

Sums. They're Math Magic

20 – More Geometry

Please go through each slide stopping until you have understood the concept described

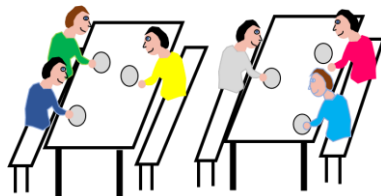
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Squares



How many squares are there?



Which tables do you not have to learn?
Dinner tables!

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Squares



How many squares are there?

Label the areas 1 to 9

There are 9 squares 1 to 9

There are also 4 squares made up of four areas, e.g. $1+2+4+5$

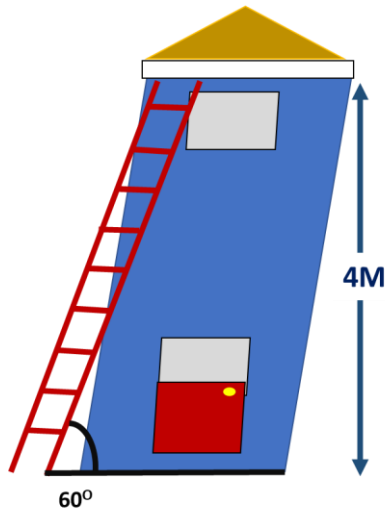
And the outside square

So there are 14 squares.

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Sum Tangential Thinking



The man has to clean the gutters on the house which are 4M above the ground.

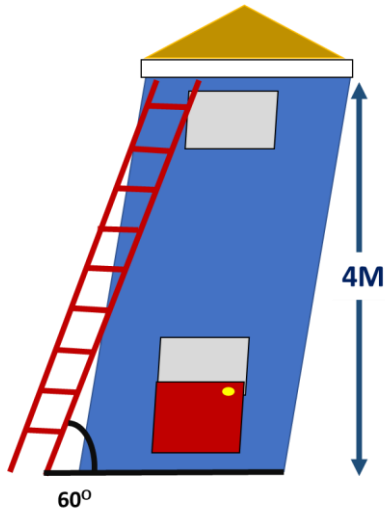
The safe angle for the ladder is 60° .

How long should the ladder be?

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Sum Tangential Thinking



The ladder and the wall make a right-angled triangle.

Also the tangent of the angle 60 is $\sqrt{3} = 1.73021$ approximately.

Tangent = Opposite over Adjacent

So the ladder should be placed $= 4/1.73021 = 2.309M$ from the wall.

Using Pythagoras, Ladder $= \sqrt{(4^2 + 2.309^2)}$
 $= \sqrt{21.333} = 4.619M$

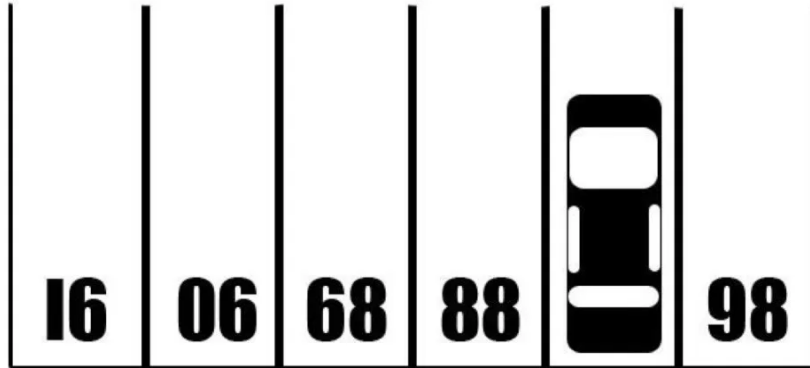
To be safe the ladder should be 5M high.

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Car Park

Car Park

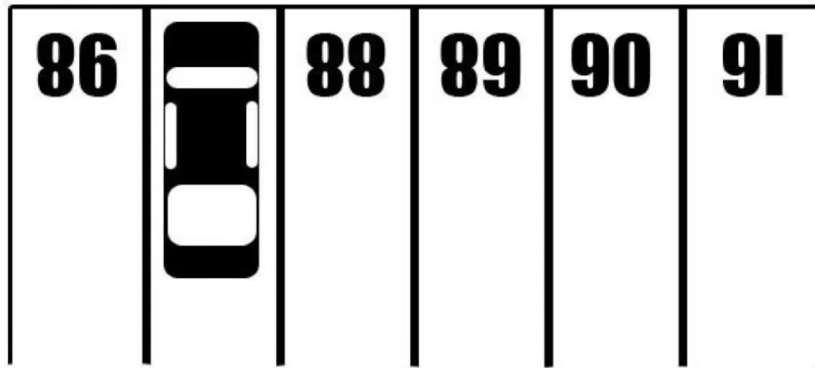


Which number is the car parked in?

