

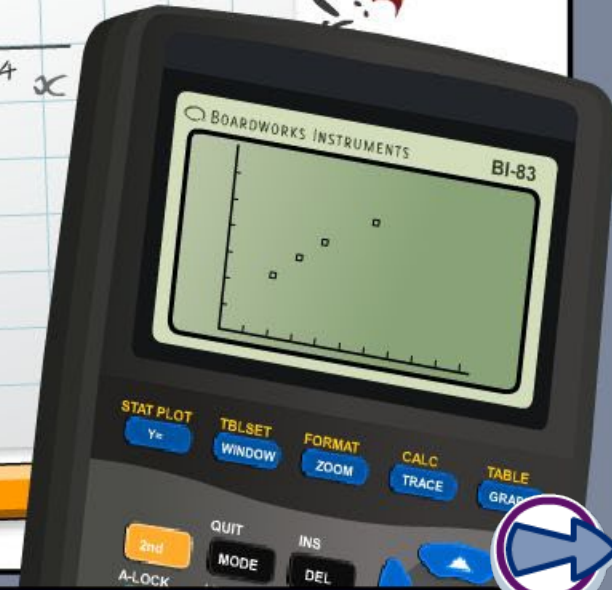
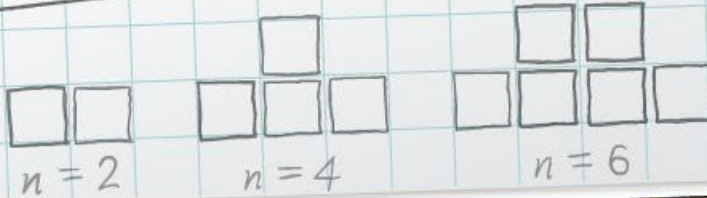
## The mean

x	-2	-1	0	1	2	3	4
y	5	0	-3	-4	-3	0	5

$$x^2 - 2x - 3 = 0$$

$$(x+1)(x-3) = 0$$

$$x = -1 \text{ or } x = 3$$



## Common core icons



This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.



Slides containing examples of mathematical modeling are marked with this stamp.



This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

They are:

- 1) **Make sense of problems and persevere in solving them.**
- 2) **Reason abstractly and quantitatively.**
- 3) **Construct viable arguments and critique the reasoning of others.**
- 4) **Model with mathematics.**
- 5) **Use appropriate tools strategically.**
- 6) **Attend to precision.**
- 7) **Look for and make use of structure.**
- 8) **Look for and express regularity in repeated reasoning.**



This icon indicates that the slide contains activities created in Flash. These activities are not editable.



This icon indicates teacher's notes in the Notes field.



The World Stone Skimming Championships take place on Easdale Island in Scotland, UK.

Here are some distances in meters for each category.



men	women	boys	girls
54	36	33	18
52	28	28	15
46	23	28	14
27	23	26	13

How would you compare each of the categories?



The **mean** is the most commonly used average or **measure of central tendency**.

To calculate the mean of a set of values we add together the values and divide by the total number of values.

$$\text{mean} = \frac{\text{sum of values}}{\text{number of values}}$$

The mean is often denoted using the notation:  $\bar{x}$ .

This is read as “x bar.”



men	women	boys	girls
54	36	33	18
52	28	28	15
46	23	28	14
27	23	26	13

The mean distance (in meters) for each category are recorded in the table below.

	men	women	boys	girls
mean	44.75 m	27.50 m	28.75 m	15 m

**Complete this table of mean distances.**

	seniors	juniors
mean	36.13 m	21.88 m

**Calculate means for the Seniors and the Juniors (with male and female results combined).**



Here are the results (in m) for one stone-skimming contestant.

36.6 36.2 35.3 34.7 37.3 34.4 15.9 36.3

## Discuss:

- Are there any outliers?
- Why might this outlier have occurred?
- Will the outlier increased or decrease the mean?
- Calculate the mean with and without with the outlier. How much does it change?

It may be appropriate in research or experiments to remove an outlier before carrying out analysis of results.

**Why do you think this is?**



Skim the stones then calculate  
the mean number of jumps.

Press **start** to begin.

start





Adjust the number of jumps the stones have skimmed to create the mean.

Press **start** to begin.

start







Read the following questions about the mean and discuss them either in groups or together as a class.

Press **start** to begin.

**start**

