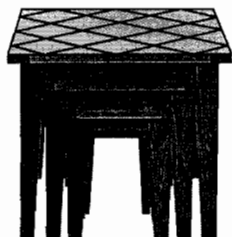
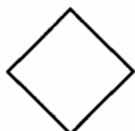


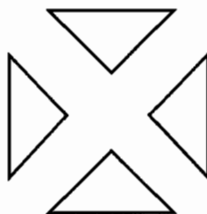
Maria makes square tables, then sticks tiles to the top.



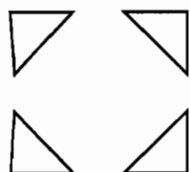
She uses three types of tiles:



whole tiles



half tiles

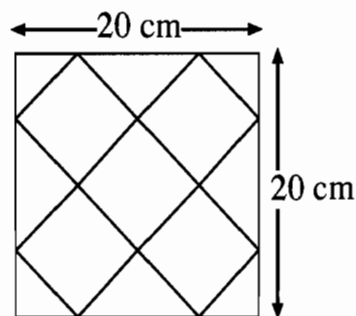


quarter tiles

The sizes of the square tabletops are all multiples of 10 cm.

Maria only uses quarter tiles in the corners and half tiles along the edges of the table.

Here is one tabletop:



This square table uses:
**5 whole tiles, 4 half tiles,
 4 quarter tiles.**

1. How many tiles of each type will she need for a 40 cm by 40 cm square?
2. Describe a method for quickly calculating how many tiles of each type she needs for larger, square tabletops.

Please show your work on the page opposite.

Table Tiling

The table is measured $10n \times 10n$, the letter $n=4$

so it will 40×40

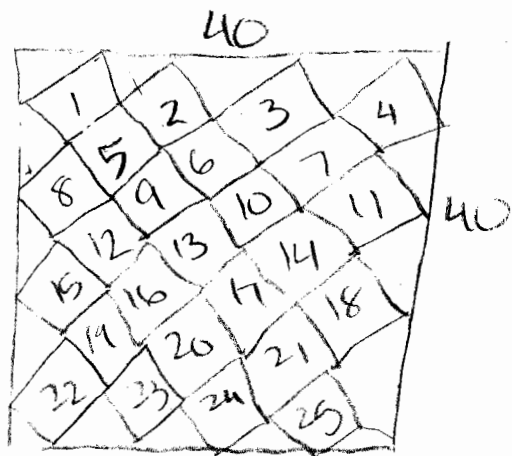
whole tiles: $n^2 + (n-1)^2$ $4^2 + 3^2 = 16 + 9 = 25$

whole tiles

half tiles: $4(n-1)$ $4(4-1)$ $4 \times 3 = 12$ half tiles

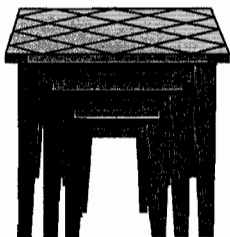
quarter tiles: $10n \times 10n$ $n=4$ 4 quarter tiles.

To calculate the whole tiles you can use the formula $n^2 + (n-1)^2$ and substitute your values in it. To calculate the half tiles use $n(n-1)$ where n is your value.

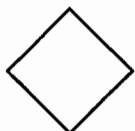


25 whole tiles
12 half tiles
4 quarter tiles.

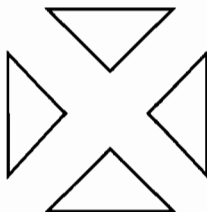
Maria makes square tables, then sticks tiles to the top.



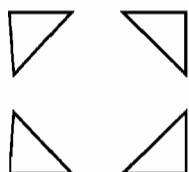
She uses three types of tiles:



whole tiles



half tiles

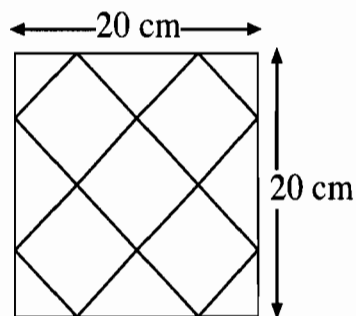


quarter tiles

The sizes of the square tabletops are all multiples of 10 cm.

Maria only uses quarter tiles in the corners and half tiles along the edges of the table.

Here is one tabletop:



This square table uses:
**5 whole tiles, 4 half tiles,
 4 quarter tiles.**

1. How many tiles of each type will she need for a 40 cm by 40 cm square?

2. Describe a method for quickly calculating how many tiles of each type she needs for larger, square tabletops.

Please show your work on the page opposite.

