



Grade 7

DATA MANAGEMENT AND PROBABILITY: APPLICATIONS

This resource may be copied in its entirety, but is **not to be used for commercial purposes** without permission from the Centre for Education in Mathematics and Computing, University of Waterloo.

Play the **Mode, Median and Mean Game** first!

Click on <http://www.bbc.co.uk/schools/ks2bitesize/maths/activities/modemedianmean.shtml> or you may go to www.wiredmath.ca for the link.

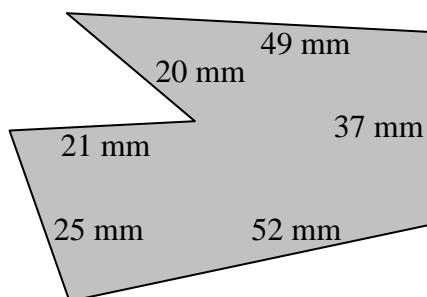
Measures of Central Tendency

- Mean:** The sum of the numbers divided by the number of numbers in the list.
Median: The middle number in a list of numbers arranged in order.
Mode: The most frequent number in a set of data.
Range: The difference between the highest and lowest number in a list of numbers.

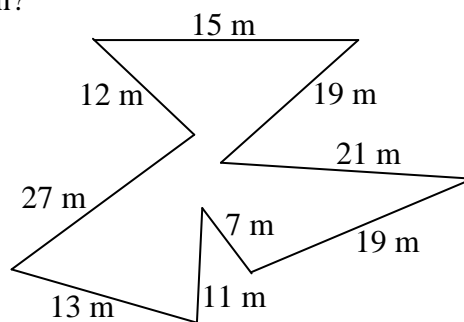
- Find the mean, median, mode, and range of each set of values.
 - 3, 13, 9, 5, 13, 13, 7
 - 15, 3, 21, 15, 5, 9, 11, 9
 - 23, 36, 45, 32, 12, 19, 21, 31, 29, 52
 - 3, 29, 32, 62, 16, 30, 23, 6, 43, 23, 29, 12, 41, 94, 23, 82, 34, 29, 12, 77

- What are the mean and median side lengths of each polygon?

a.



b.



- Write 8 numbers whose mode is 8? median is 8? mean is 8?

Test your knowledge.

http://www.bbc.co.uk/apps/ipl/schools/gigaquiz?path=ks2revisewise/rw_maths12&infile=rw_maths12

The **Probability** of an event is the likelihood that it will occur.
It is expressed in fraction, decimal, or percentage form.

Ex. The probability of a coin landing on heads after it is flipped
can be expressed as: $\frac{1}{2}$, 0.5 or 50%

4. Jimmy's little league basketball team has an average free throw shooting percentage of 34%. How many free throws are they expected to hit if they shoot 450 free throws?
5. The probability of choosing a girl's name from the international club name list is $\frac{1}{3}$. If the club has 36 members, how many of them are girls?
6. Your class has just finished selling chocolate bars for a fundraiser. The number of bars sold by each student is as follows:
23, 34, 30, 22, 45, 66, 43, 22, 57, 41, 18, 38, 35, 26, 39, and 21.

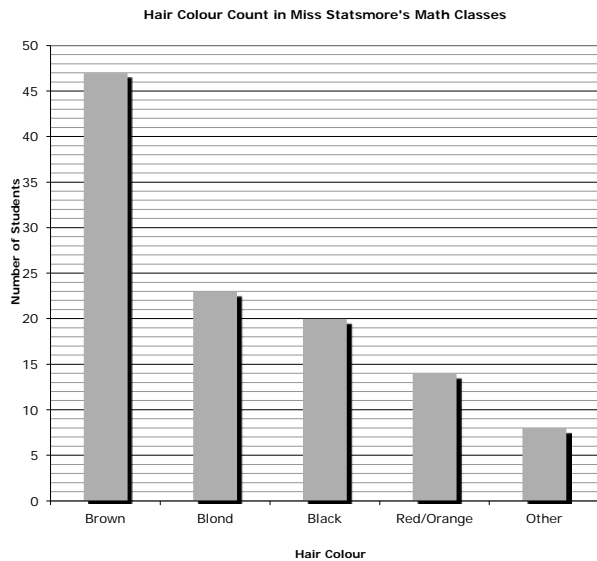
a. Complete a stem and leaf plot of the data above.

Stem	Leaf
1	8
2	1,
3	

- b. What is the mean, median, mode and range of the data?
- c. What percentage of the class sold less than 30 bars?

A **Stem and Leaf Plot** is a chart that organizes data to show its shape and distribution. Each value is split into a "stem" and a "leaf". The "leaf" is usually the last digit of the number and the other digits to the left of the "leaf" form the "stem". For example, the number 12 would have a stem 1 and a leaf 2. The number 345 would have a stem 34 and a leaf 5.

7.



- a. Determine the total number of students in Ms Statsmore's math classes?
- b. Find the probability of a student having brown hair? Red/Orange hair?
- c. What is the median hair colour group?

8. A herd of 12 cows has a mass of 4560 kg. What is the mean mass of the cows?
A 432 kg cow is added to the herd, what is the new mean mass of the cows?
9. Twelve friends enter a mini pie-eating contest and manage to eat the following number of mini pies: 16, 13, 17, 6, 23, 18, 20, 23, 15, 11, 12, and 18.
- What is the mean and median number of mini pies eaten?
 - What would the new mean and median be if the person that ate 13 mini pies had managed to eat 25 of them?

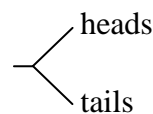
CHALLENGE YOURSELF!

10. Billy and Mike are playing a game with a six-sided die and a coin. Each begins by rolling the die. One point is awarded for rolling an odd number. If an even number is rolled, the coin is flipped. If the coin turns up heads, two points are awarded. If tails come up, the person receives no points.
- Use a tree diagram to display all possible results.
 - What is the probability of scoring 2 points?
 - What percentage of outcomes will result in at least 1 point?
11. In a set of 18 numbers, the mean of the first twelve numbers is 9, and the mean of the last six numbers is 12. What is the mean of the entire set of numbers?

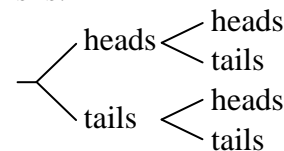
A **Tree Diagram** is a diagram used to show all of the possibilities of an event.

For example,

A Tree diagram for flipping one coin is:



A tree diagram for flipping two coins is:



EXTENSIONS

12. The following table displays the age of 6 employees at Johnson and Son's hardware:

Name	Age
Anna Tolstoy	56
Jacob Greenburg	23
Bernardo Rossi	78
Sam Johnson	19
Benjamin Adams	34

- What is the mean age of the employees?
 - When the store owner's age is added, the mean age becomes 47. What is the age of the store owner?
13. The numbers 4, 9, 7, 6, 2, and 3 are written on scraps of paper and put in a jar. If you are to draw two numbers from the jar and place them in the order in which they are drawn, what is the probability that you will draw a prime number?

