



## Warm Up Grade 7



1) There are 11 Grade 7 students in Ms. Shim's combined Grades 6 and 7 class. Below are the student's marks on their last science:

~~80, 54, 92, 95, 73, 78, 66, 85, 76, 70, 87~~

54, 66, 70, 73, 76, 78, 80, 85, 87, 92, 95

- Find the median
- Find the mean
- Find the Range
- Find the mode

a) median = 78

$$b) \text{ mean} = \frac{856}{11} \\ = 77.81$$

$$c) \text{ Range} = \text{Big} - \text{Small} \\ = 95 - 54 \\ = 41$$

d) mode = none

2) Another Grade 7 student transfers to Ms. Shim's class. He writes the same test and receives a mark of 72.

Find the new median mark on the last science test.



# Warm Up

## Grade 7

### April 24, 2014



1) There are 11 Grade 7 students in Ms. Shim's combined Grades 6 and 7 class. Below are the student's marks on their last science:

~~80~~, ~~54~~, ~~92~~, ~~95~~, ~~73~~, ~~78~~, ~~66~~, ~~85~~, ~~76~~, ~~70~~, ~~87~~

54, 66, 70,

73, 76, 78, 80, 85, 87, 92, 95

a) Find the median **78**

b) Find the mean

c) Find the Range =  $95 - 54 = 41$

d) Find the mode **NO**

$$\begin{aligned}
 \text{b) mean} &= \frac{54 + 66 + 70 + 73 + 76 + 78 + 80 + 85 + 87 + 92 + 95}{11} \\
 &= \frac{856}{11} \\
 &= 77.81
 \end{aligned}$$

2) Another Grade 7 student transfers to Ms. Shim's class. He writes the same test and receives a mark of 72.

Find the new median mark on the last science test.

54, 66, 70, 72, 73, **76, 78**, 80, 85, 87, 92, 95

$$\begin{aligned}
 \text{Median} &= \frac{76 + 78}{2} \\
 &= \frac{154}{2} \\
 &= 77
 \end{aligned}$$

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7W

1 a) 80, 85, 85, 90, 90, 95, 100

$$\text{median} = 90$$

$$\text{range} = 100 - 80 \\ = 20$$

b) 12, 15, 19, 21, 30, 52, 61, 85

$$\text{median } \frac{21+30}{2} \\ = \frac{51}{2} = 25.5$$

$$\text{range } 85 - 12 \\ 73$$

2. Class A

8, 9, 9, 12, 12, 13, 13, 14, 15, 15

$$\text{median } \frac{12+13}{2} \\ \frac{25}{2} = 12.5$$

$$\text{range } 15 - 8 \\ 7$$

Class B

10, 10, 11, 11, 12, 12, 13, 13, 14, 14

$$\text{median } 12 \\ \text{range } 14 - 10 \\ 4$$

c) students opinion, with explanation

3i) 4, 5, 7, 8, 11

mode - none

median 7

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

ii) 50, 50, 55, 65, 70, 70

mode 50 and 70

median  $\frac{55+65}{2} = 60$

mean  $\frac{360}{6} = 60$

iii)

7, 63, 68, 71, 71

mode 71

median 68

mean  $\frac{280}{6} = 56$

iv)

6, 13, 13, 13, 20

mode 13

median 13

mean  $\frac{65}{6} = 13$

b) orally

4  
a)           80 100 100 100

mode 100

median and mean equal

mean and median 90  $6 \times 90 = 540$

90 95 100 100 105 110

mode 100

median and mean 100

b) mode 100

mean is less than median

10 20 85 95 100 100

median 90

sum has to be less than  $6 \times 90$   
540

5. a) median 158

140 146 150 154 158 158 160 162 165 180

b) mode 163

176 142 158 163 160 163 177 163 139 148

6 a) 118, 118, 120, 124, 138, 210

median 120

mode 118

b) 118 118 120 122 124 138

median 121

The time for the next race has to be 122.

c) A time of 210 will have the biggest effect on the mean.

7a) Game

mode 11

median 12

mean  $\frac{124}{10} = 12.4$ 

Assist

mode 4

median 17

mean  $\frac{109}{10} = 10.9$ 

Penalty Minutes

mode 2 and 8

median 8

mean  $\frac{183}{10} = 18.3$ 

Goals

3

 $\frac{5+7}{2} = 6$  $\frac{97}{10} = 9.7$ 

Points

10

 $\frac{14+20}{2} = 17$  $\frac{207}{10} = 20.7$

## Gr. 7 Worksheets

### Extra Practice 1 – Master 7.19

1. a) 7            b) 33            c) 5            d) 14
2. a) 3            b) 45            c) 143, 534  
d) No mode
3. a) 57, 56, 36            b) No mode, 17, 10  
c) Brown; he has the most hits and has fewer strikeouts than Green.

### Extra Practice 2 – Master 7.20

1. a) 75, 45            b) 22.5, 33  
c) 105.5, 504            d) 42, 90
2. a) 35            b) 18.5
3. a) For example: 10, 12, 14, 16, 18  
b) For example: 7, 8, 9, 10, 14, 22, 23, 24, 25, 26  
c) For example: 3, 9, 11, 14, 16, 17, 19, 21
4. a) The 12th number  
b) The mean of the 12th and 13th numbers
5. For example, 20, 25, 33, 34, 38 and 19, 24, 33, 33, 41
6. a) For example, the ages in years might be: 18, 18, 19, 23, 31, 34, 34, 37, 39, 45, 53, 60  
b) For example, the ages in years might be: 21, 25, 29, 39, 45, 45, 45, 51, 71, 78





## Outlier

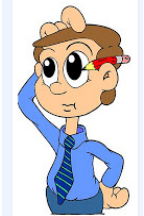
An outlier is a number in the set of data that doesn't "fit" or match up with the rest of the data.