Table Tiling

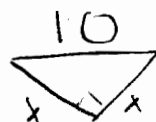
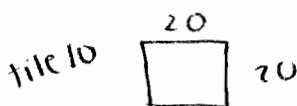
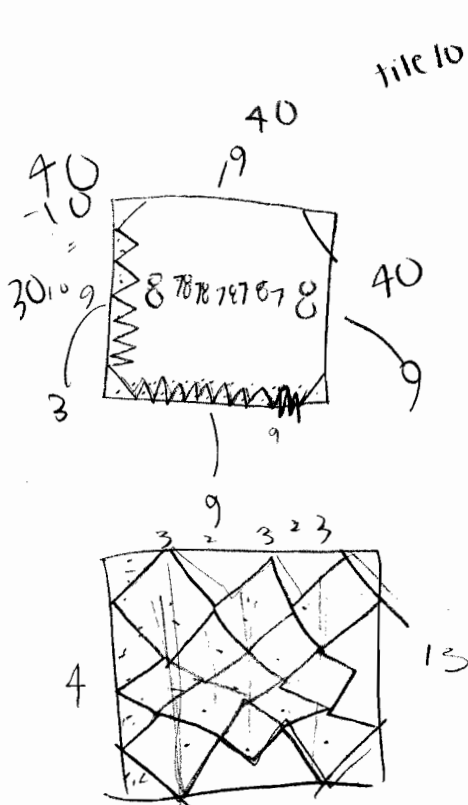
1. 4 quarter, 12 half, 25 wholes

2. ^{a)} Every tabletop needs 4 quarters

b) Divide area of table by area of whole tile (50)

c) Subtract 10cm from length of table, divide answer by 10, then times 4. That's the # of halves needed

d) Add one to the half of the answer in c, and subtract the answer from the answer in b). That's the # of whole tiles needed.



$$\begin{aligned}
 & 9(4) = 36 \\
 & 989898989 \\
 & 5(9) = 45 \\
 & \begin{array}{r} 45 \\ 32 \\ \hline 77 \end{array}
 \end{aligned}$$

$$\begin{aligned}
 & x\sqrt{2} = 10 \\
 & \frac{10}{\sqrt{2}} \cdot \frac{10}{\sqrt{2}} = \frac{100}{2} = 50
 \end{aligned}$$

$$40 \cdot 40 = 1600$$

$$\begin{aligned}
 & \frac{1600}{50} = 32 \\
 & 32 - 1 = 31
 \end{aligned}$$

$$\frac{36}{2} = 18$$

$$31 - 6 = 25$$

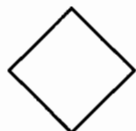
$$3(4) = 12$$

$$4\sqrt{2}$$

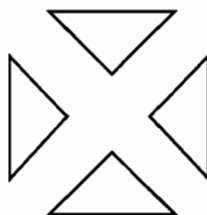
Maria makes square tables, then sticks tiles to the top.



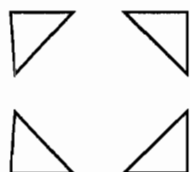
She uses three types of tiles:



whole tiles



half tiles

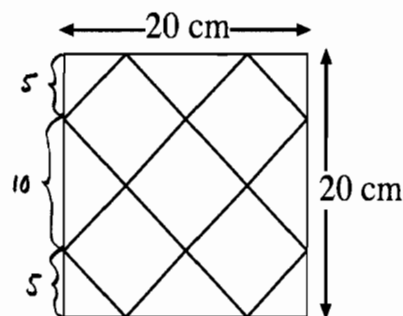


quarter tiles

The sizes of the square tabletops are all multiples of 10 cm.

Maria only uses quarter tiles in the corners and half tiles along the edges of the table.

Here is one tabletop:



This square table uses:

5 whole tiles, 4 half tiles, 4 quarter tiles.

1. How many tiles of each type will she need for a 40 cm by 40 cm square?
4 quarter tiles, 12 half tiles, 25 whole tiles

2. Describe a method for quickly calculating how many tiles of each type she needs for larger, square tabletops.

Please show your work on the page opposite.

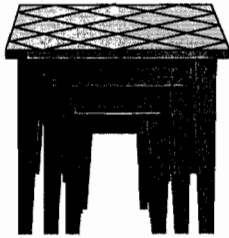
Table Tiling

2) Every table has 4 quarter tiles. You can find the # of half tiles by using the formula: $[(n \div 10) - 1] \cdot 4$, where n is the length of one side.

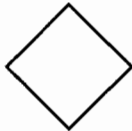
You can also use the formula: $(n \div 10)^2 + (n \div 10 - 1)^2$ to find the number of whole tiles.

