

# Statistics: measures of central tendency, cumulation, grouped data — YEAR 9

**Question 1** For the following data find the range, mode, median, and mean:

(a) 3, 5, 6, 6, 7, 9, 11

(b) 7, 11, 5, 5, 6, 4, 6, 7

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(c) 1, 3, 7, 3, 2, 2, 4, 3, 2

(d) 12, 12, 13, 11, 15, 14, 13, 12, 11, 12

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**Question 2** For the following data complete the cumulative frequency (*cf*) column in order to find the median, and the *fx* column to find the mean:

(a)

<i>x</i>	<i>f</i>	<i>cf</i>	<i>fx</i>
1	5		
2	8		
3	11		
4	7		
5	9		
6	2		
$\Sigma$			

(b)

<i>x</i>	<i>f</i>	<i>cf</i>	<i>fx</i>
10	2		
12	11		
14	3		
16	17		
18	18		
20	12		
22	7		
$\Sigma$			

median = \_\_\_\_\_

Mean = \_\_\_\_\_

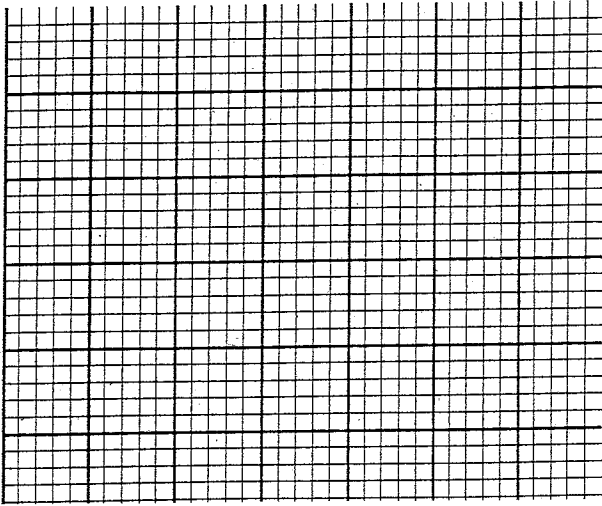
Mean = \_\_\_\_\_  
median = \_\_\_\_\_

**Question 3** For the following data, draw a cumulative frequency histogram to find the median:

(a)

<i>x</i>	48	49	50	51	52	53
<i>f</i>	19	29	35	26	29	22

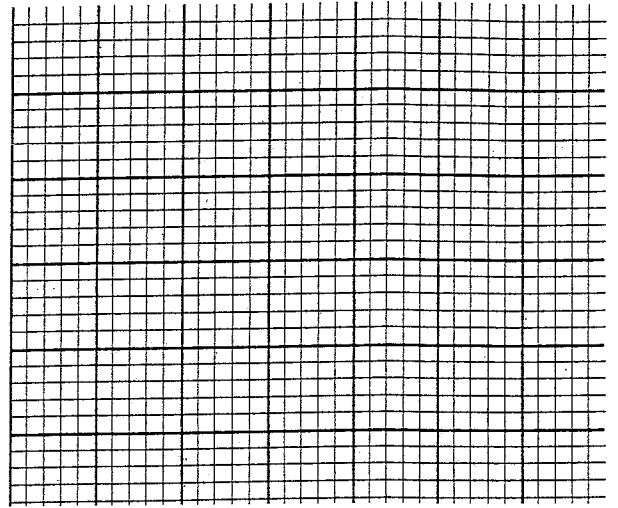
median = \_\_\_\_\_



(b)

<i>x</i>	20	21	22	23	24	25	26
<i>f</i>	32	33	26	18	15	17	11

median = \_\_\_\_\_



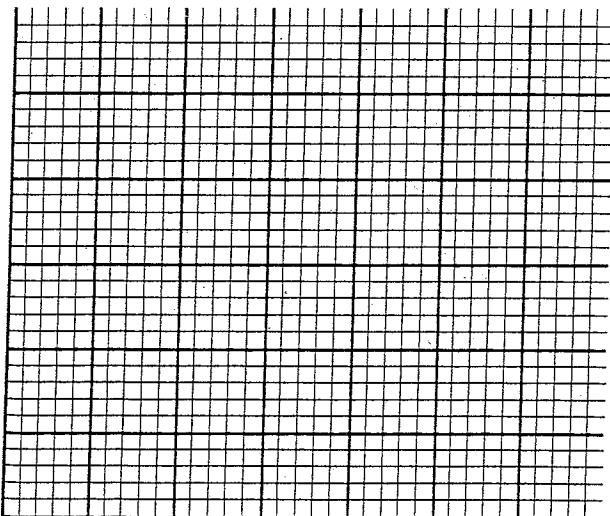
**Question 4** For the following grouped data, find the class centre and hence the mean.  
Also draw a cumulative frequency histogram and polygon to find the median.

