

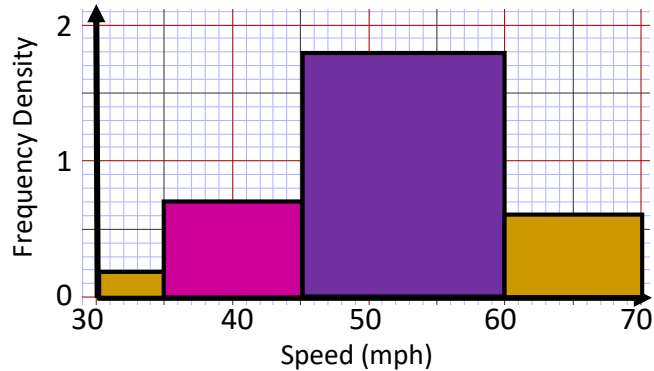


# Timester Challenge

## Histograms – Interpreting



A police speed camera operator noted down the speeds of cars.  
The histogram illustrates the results.



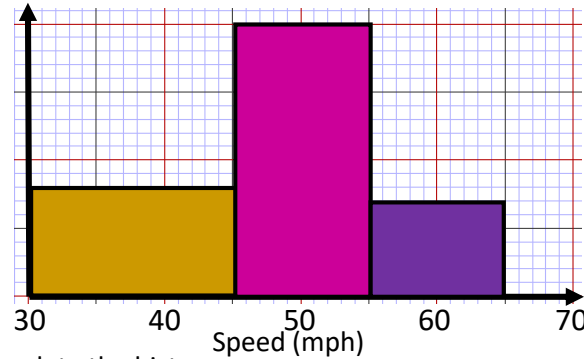
a) Use the histogram to complete the grouped frequency table.

Speed (mph)	Frequency
$30 < s \leq 40$	
$40 < s \leq 45$	
$45 < s \leq 60$	
$60 < s \leq 70$	

b) The speed limit was 50 mph.  
How many people were caught speeding?

Bronze ★

A month later after a speed awareness sign was placed up the speed camera operator went back and noted down the speeds of cars.



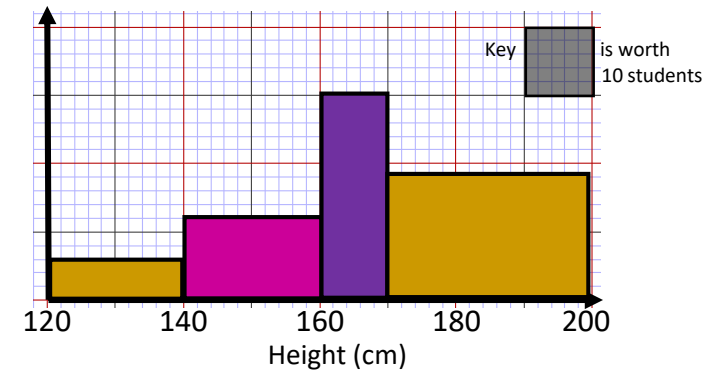
a) Complete the histogram.  
b) Use the histogram to complete the grouped frequency table.

Speed (mph)	Frequency
$30 < s \leq 45$	12
$45 < s \leq 55$	
$55 < s \leq 65$	
$65 < s \leq 70$	2

c) The speed limit was still 50 mph. As in the bronze question. Do you think the speed awareness sign was effective?

Silver ★

A survey was carried out to record the height of students before they went on a trip to a theme park.  
The histogram illustrates the results of the survey.



a) Use the histogram to complete the grouped frequency table.

Height (cm)	Frequency
$120 < h \leq 140$	
$140 < h \leq 160$	
$160 < h \leq 180$	
$180 < h \leq 200$	

b) One quarter of the students were too small to go on a ride. What height was too small?