1 2 3 4
5 6 7
8 9 10 11
12 13 14
15 16 17 18
19 20 21
22 23 24 25

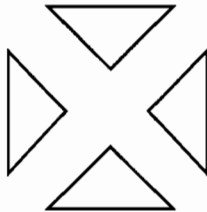
Maria makes square tables, then sticks tiles to the top.



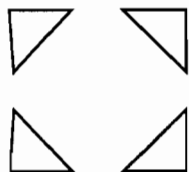
She uses three types of tiles:



whole tiles



half tiles

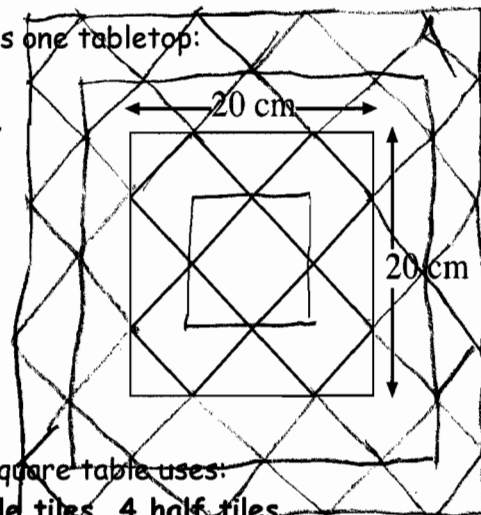


quarter tiles

The sizes of the square tabletops are all multiples of 10 cm.

Maria only uses quarter tiles in the corners and half tiles along the edges of the table.

Here is one tabletop:



Work for #1

This square table uses:

5 whole tiles, 4 half tiles, 4 quarter tiles.

1. How many tiles of each type will she need for a 40 cm by 40 cm square?
25 whole, 12 half, 4 quarter

2. Describe a method for quickly calculating how many tiles of each type she needs for larger, square tabletops. Quarter is always 4
 $n = \text{length}$ Whole = $\frac{2}{5}(n-10) + 1$
 Half = $4(\frac{n}{10} - 1)$

Please show your work on the page opposite.

Table Tiling

T4

Whole tiles: $10\text{ cm} = 1$ ⁺⁴, $20\text{ cm} = 5$ ⁺⁸, $30\text{ cm} = 13$

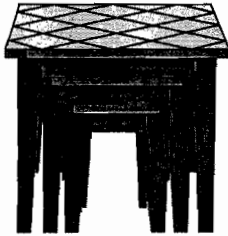
$$40 = 25$$

$$w = \frac{1}{10}(n-10)4 + 1 \quad \frac{2}{5}(n-10) + 1$$

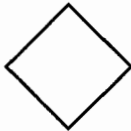
Half tiles: $10\text{ cm} = 6$ ⁺⁴, $20\text{ cm} = 4$ ⁺⁴, $30\text{ cm} = 8$
⁺⁴ $40\text{ cm} = 12$

$$(n/10 - 1) \times 4 \quad \frac{1}{10}n$$

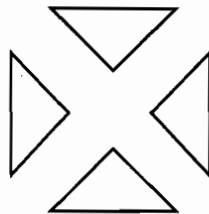
Maria makes square tables, then sticks tiles to the top.



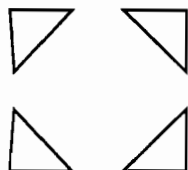
She uses three types of tiles:



whole tiles



half tiles

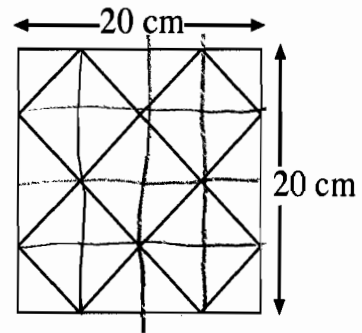


quarter tiles

The sizes of the square tabletops are all multiples of 10 cm.

Maria only uses quarter tiles in the corners and half tiles along the edges of the table.

Here is one tabletop:



This square table uses:
**5 whole tiles, 4 half tiles,
 4 quarter tiles.**

1. How many tiles of each type will she need for a 40 cm by 40 cm square?
2. Describe a method for quickly calculating how many tiles of each type she needs for larger, square tabletops.

Please show your work on the page opposite.

Table Tiling

1) x = how many 0s in measurement
of one side

$$\text{large: } 4 \times 4 + (4-1)(4-1) = 16 + 9 = 25 \text{ whole tiles}$$

$$\text{half: } (4-1) \times 4 = 12 \text{ half}$$

$$\text{quarter} = 4$$

because there

are 4 corners

$$2) \text{ large squares} = x \times x + (x-1)(x-1)$$

$$\text{half} = (x-1) \times 4$$

$$\text{quarter} = 4$$