Stopping Distances

In this activity we will be looking at stopping distances for cars and lorries. You will use your skills in averages, graphs and charts, length calculations and estimation, percentages and rounding.

First see what the highway code says about stopping distances. (Source Dept of Transport)

Typical Stopping Distances

Speed	Thinking Distance	Braking Distance	Total
20 mph (32 km/h)	6 m	6 m	= 12 metres (40 feet)
30 mph (48 km/h)	9 m	14 m	= 23 metres (75 feet)
40 mph (64 km/h)	12 m	24 m	= 36 metres (118 feet)
50 mph (80 km/h)	15 m	38 m	= 53 metres (175 feet)
60 mph (96 km/h)	18 m	55 m	= 73 metres (240 feet)
70 mph (112 km/h)	21 m	75 m	= 96 metres (315 feet)

The distances shown are a general guide. The distance will depend on your attention (thinking distance), the road surface, the weather conditions and the condition of your vehicle at the time

Thinking Distance   Braking Distance

Average car length = 4 metres (13 feet)

The table says an average car length is 4m. Is this correct? Here are the lengths of 10 cars. Find the mean length and the median length.

Ford Fiesta 3950mm

Ford Focus 4358mm

Fiat Bravo 4336mm

Renault Megane 4295mm

Vauxhall Astra 4419mm

Volkswagon Golf 4225mm

Skoda Rapid 4483mm

Smart Forfour 3495mm

Rover Streetwise 3980mm

Rolls Royce Silver Shaddow 5181mm

BONUS QUESTION

WHICH 3 CARS ARE PICTURED?

Mean=

Median=

Do you think the Highway Code is right to say the average length of a car is 4m?

If the Rolls Royce was removed from the sample what difference would it make to the averages?
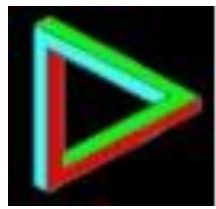
Mean=

Median =

1m=39.37 inches. 12 inches =1 foot. How long is 4m in feet? Round your answer to 1 decimal place.

Is the Highway Code correct to say 4m =13 feet?

Look at the graph from the Highway Code.

Stopping distance = thinking distance (blue) + braking distance (red).

What is the stopping distance at 20mph?

How many car lengths is this?

Measure 12 m in the room or corridor to see how long this is. It is about the same length as a bus.

What is the stopping distance at 30mph?

How many bus lengths is this approximately?

How many car lengths is this?

What is the total stopping distance at 40mph?

How many car lengths is this?

How much longer is this than the stopping distance at 20mph?
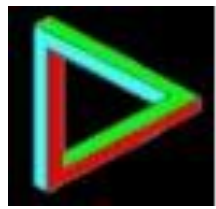
What is the stopping distance at 70mph?

How many car lengths is this?

How many bus lengths?

How much further is this than at 20mph?

Fill in the table

Speed mph	Thinking Distance m	Braking Distance m	Stopping Distance m	Car lengths
20	6	6		
30	9	14		
40	12	24		
50	15	38		
60	18	55		
70	21	75		

This graph is from the Department of Transport 2013 Reported road casualties Great Britain

## In 2013, 785 fatalities were car occupants (46 per cent of all fatalities) ...

		Latest annual change
(car)	785	↓ 2%
(pedestrian)	398	↓ 5%
(motorcycle)	331	↑ 1%
(cyclist)	109	↓ 8%
Other	90	↑ 3%
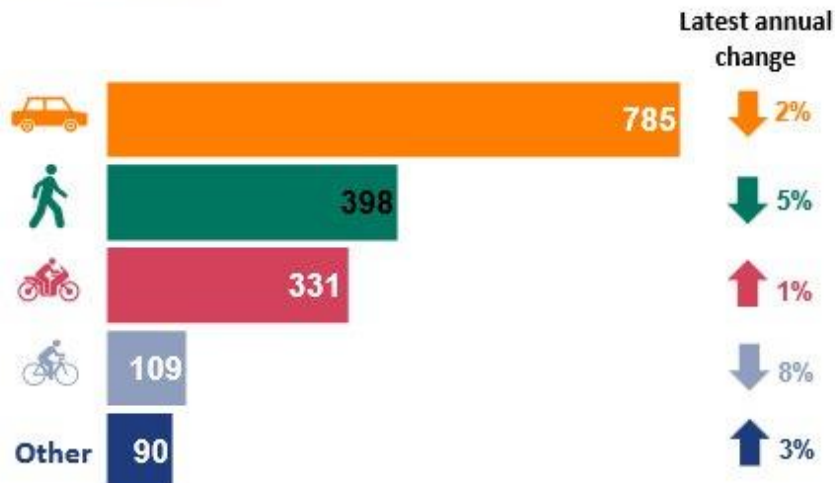
Other consists mainly of goods vehicle and bus and coach occupants

