

MATCH THE MATCHES

Two teams Alpha United and Beta Rovers have each played 15 matches.

The data shows how many goals the teams scored in their matches.

There are six sets of data, three showing the results for Alpha United and three for Beta Rovers.

Match the data to the teams and explain your answers.

The mode of the number of goals scored by Alpha United is one more than the mean number of goals they scored

The mean number of goals scored by Alpha United is equal to the median number of goals they scored

Number of goals	Tally
0	
1	
2	
3	
4	

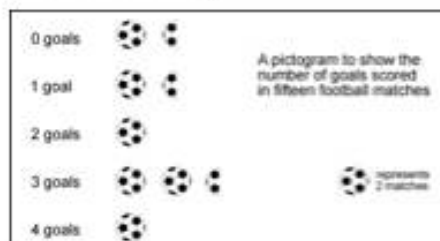


A pie chart to show the number of goals scored in fifteen football matches



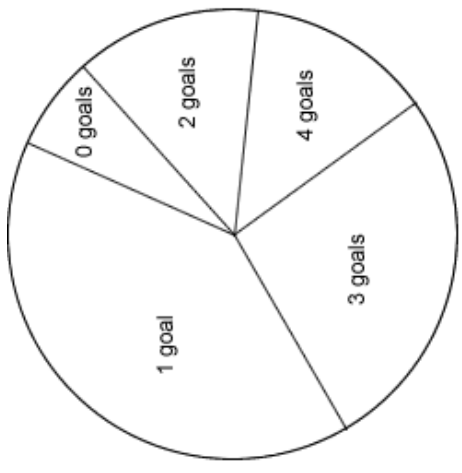
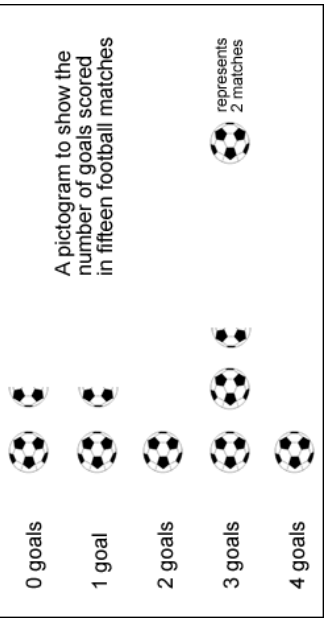
The mode of the number of goals scored by Beta Rovers is one less than the mean number of goals they scored

The mean number of goals scored by Beta Rovers is equal to the median number of goals they scored

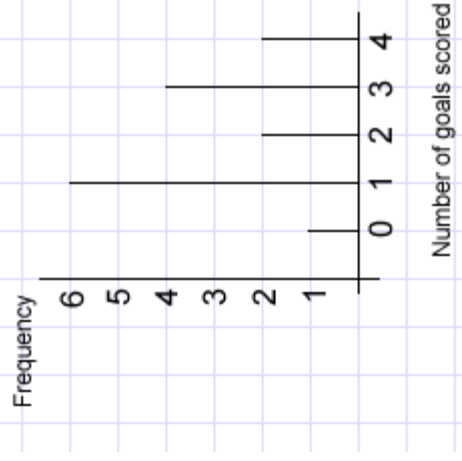


The mode of the number of goals scored by Beta Rovers is one less than the mean number of goals they scored

The mean number of goals scored by Beta Rovers is equal to the median number of goals they scored



A pie chart to show the number of goals scored in fifteen football matches



The mode number of goals scored by Alpha United is one more than the mean number of goals they scored

The mean number of goals scored by Alpha United is equal to the median number of goals they scored

Number of goals	Tally
0	
1	
2	
3	
4	

HELP

For an easier activity on pie charts see Ice Cream Pie on the AIMING High website. It might be helpful to make jottings on the cards as they work on this task.

ICE CREAM PIE



An ice cream stall sells vanilla, strawberry and chocolate ice creams.

The pie chart illustrates the sales of ice cream for last Saturday.

The number of vanilla and the number of chocolate ice creams sold were the same.

The stall sold 60 strawberry ice creams.

How many chocolate ice creams were sold?

<https://aiminghigh.aimssec.ac.za/years-4-9-ice-cream-pie/>

NEXT

Work with a partner and make your own version of this problem. It could be about football matches or anything else you are interested in.

NOTES FOR TEACHERS

SOLUTION

Results for Alpha United Represented in the tally chart and the pictogram

Number of goals	Frequency - number of matches	Total number of goals	Angle in pie chart
0	3	0	72
1	3	3	72
2	2	4	48
3	5	15	120
4	2	8	48
		30	360
Mode 3 goals		Mean 2	Median 2

Results for Beta Rovers Represented in the pie chart and the frequency graph

Number of goals	Frequency - number of matches	Total number of goals	Angle in pie chart
0	1	0	24
1	6	6	144
2	2	4	48
3	4	12	96
4	2	8	48
		30	360
Mode 1 goal		Mean 2	Median 2

DIAGNOSTIC ASSESSMENT

This should take about 5–10 minutes.

