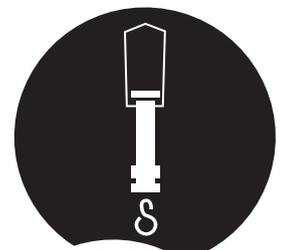
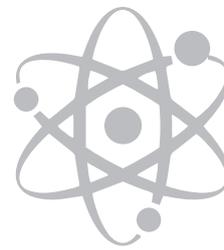




making physics matter



Age
5-7
years

Phizzi problem solving

Fridge magnets

Problems to solve

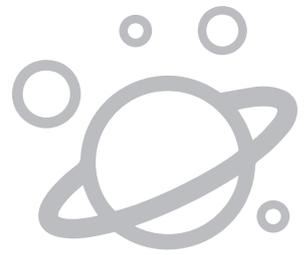
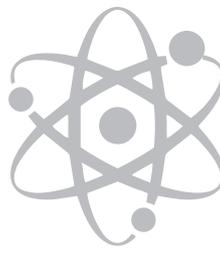
Mr Holt's class is working on a project to make fridge magnets that they can sell at the Christmas fair. Mr Holt has found five different types of magnet that they could use, and he asks the class if they can design scientific tests to help them to decide which type of magnet to buy for the project. To stay safe, Mr Holt says that they will have to carry out their tests on the neodymium magnets with close supervision and wearing safety glasses.

1

Tom's group noticed that some of the magnets would only hold one sheet of paper to the fridge – if they added any more sheets then the magnet would just fall off. They decided that the most important test would be how many sheets of paper the magnet would hold to the fridge and that the best magnet for the job would be the one that could hold up the most sheets of paper.

(a) Complete the results table.

Type of magnet	Number of sheets	
	Tally	Total
2cm ceramic discs	II	2
Rectangular	III	
Flexible squares		7
Neodymium discs	I	
Noticeboard magnets	II	



(b) Write the names of magnets in order from the one that holds up the least sheets of paper to the one that holds up the most sheets of paper.

Holds the most sheets of paper

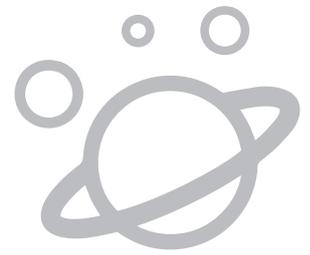
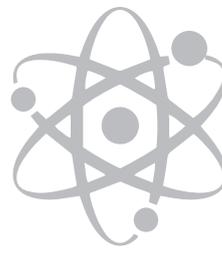


Holds the least sheets of paper

(c) Complete the block diagram opposite with the data they collected.

13				
12				
11				
10				
9				
8				
7				
6				
5				
4				
3				
2				
1				
	2cm ceramic discs	Rectangular magnets	Flexible squares	Neodymium discs
				Noticeboard magnets

(d) Based on this test, which magnet do you think Mr Holt should buy? Explain your decision.



2

Mr Holt shared the price of each type of magnet with his class and asked whether this information would make them change their minds about which magnet they would choose.

Type of magnet	Number in pack	Cost per pack
2cm ceramic disc magnets	10	£2
Neodymium discs	10	£3
Flexible squares	10	£3
Rectangular magnets	10	£4
Noticeboard magnets	10	£1

(a) Use the information in the table to find the cost of one of each of the magnets.

Type of magnet	Cost of one magnet
2cm ceramic disc magnets	
Neodymium discs	
Flexible squares	
Rectangular magnets	
Noticeboard magnets	

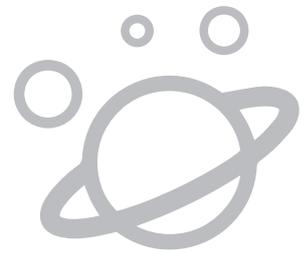
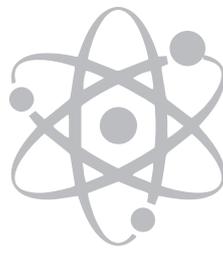
(b) Based on your calculations, which magnet do you think they should buy? Explain your decision.

(c) Mr Holt tells the class there are some important safety symbols on the packet of the neodymium magnets.



(i) Which magnets do you think they should buy now?

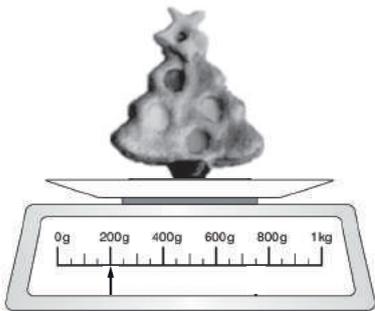
(ii) What is the reason for your decision?



3

The class all agreed that the best magnets to use would be the flexible squares. Mr Holt made some sample fridge magnets with Christmas decorations to give the children some ideas. Christa noticed that one of the fridge magnets with heavier decoration wouldn't stick to the fridge, it kept falling off. Christa told the class that they needed to find out the maximum mass of decoration they could stick to the magnet so that it would still work.

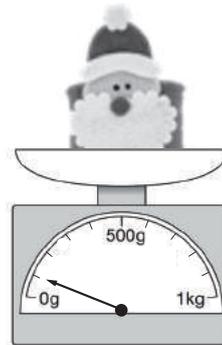
(a) Use the scales below to read the mass of the four magnets Mr Holt made.



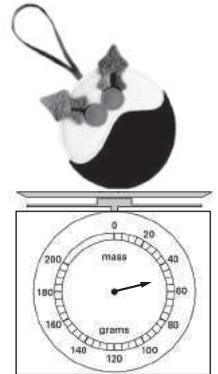
Salt dough
Christmas tree
_____g



Felt snowman
beanbag
_____g



Felt Santa
stuck to card
_____g



Felt Christmas
pudding
_____g

- (b) (i) Which fridge magnet do you predict will not stick to the fridge?
(ii) What is the reason for your prediction?
- (c) (i) What material do you think the children should use to make their decorations?
(ii) Why do you think that?
- (d) What do you think is the maximum mass of the decorations the children should make?