(a)

<i>Class</i>	<i>Freq.</i>	<i>Class centre</i>	<i>Cumul. freq.</i>	<i>fx</i>
11-20	5			
21-30	7			
31-40	11			
41-50	10			
51-60	3			
61-70	4			
Totals				

mean = \_\_\_\_\_

median = \_\_\_\_\_

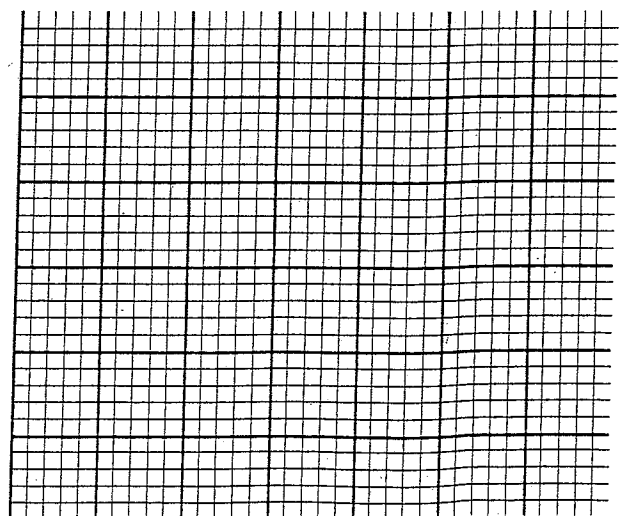


(b)

<i>Class</i>	<i>Freq.</i>	<i>Class centre</i>	<i>Cumul. freq.</i>	<i>fx</i>
16-20	12			
21-25	9			
26-30	8			
31-35	3			
36-40	3			
Totals				

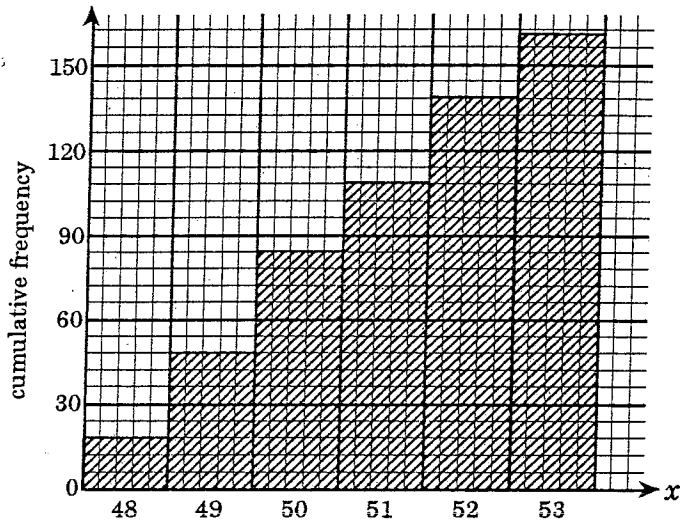
mean = \_\_\_\_\_

median = \_\_\_\_\_

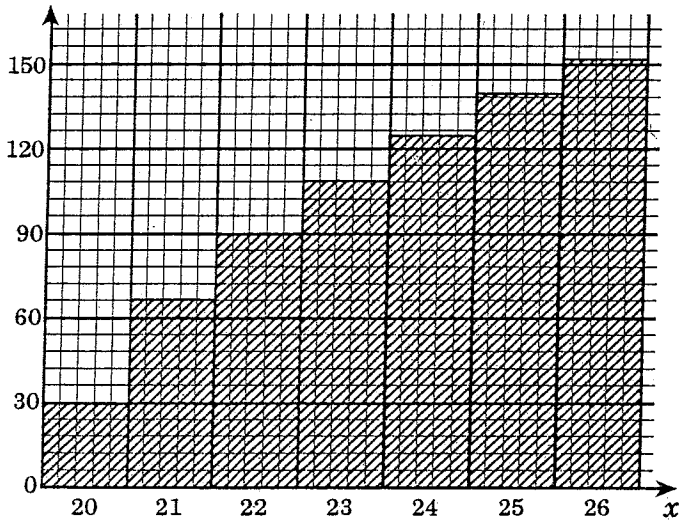


## 20 Statistics: measures of central tendency, cumulation, group data

- 1 (a) range 8, mode 6, median 6, mean 6.7  
 (b) range 7, mode 5,6,7, median 6, mean 6.4  
 (c) range 6, mode 2,3, median 3, mean 3  
 (d) range 4, mode 12, median 12, mean 12.5
- 2 (a) median 3, mean 3.3  
 (b) median 18, mean 16.9
- 3 (a) median = 50



