

Mini Max Wallpaper

Mini Max

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Mini Max is a company specialising in the distribution and retail sale of a wallcoverings. In order to facilitate our clients, we need an automated way to calculate the number of wallpaper rolls necessary for decorating a room with wallpaper. The final calculation will be implemented as part of a web-based calculator open for use to both Mini Max staff and the general public.

Room Measurements

Clients provide the measurements of their rooms: number of walls to be decorated with wallpaper, wall width and height, and sizes of doors and windows.

Wallpaper Specifications

There are several possible sizes of wallpaper rolls:

0.53 m × 10 m

0.70 m × 10 m

1.06 m × 10 m

1.06 m × 25 m

Wallpaper designs can be plain or patterned. Plain wallpapers are made of just one colour and do not need to be adjoined at the sides when applied to the wall. Patterned wallpapers have a design, which requires the wallpaper to be matched at the sides. There are two match types: straight match (see figure A) and offset match (see figure B). Straight match wallpaper starts with the same pattern at the top of each

wallpaper strip, offset match wallpaper starts with the same pattern at the top every other strip. Each wallpaper design has a stated by the manufacturer pattern height, and, if applicable in the case of offset match, a drop height. The drop height is the length by which the pattern is dropped at the alternate strips of wallpaper.

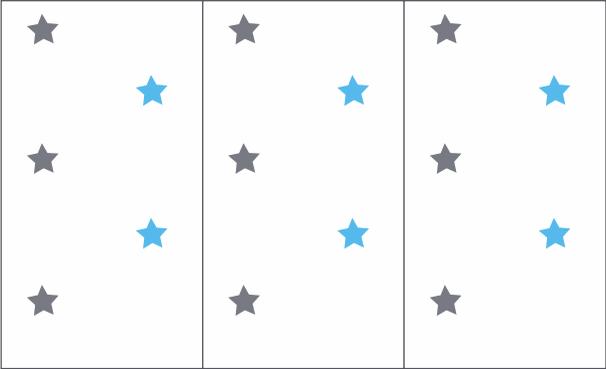


Figure A (Straight Match):

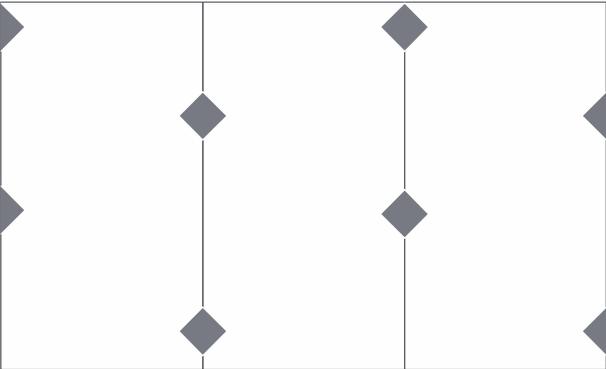


Figure B (Offset Match):

The calculation of the number of necessary rolls should take into account the pattern specifics of each wallpaper design.

Below is a table with sample data for different wallpaper designs:

Match Type	Pattern Height (cm)	Drop (cm)
straight	64	–
straight	53	–
straight	45	–
straight	4	–
straight	5	–
straight	1.5	–
straight	16	–
straight	1	–
straight	21.5	–
straight	91	–
straight	32	–
offset	64	32
offset	26.5	13.25
offset	45	22.5
offset	32	16
offset	53	26.5
free	0	0

It should be taken into account that only full strips are used for a full room height, e.g. if the height of a wall is 2.6 m, it is necessary to use one piece of wallpaper which is 2.6 m long, it is not possible to use 2 pieces of 1.3 m since matching may not be possible and there will be a horizontal matching point which will be visually unpleasant. Leftover pieces of wallpaper may, however, be used around doors and windows if they match correctly. In addition, when cutting the wallpaper to size for the required wall height, it is necessary to take into account a 10 cm safety margin, which is used in case the ceiling or floor is not completely straight.

The web-based calculator will require the user to fill out the room measurements, as well as the doors and windows. The data for each wallpaper design (pattern height, type of pattern, roll size) is stored in our wallpaper database and is queried depending on the wallpaper the user selects. The calculator should then output the necessary number of rolls for the specific room and the selected design. The task is to develop a calculation method that takes into account all the room and wallpaper specifics.