Gold ★



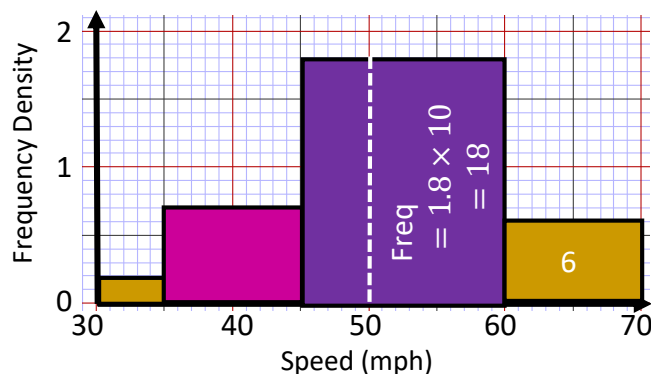
Answers

# Timester Challenge

## Histograms – Interpreting



A police speed camera operator noted down the speeds of cars.  
The histogram illustrates the results.



a) Use the histogram to complete the grouped frequency table.

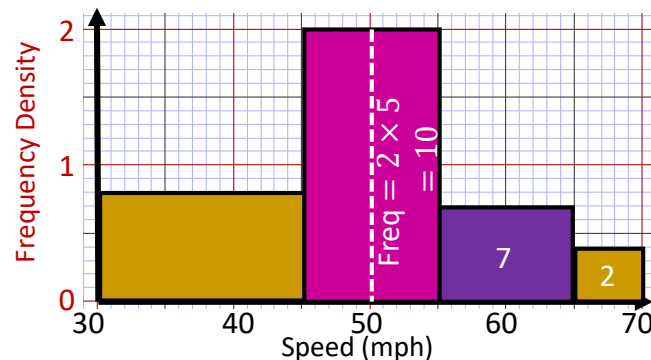
Speed (mph)	Frequency
$30 < s \leq 40$	1
$40 < s \leq 45$	7
$45 < s \leq 60$	27
$60 < s \leq 70$	6

*frequency*  
 $= fd \times cw$

b) The speed limit was 50 mph.  
How many people were caught speeding?  
 $(1.8 \times 10) + (0.6 \times 10)$   
 $= 18 + 6$   
 $= 24$  people

Bronze ★

A month later after a speed awareness sign was placed up the speed camera operator went back and noted down the speeds of cars.



a) Complete the histogram.  
b) Use the histogram to complete the grouped frequency table.

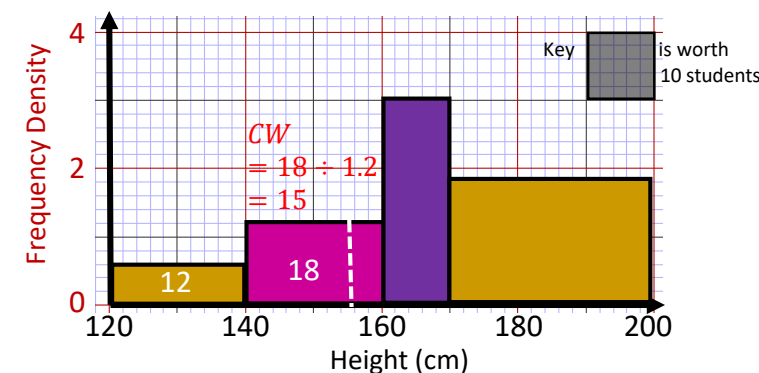
Speed (mph)	Frequency
$30 < s \leq 45$	12
$45 < s \leq 55$	20
$55 < s \leq 65$	7
$65 < s \leq 70$	2

c) The speed limit was still 50 mph. As in the bronze question. Do you think the speed awareness sign was effective?  
 $(2 \times 5) + (0.7 \times 7) + 2$   
 $= 10 + 4.9 + 2 = 16.9$  people

Yes because less people were caught speeding.

Silver ★

A survey was carried out to record the height of students before they went on a trip to a theme park.  
The histogram illustrates the results of the survey.



a) Use the histogram to complete the grouped frequency table.

Height (cm)	Frequency
$120 < h \leq 140$	12
$140 < h \leq 160$	24
$160 < h \leq 180$	30
$180 < h \leq 200$	54

b) One quarter of the students were too small to go on a ride. What height was too small?

$\frac{1}{4}$  of 120 is 30 people.

30<sup>th</sup> person is within the 2<sup>nd</sup> bar. 12 people from the 1<sup>st</sup> bar plus another 18 from the second.

Gold ★

This means we have a class width of  $cw = \frac{freq}{fd} = \frac{18}{1.2} = 15$  cm  
So anybody under  $140 + 15 = 155$  cm is too small for the ride.