

**Sums. They're Math Magic**

**20 – More Geometry**

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

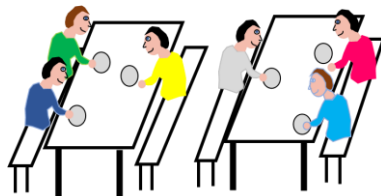
# Sums. The're Math Magic

## 20 – More Geometry

### Squares



How many squares are there?



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

# Sums. They're Math Magic

## 20 – More Geometry

### 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.  $1+2+4+5$

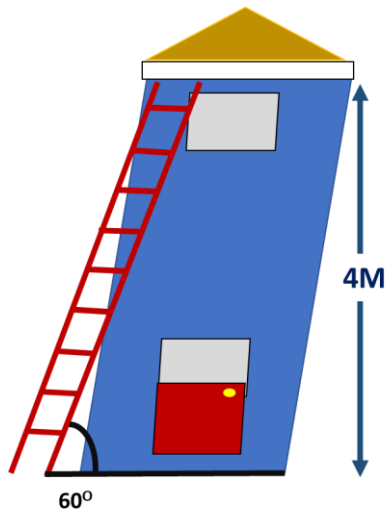
And the outside square

**So there are 14 squares.**

# Sums. They're Math Magic

## 20 – More Geometry

### Sum Tangential Thinking



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

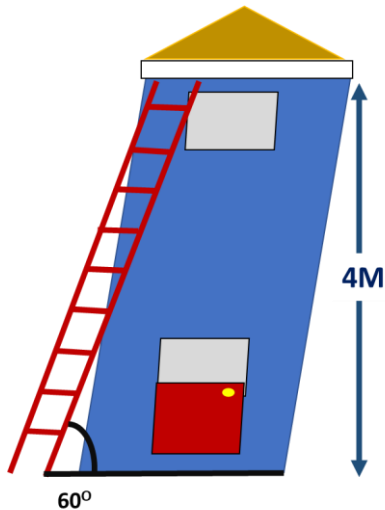
The safe angle for the ladder is  $60^\circ$ .

**How long should the ladder be?**

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## 20 – More Geometry

### 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  $= \sqrt{4^2 + 2.309^2}$   
 $= \sqrt{21.333} = 4.619M$

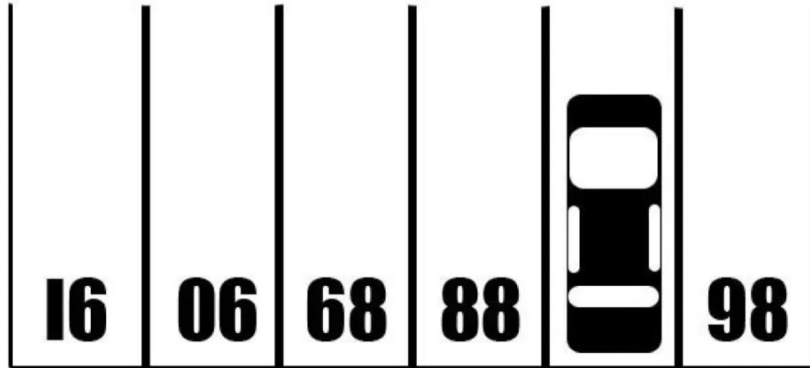
To be safe the ladder should be 5M high.

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## 20 – More Geometry

Car Park

Car Park

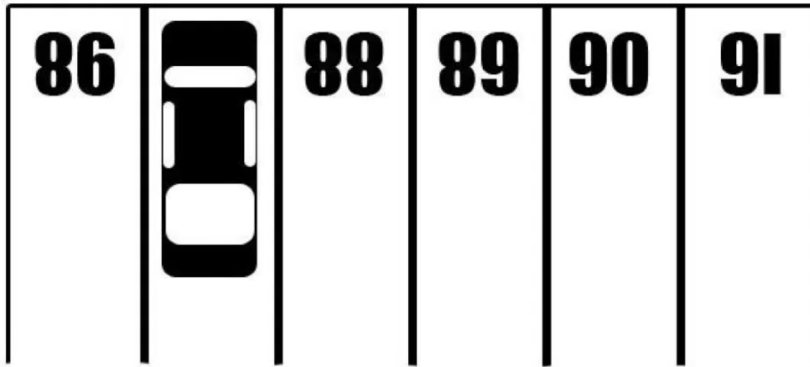


Which number is the car parked in?

