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Q 1. Mean = Median = Mode = Range

4, 10, 10, 12, 14 — satisfied

mode = 10
median = 10
range = 14 − 4 = 10
mean = 10

base — 2nd no, 3rd no — ×2 — 2 5 5 6 7

we can find infinite sets of numbers from the base no:-

One way — 4 10 10 12 14 — infinite

another base — 3rd, 4th — 3 4 5 5 8 — we again can find infinite sets

6 8 10 10 10 — all 10 — infinite

mode = 5
median = 5
range = 5
mean = 5

- one more set 8 20 20 24 28 from 4 10 10 12 14

till infinite

Why this doubling trick works.

Have to prove this

~~Mean~~

this is our example

×2
2, 5, 5, 6, 7
4, 10, 10, 12, 14

For mode

suppose x x

2 5 5 6 7

× 2 ×2 ×2 ×2 ×2

4 10 10 12 14

2x 2y 2y

mode = 5 → 5×2 = 10

median = 5

range = 5

mean = 5

naturally

the y is repeated so

2y is also repeated

If is convinced that if everything is doubled, mode is also doubled

For median

position ~~wise~~ wise

2 5 5 6 7

4 10 10 12 14

it will be doubled as well

For range

so first in 2 5 5 6 7

range is ~~7-5~~

7-2 originally

new range = (7×2) - (2×2)

= 2(7-2)

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For mean for that this part is common $2\left[\frac{\quad}{5}\right]$

when you are doubling the whole set then that doubles the whole sum of it and then you divide it by 5

that's why this is common $2\left(\frac{\quad}{5}\right)$

original → $\frac{\quad}{5}$

new mean of
in 4 10 10 12 14

$= \frac{(4+10+10+12+14)}{5}$

in short = $2\left\{\frac{2+5+5+6+7}{5}\right\}$

mean of original

new mean is (×2) the original mean set

For base set you need some trial and error.

By changing the multiplier, we can find infinite sets.

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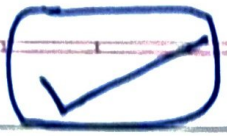

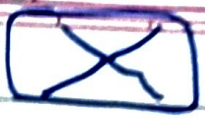

Q.2.a) Mode < Median < Mean

- 5, 5, 6, 7, 12

mode - 5

median - 6

mean - $\frac{35}{5} = 7$

can't repeat choice

8, 8, 8, 10, 11

mode - 8

median - also 8

so its wrong

2 B) Mode < Mean < ~~Mean~~ Median

- 1 1 10 11 12

mode - 1

~~median~~ an - 7

median - 10

experimenting $\times 2$ 1, 1, 10, 11, 12 & 2, 2, 20, 22, 24 let's see if it works in this case

mode - 2

~~median~~ an - ~~14~~ 14

~~mean~~ median - 20

now again you can generate infinite sets with this condition.

again like

3, 3, 30, 33, 36

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2 c) Mean < Mode < Median

= 2 16 20 20 22

1 8 10 10 11

won't work

so just trial and error

5 5 6 _ _

mode < ~~medine~~ median

fixed place for mode it must come there

Take example of 5, 5, 6

~~we need answer in whole~~ numbers

the no:s are

$\frac{\text{sum}}{5} = 4$ ← 20

total has to be 20 or smaller.

To reach 20 you already have

5 + 5 + 6 = 16 (4) 3 1

won't wor

So it is not possible

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2 D) Mean < Median < Mode

= 1, 2, 5, 6, 6

mode - 6

median - 5

mean - 4

1 2 4 5 5

mode - 5

median - 4) smaller anyway

mean - 3. something

In decimals

2 E) Meedian < Mode < Mean

10 11 11 30 30

mode

+ - 70

mean bigger than 30 not possible

Not possible

because it has to be in ascending order

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2 F) Median < Mean < mode

= 4 5 6 10 10 possible

median - 6 } mean - 7

mode - 10 }

again you can find infinite examples by doubling it further.