Day Out

Task description

Pupils choose the best trip using survey data and then cost it.

Suitability   National Curriculum levels 4 to 5

Time   30 minutes to 1 hour

Resources   Pencil, calculator and paper

Key Processes involved

- **Representing:** Simplify the situation, summarise unsorted data, and represent data mathematically.
- **Analysing:** Calculate costs accurately.
- **Interpreting and evaluating:** Interpret their tables and deduce the best place for the trip.
- **Communicating and reflecting:** Clearly describe their decision making process and their methods.

Teacher guidance

Check that pupils understand the context, for example, give out the task sheet and ask general questions such as:
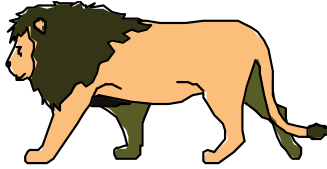
- *Which place has the cheapest entrance fee?*
- *Which place is nearest?*
- *What are Lucy's first and second choices?*
- *How does the bus company charge for the coach?*
- *How much will teachers have to pay?*
- *How much will the school pay towards the total cost of the trip?*

Pupils can tackle this task in different ways, but they might be expected to know:

- *How to collect discrete data*
- *How to record data using a frequency table*

Day Out

Mr. Richards, a teacher at Bosworth School, plans to take 30 pupils on a school trip. Here are the places they could visit.

Growlets Zoo	Prison Museum	Space Science Show
36 miles from Bosworth Entrance fee £2.50 per person	30 miles from Bosworth Entrance fee £6 per person	10 miles from Bosworth Entrance fee £10 per person

The class vote on which place to visit. Here are the results:

Name	First Choice	Second choice
Olivia	Zoo	Space show
Grace	Space show	Prison museum
Jessica	Prison museum	Zoo
Ruby	Zoo	Space show
Emily	Space show	Prison museum
Sophie	Prison museum	Zoo
Chloe	Prison museum	Space show
Lucy	Prison museum	Space show
Lily	Space show	Prison museum
Ellie	Space show	Prison museum
Ella	Zoo	Space show
Charlotte	Space show	Prison museum
Katie	Space show	Prison museum
Mia	Zoo	Space show
Hannah	Zoo	Space show

Name	First Choice	Second choice
Jack	Prison museum	Zoo
Thomas	Zoo	Prison museum
Joshua	Zoo	Prison museum
Oliver	Space show	Prison museum
Harry	Prison museum	Zoo
James	Zoo	Space show
William	Space show	Space show
Samuel	Zoo	Prison museum
Daniel	Zoo	Space show
Charlie	Prison museum	Prison museum
Benjamin	Space show	Zoo
Joseph	Zoo	Prison museum
Callum	Zoo	Prison museum
George	Prison museum	Space show
Jake	Space show	Prison museum

1. **Taking first and second choices into account, where do you think Mr Richards should take them? Explain how you decided.**
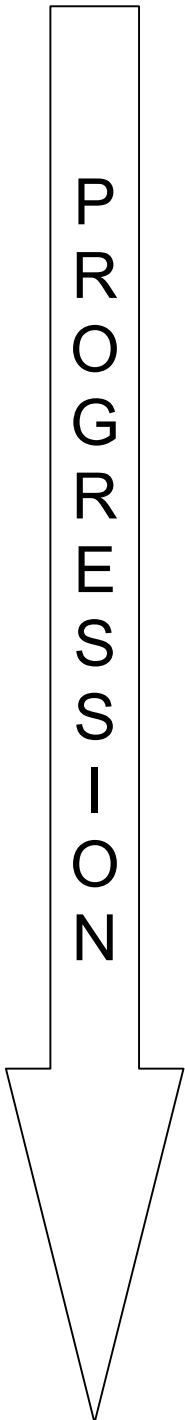
Here are some more facts about the trip.

> The bus company charges £6 per mile. The school fund will pay the first £200 of the trip. Teachers will go free. Each pupil will pay the same amount.

2. **How much will each pupil need to pay to go on the trip you have chosen? Explain how you work this out.**