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## 20 – More Geometry

### Car Park



Which number is the car parked in?

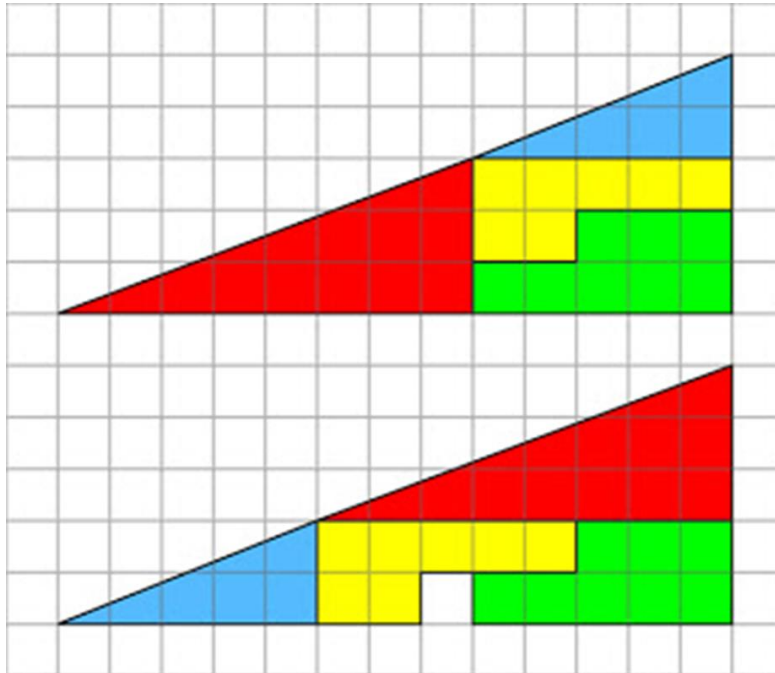
The car parked is parked in no. 87

Invert the picture

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## 20 – More Geometry

### Extra Square



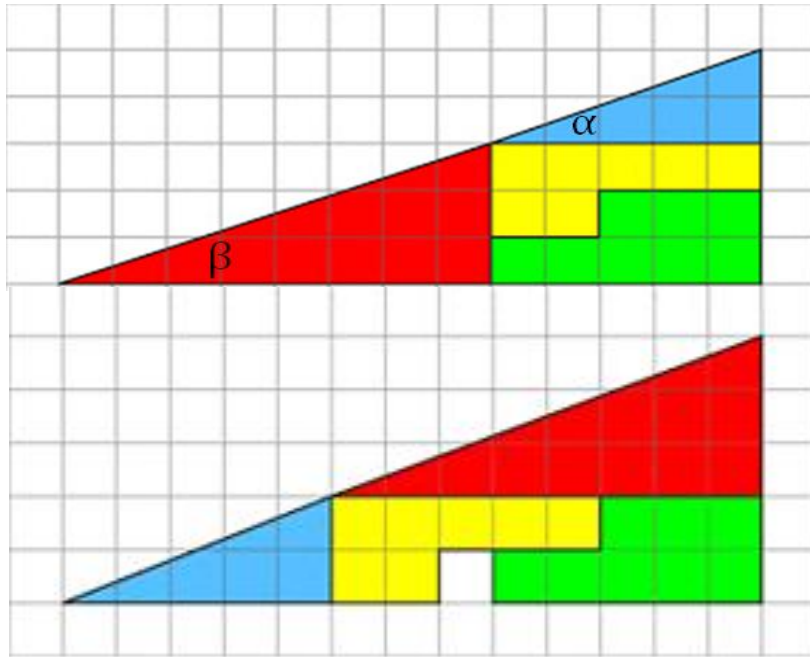
Where has the extra square  
in the second diagram  
come from?



# Sums. The're Math Magic

## 20 – More Geometry

### Extra Square



Trigonometry:

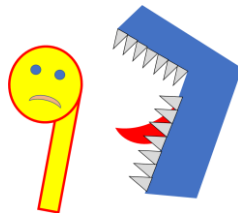
$$\tan \alpha = 2/5 = 0.4$$

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

So  $\alpha$  is not equal to  $\beta$

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 )

**Sums. The're Math Magic**

**20 – More Geometry**

**Please go to the next lesson.**

**Sum More Logic**