(b) median = 22

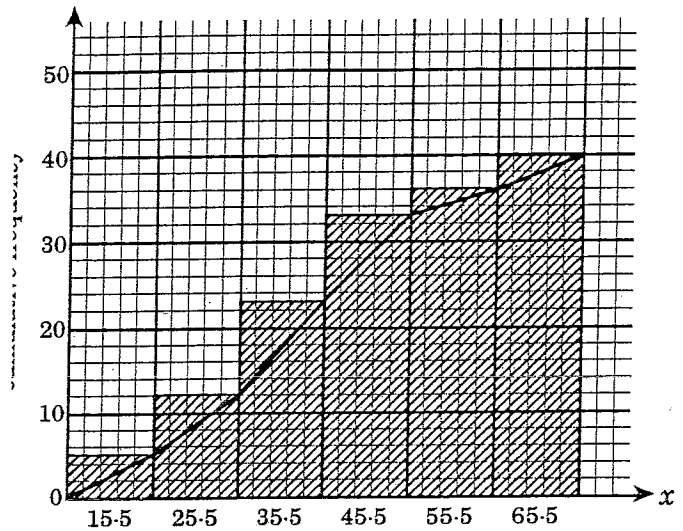


(a)

Class	Freq.	Class centre	Cumul. freq.	$fx$
11-20	5	15.5	5	77.5
21-30	7	25.5	12	178.5
31-40	11	35.5	23	390.5
41-50	10	45.5	33	455.0
51-60	3	55.5	36	166.5
61-70	4	65.5	40	262.0
Totals	40			1530.0

mean = 38.25

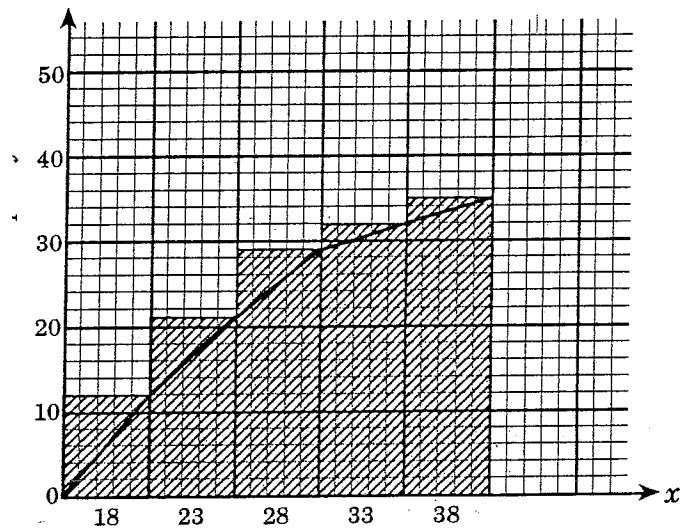
median = 35.5



Class	Freq.	Class centre	Cumul. freq.	$fx$
16-20	12	18	12	216
21-25	9	23	21	207
26-30	8	28	29	224
31-35	3	33	32	99
36-40	3	38	35	114
Totals	35			860

mean = 24.57

median = 23



## Simultaneous equations

- (a)  $x=8, y=2$       (b)  $x=4, y=-7$
- (c)  $x=5, y=2$       (d)  $x=-2, y=11$
- (a)  $x=19, y=6$       (b)  $x=-5, y=-13$
- (c)  $x=3, y=2$       (d)  $x=13, y=15$
- (a)  $x=3, y=7$       (b)  $x=2, y=1$
- (c)  $x=3.87, y=1.52$       (d)  $x=-6.36, y=-10.21$

- (a) 13 and 19
- (b)  $19 \times 5c$  coins,  $6 \times 20c$  coins
- (c) apples 28c, oranges 12c
- (d) length 30 cm, width 6 cm