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Car Park



Which number is the car parked in?

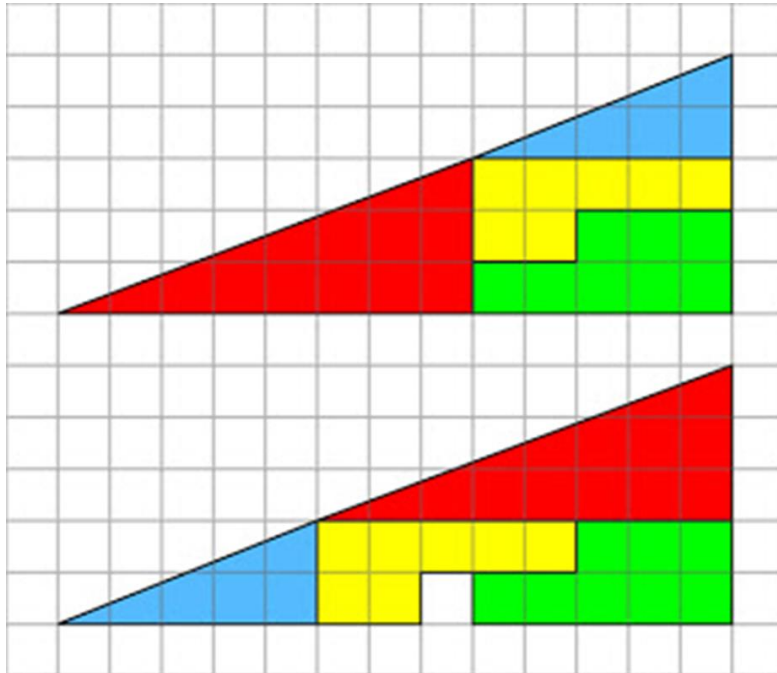
The car parked is parked in no. 87

Invert the picture

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Extra Square

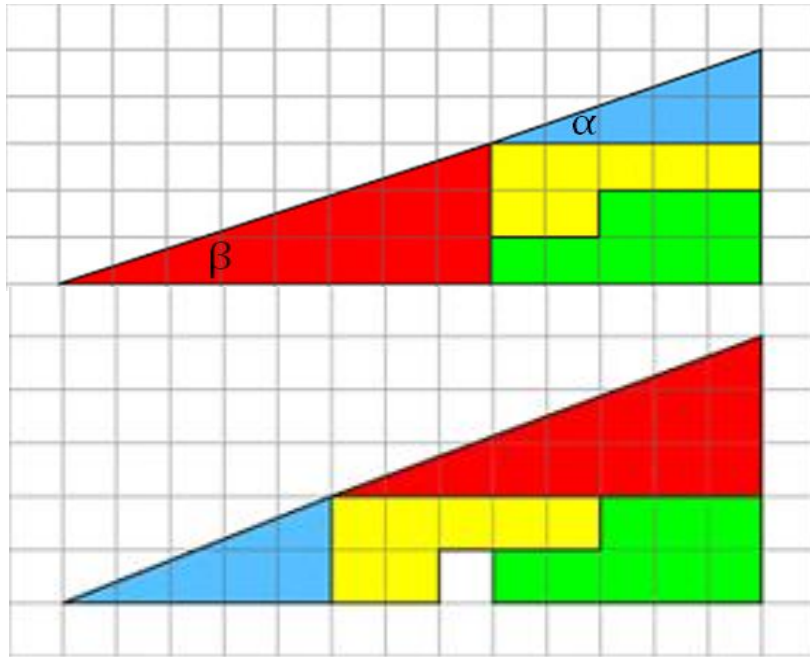


Where has the extra square
in the second diagram
come from?

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Extra Square



Trigonometry:

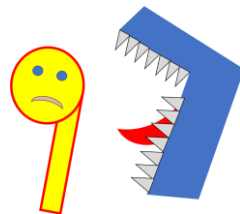
$$\tan \alpha = 2/5 = 0.4$$

$$\tan \beta = 3/8 = 0.375$$

So α is not equal to β

So the two long sides (the two hypotenuse) are not in a straight line.

This is why the extra square appears when you rearrange the triangles.



Why did six not like to be with seven?

Because 7 8 9 (seven ate nine)

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Please go to the next lesson.

Sum More Logic