Write the question on the board, say to the class:

"Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 fingers for D".

- Notice how the learners respond. Ask a learner who gave answer A to explain why he or she gave that answer. DO NOT say whether it is right or wrong but simply thank the learner for giving the answer.
- It is important for learners to explain the reasons for their answers. Putting thoughts into words may help them to gain better understanding and improve their communication skills.
- Then do the same for answers B, C and D. Try to make sure that learners listen to these reasons and try to decide if their own answer was right or wrong.
- Ask the class to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Notice if there is a change and who gave right and wrong answers.

D. is the correct answer $32 + 15 = 47$.

Common Misconceptions

A. This is the number of women who ordered tea.

B. This is the number of men who ordered coffee.

C. This is the first number given for men who ordered tea and not the total number of men.

<https://diagnosticquestions.com>

The table shows incomplete information about customers' orders in a café.

	Tea	Coffee	Total
Men	32		
Women		22	
Total	45	37	82

How many men visited the café in total?

- A 13
- B 15
- C 32
- D 47

Why do this activity?

This activity could be used at the start of a series of lessons on data handling, or for assessment at the end of the unit or to check on prior knowledge before going on to do further work on data handling. It will get learners talking meaningfully about mathematics and presenting and justifying arguments.

Learning objectives

In doing this activity students will have an opportunity to:

- review and deepen understanding of pictograms and frequency graphs;
- review and deepen understanding of pie charts.

Generic competences

In doing this activity students will have an opportunity to practise interpreting data given in different forms.

Suggestions for teaching

Start with the diagnostic question. It tests whether learners can interpret tables of information and this is an important skill. It is best to give the learners a few minutes to work it out before asking them to vote on the answer.

This activity is suitable for small group work in pairs, threes or fours. Give out copies of the worksheet (page 1) and the 6 cards which the learners can cut out (page 2).

As an introduction to this task, you may choose to ask general questions about the different forms of data as shown on the six cards. This might be most helpful in the case of the pie chart if the class is not so familiar with this method of representation. For example, you could ask questions such as:

- Looking at the pie chart, in approximately what fraction of the total number of games did the team score one goal?
- What does the tally chart show us?

Learners should be encouraged to talk to each other about the cards as they interpret the data. Listen to their discussions, they will give you a chance to assess their understanding, and also to think whether you should or should not intervene to guide their learning, and how you could base your guidance on what they have done.

To guide them if they need help to solve the problem, ask them about what clues they can discover about links between the data in the different charts. Then suggest they look for more clues.

You could suggest they put all the information that they can find into two tables, one for Alpha United and one for Beta Rovers. Ideally let them design their own tables but, if necessary, give them the headings for the columns in the tables:

Results for Alpha United Represented in the tally chart and the pictogram			
Number of goals	Frequency - number of matches	Total number of goals	Angle in pie chart

Results for Beta Rovers Represented in the pie chart and the frequency graph			
Number of goals	Frequency - number of matches	Total number of goals	Angle in pie chart

After they have solved the problem you can ask the learners to explain how they knew which forms of data go together.

Key questions

- What is the total number of goals each team scored over the fifteen matches?
- Have you tried comparing two of the charts with each other?
- Do you think they represent the same team's goals? Why or why not?

Follow up

People Stats 30-Minute Global Lesson (if not done already)

<https://aiminghigh.aimssec.ac.za/years-4-12-people-stats-30-minute-global-lesson/>

Drinking Water <https://aiminghigh.aimssec.ac.za/years-6-10-drinking-water/>

Water Crisis 1 and 2 <https://aiminghigh.aimssec.ac.za/years-4-8-water-crisis-1/>

<https://aiminghigh.aimssec.ac.za/years-6-8-water-crisis-2/>

A Richer World <https://aiminghigh.aimssec.ac.za/years-9-12-a-richer-world/>

Go to the **AIMSSEC AIMING HIGH** website for lesson ideas, solutions and curriculum



links: <http://aiminghigh.aimssec.ac.za>

Subscribe to the **MATHS TOYS YouTube Channel**

<https://www.youtube.com/c/mathstoys>

Download the whole AIMSSEC collection of resources to use offline with the **AIMSSEC App** see <https://aimssec.app> or find it on Google Play.

Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA, to Years 4 to 12 in the UK and school years up to Secondary 5 in East Africa.

New material will be added for Secondary 6.

For resources for teaching A level mathematics (Years 12 and 13) see <https://nrich.maths.org/12339>

Mathematics taught in Year 13 (UK) & Secondary 6 (East Africa) is beyond the SA CAPS curriculum for Grade 12

	Lower Primary Approx. Age 5 to 8	Upper Primary Age 8 to 11	Lower Secondary Age 11 to 15	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13