Assessment guidance

Progression in Key Processes

Representing	Analysing	Interpreting and evaluating	Communicating and reflecting
Selection of data and choices about summarising data	Analysis of pupils' first and second choices and calculations	Ensuring that the chosen destination relates to the context	Description of method: clarity and completeness
Selects some of the data given	Uses some of the data given for analysis of choice, for example counts only first choices or performs some calculations on the cost of the trip Pupil A	The result of analysis of some of the data is used to select a destination Pupil A	Describes the decision, or calculations made but this is incomplete and/or contains errors Pupil A
Pupils A and B	Uses some of the data given for analysis. Calculates the cost of a trip Pupil B	The result of analysis of some of the data is used to select a destination Calculations on the cost of the trip are made, but with some inaccuracies Pupil B	Describes the decision made and cost of the trip but with some errors Pupil B
Produces summary data on first and second choices Pupil C	Takes both first and second choices into account, but does not weight them. Calculates cost per pupil accurately Pupil C	Interprets and evaluates the summary data and makes a reasoned decision about which trip, but does not take everything into account Pupil C	Describes their decision making process and methods but lacks clarity Pupil C
Produces summary data on first and second choices Pupil D	Uses a weighting system based upon both first and second choices. Calculates cost per pupil accurately Pupil D	Interprets and evaluates the summary data and makes a reasoned decision about which trip; takes everything into account Pupil D	Clearly describes their decision making process and their methods Pupil D

PROGRESSION

Sample responses

Pupil A

Comments

Pupil A correctly counts the number of first choices for each venue.

Probing questions and feedback

- *How might you take into account the second choices?*
  How would this affect your decision?
- *What would be the entrance cost for 30 pupils to go to the zoo?*
- *Can you calculate the total cost for 30 pupils to go to the zoo – including the coach?*
- *How does the cost of going to the other places compare with the cost of going to the zoo?*

Pupil B

ZOO
Entrance = £2.50 x 30 = £75
miles = 36 miles x £6 = £216
_____
£218.50 each

Prison Museum
Entrance = £6 x 30 = £180
miles = 30 miles x £6 = £180
_____
£186 each

Space Science Show
Entrance = £10 x 30 = £300
miles = 10 miles x £6 = £60
_____
£70 each

1. I think they should all go to the Space science museum as it would be less pay.

2. Each Person would have to pay £70 each to go to the space science show.

Comments

Pupil B correctly calculates the total cost of the entrance fee and travel for the three venues, but calculates the cost per person incorrectly. She selects the Space Science based on her calculations.

Probing questions and feedback

- *Please explain how you worked out the cost of visiting the zoo?*
- *About how much per person will this be?*
- *How popular is the Space Science Show compared with the other places?*

Pupil C

1) ZOO - 12 - 5   30 pupils
   Space Show - 10 - 11   6 × 36 - 200
   Prison museum - 8 - 14   6 × 30 - ~~Space Show~~ Prison-M.
                             6 × 10 - Space Show.

                        6 × 36 = 216
                        6 × 30 = ~~###~~ 180
                        6 × 10 = 60

So i think that they should go to the Space Science show because it is cheaper to go there 21 people said either in the 1 or second choice, therefore it is a good decision, however it is £10 to get in the show which is more expensive ~~that~~ than the others.

2, each person needs £10 to get in. £200 pounds is paid by the school but it is £10 to get in for each person & £60 to get there so its. 30 × 10 = 300
                                    + 60 = 360
                            So children
                            have to pay
                            the extra £160
£160 ÷ 30 £(children) = 5·333

Comments

Pupil C counts the number of first and second choices for each trip, but does not attempt to weight first choice. She calculates the cost of travel for each trip and chooses Space Science Show because travel is cheapest. Then she correctly calculates the cost per person.

Probing questions and feedback

- *How does the total number of first and second choices for the Space Science Show compare with the choices for the Growlets Zoo and Prison Museum?*
- *You have added the number of first and second choices. You have not taken into account whether these were mainly first or mainly second choices. How reasonable is this approach?*
- *Could you have made a case for either of the other two trips?*

Pupil D

A Day Out

First choice   2 points ⎱ Tally
Second choice 1 point ⎰

zoo	ЖТ ТНЛ ТНЛ ТНЛ ТНЛ IIII	29
Prison museum	ТНЛ ЖТ ТНЛ ТНЛ ТНЛ ТНЛ	30
Space Show	ЖТ ТНЛ ЖТ ТНЛ ТНЛ ТНЛ I	31

1) I made a tally and for there first choice they got 2 point and there second choice the got 1 point and the result I got is the space show was most popular.

2) 30 people - £10 entree per person

30 × 10 = 300 -
          200
         £100

The school fund pays for the first 200.

Teachers go free!

10 miles
× £6 pound per mile
£60

£160

Pupils pay - 5·33ʳ each

Comments

Pupil D counts the number of first and second choices for each venue and weights them. He correctly chooses the Space Science Show and then correctly calculates the cost of travel and entry and the cost per person. His work is clear and easy to follow.

Probing questions and feedback

- *How accurately is it reasonable to give the cost per pupil?*
- *Can you think how someone might make a case for one of the other trips?*
- *You have given a reasonable weighting of 2 points for first choice and 1 point for second choice. Would your decision have been the same if you had given different weightings e.g. of 3 points and 2 points?*