How many casualties were there altogether in 2013?

Fill in the table to find the percentages of each type of casualty. Round the percentages to one decimal place.

Type of fatality	Number	Percentage
Car	785	
Pedestrian	398	
Motor Cyclist	331	
Cyclist	109	
Other	90	
Total		

Which types of fatality increased between 2012 and 2013?
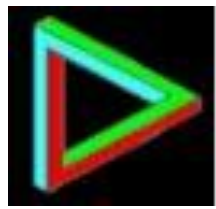
RELATIVE STOPPING DISTANCES for passenger cars, buses, and large trucks
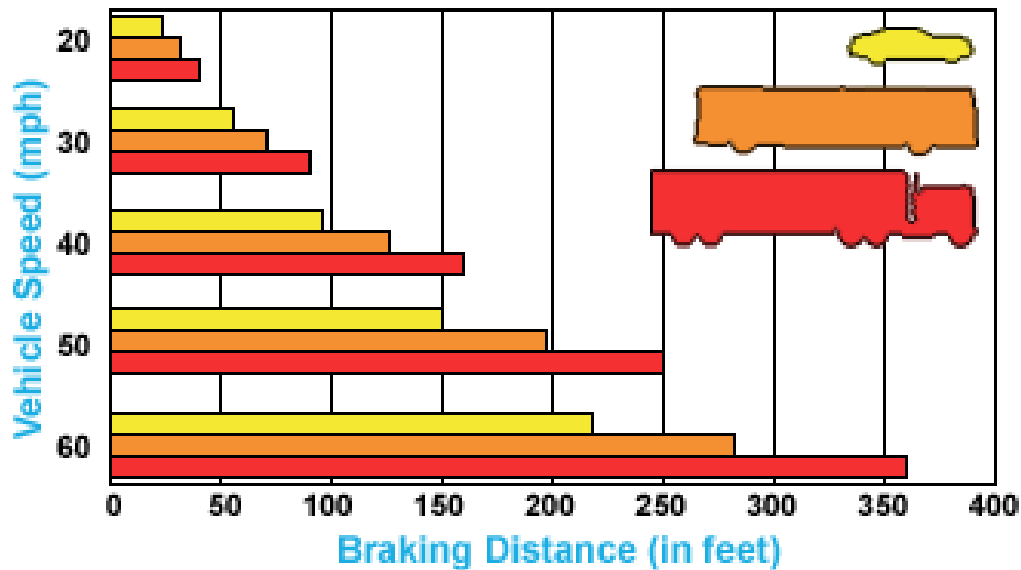
(Source http://www.truckitsmart.com/news/view/tips_for_driving_in_poor_weather)

This bar chart compares the stopping distances of cars, buses and lorries.

If a lorry is travelling at 60mph what is its stopping distance?

How many metres is that? (Give your answer to the nearest metre.

Which of these is this the same as?

a. The length of the Men's Olympic hurdles race.

b. The length of 3 buses.

c. The length of 20 cars.

d. The width of a football pitch.

How much greater is the stopping distance at 60mph for a lorry compared to a car?

This is about the same as a stopping distance for a bus at how many mph?

When you are driving keep to the speed limits! Don't let this happen to you. See http://www.brake.org.uk/ for more information on road safety.