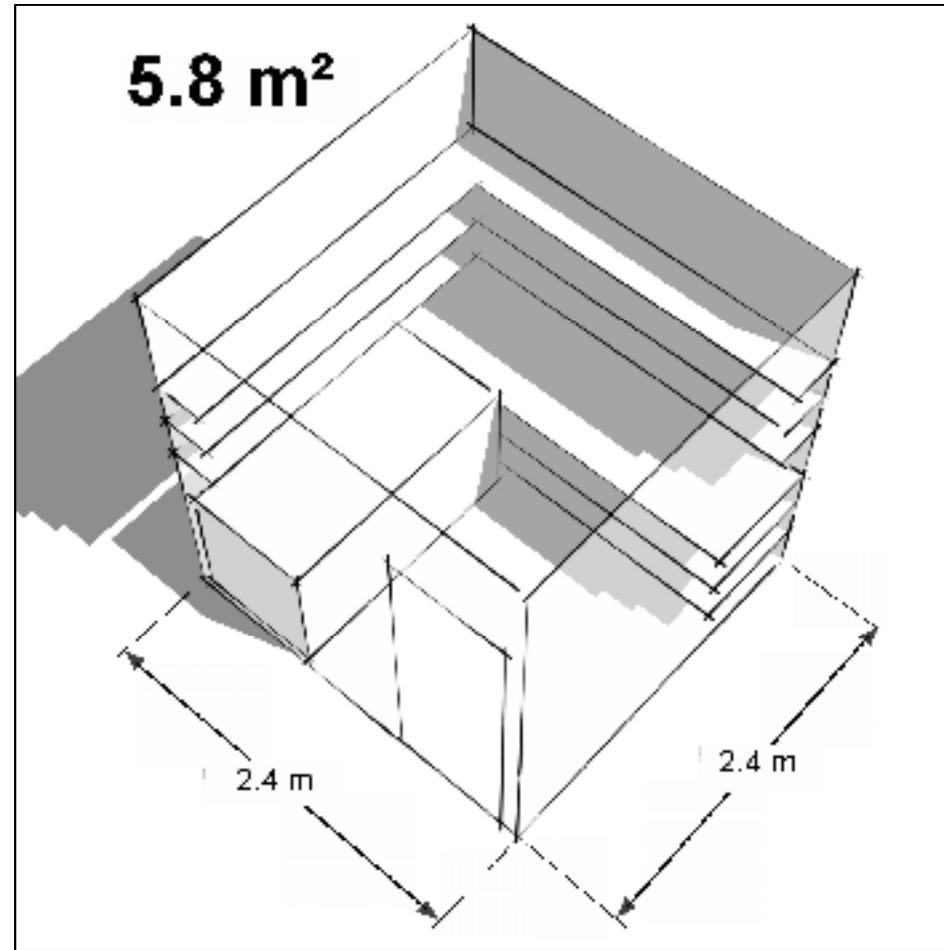


Z- Small Storage Room

60 sf (5.8 m²)

7'-10 x 7'-10 (2.4 x 2.4 m)

Shelves and copier or other equipment



More Information

For project managers:

The resources posted online by Engineering Ministries International for their volunteers at https://emiworld.org/volunteer_resources.php are very helpful. The Developing World Design powerpoint gives a general introduction to issues involved with building for the developing world. The pdfs under the architecture heading are also very good. A 3-part series called Learning Spaces covers classroom settings. The pdf Living Spaces focuses on orphanage layouts.

For building designers:

These books introduce the subject of space use:

Designing Places for People, C.M.Deasy with Thomas E. Lasswell, 1985, Whitney Library of Design, NY, US

The Language of Space, Bryan Lawson, 2001, Architectural Press, Oxford, UK

When researching a particular culture, articles by anthropologists are important, but these general books are a good place to start:

6,000 Years of Housing, Norbert Schoenauer, 2000, W.W. Norton Co., NY, US

Atlas of Vernacular Architecture of the World, Marcel Vellinga, Paul Oliver, Alexander Bridge, 2007, Routledge, Abingdon, UK