Ex) The set 13 15 16 18 22 97  
97 would be the outlier

An outlier is much greater than or much less than most of the numbers in the data set.

Outliers will often have an effect on certain averages. You will try to discover these effects with tonight's homework.

93, 96, 82, 64, 72, 68, 71, 4



During one week in February, the daily snowfalls in Kingston were:

~~5~~ cm, ~~4~~ cm, 21 cm, ~~6~~ cm, ~~3~~ cm, 7 cm, ~~3~~ cm

3, 3, 4, 5, 6, 7, 21

1. Calculate the mean, median, and mode.
2. Calculate the mean, median, and mode without the outlier. What do you notice?
3. Should the outlier be used when reporting the average mark? Explain.

1)

$$\text{mean} = \frac{49}{7} = 7 \text{ cm}$$

$$\text{median} = 5 \text{ cm}$$

$$\text{mode} = 3 \text{ cm}$$

2) outlier is 21

$$\text{mean} = \frac{28}{6} = 4.\bar{6} \text{ cm}$$

$$\text{median} = \frac{4+5}{2} = \frac{9}{2} = 4.5 \text{ cm}$$

$$\text{mode} = 3$$

3, 3, 4, 5, 6, 7



During one week in February, the daily snowfalls in Kingston were:

$$\text{mode} = 3$$

$$\text{median} = 5$$

$$\text{mean} = \frac{49}{7} = 7$$

~~5 cm, 4 cm, 21 cm, 6 cm, 3 cm, 7 cm, 3 cm~~

3, 3, 4, 5, 6, 7, 21

1. Calculate the mean, median, and mode.
2. Calculate the mean, median, and mode without the outlier. What do you notice?
3. Should the outlier be used when reporting the average mark? Explain.

$$\text{mean} = \frac{3+3+4+5+6+7}{6}$$

$$= \frac{28}{6}$$

$$= 4.\bar{6}$$

$$\text{median} = \frac{4+5}{2} = \frac{9}{2} = 4.5$$

$$\text{mode} = 3$$

# Class/Homework

#1, #2  
abc abc

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# 1, 2, 3, 4(if loud)

## Unit 7 Data Analysis (Part 1) Test will be TUESDAY, OCT. 7

Topics: Mean, Median, Mode, Range, Outliers

8 Multiple Choice

3 Short Response

(VERY similar To wamp ups)

~~0~~, 1, 2, 4, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 6, 6, 7, 7, 7, 7, 8, 9

$$\text{mean} = \frac{124}{25} = 4.59$$

Outlier  $\Rightarrow$  0 b/c

you need  
to cook  
or  
package  
food

$$\text{median} = 5$$

$$\text{mean} = \frac{124}{23} = 5.39$$

$$\text{mode} = 5$$

$$\text{median} = 5$$

$$\text{mode} = 5$$

Mean is effected the most

1. This set of data represents the waiting time, in minutes, at a fast-food restaurant:
- 5, 5, 5, 6, 5, 7, 0, 5, 1, 7, 7, 5, 6, 5, 5, 5, 8, 5, 0, 5, 4, 5, 2, 7, 9
- Calculate the mean, median, and mode.
  - Identify the outliers. Explain your choice.
  - Calculate the mean, median, and mode without the outliers.  
How is each average affected when the outliers are not included?

Remember to arrange the data in order before finding the median.

2. Bryan recorded the time he spent on the school bus each day for one month. Here are the times, in minutes:
- 15, 21, 15, 15, 18, 19, 14, 20, 95, 18, 21, 14, 15, 20, 16, 14, 22, 21, 15, 19
- Calculate the mean, median, and mode times.
  - Identify the outlier. How can you explain this time?
  - Calculate the mean, median, and mode times without the outlier.  
How is each average affected when the outlier is not included?
  - A classmate asks Bryan, "What is the average time you spend on the bus each day?" How should Bryan answer? Give reasons.

3. A clothing store carries pant sizes 28 to 46. A sales clerk records the sizes sold during her 6-h shift:
- 28, 36, 32, 32, 34, 4, 46, 44, 42, 38, 36, 36, 40, 32, 36
- Calculate the mean, median, and mode sizes.
  - Is there an outlier? If so, why do you think it is an outlier?
  - Calculate the mean, median, and mode sizes without the outlier.  
How is each average affected when the outlier is not included?
  - Should the outlier be used when the sales clerk reports the average pant size sold during her shift? Explain your thinking.



4. Here are the science test marks out of 100 for the Grade 7 students in a combined-grades class:
- 0, 66, 65, 72, 78, 93, 82, 68, 64, 90, 65, 68
- Calculate the mean, median, and mode marks.
  - Identify the outlier. How might you explain this mark?
  - Calculate the mean, median, and mode marks without the outlier.  
How is each average affected when the outlier is not included?
  - Should the outlier be used when reporting the average test mark? Explain.

5. a) Give an example of a situation in which outliers would not be used in reporting the averages. Explain why they would not be included.
- b) Give an example of a situation in which outliers would be used in reporting the averages. Explain why they would be included.