



# TEACHER NOTES

## I1. Food ingredient card games

There are 52 playing cards which have information on them about a variety of foods. On one side (the face side), the cards show the amounts of energy, **protein, fat, carbohydrate**, calcium, iron and vitamin C contained in 100g of the foodstuff. The back of the card merely has the name of the food.

Since the information given is for the same mass of food, fair comparisons can be made. It is important to remember, however, that 100g may not represent a

'normal' portion of that particular food.

**Please note** - the values for energy have been rounded up or down to make them easier to compare. Conversion from kcal and kJ has been simplified to a factor of 4. In some games, having the name of the food on the back of the card will give players, with knowledge of that food, an advantage over their opponents. Hopefully, this will motivate pupils to acquire useful and relevant information.

The rules for some of the many games that can be played are given below. It is likely that you, or your students, will devise more games and variations as the cards are used.

### Energy pontoon

Aim: with 2 - 5 cards gain an energy score as close to the limit of 1000 kcal or 4000 kJ as possible without going 'bust'. The player is allowed a maximum of 5 cards.

#### Game 1a.

The dealer shuffles the cards and deals alternately two cards *face down* to a player/players and two to the dealer.

The first player to be dealt the cards goes first. (S)he adds up openly the kcal or kJ

for the two cards and then decides whether to 'twist'.

The player should look at the *back* of the next card in the pile so that an *educated guess* can be made as to whether or not taking the next card would keep the score below the limit.

If the player decides to twist, the next card is dealt *face upwards* for all the players to see.

The player keeps 'twisting' until:

- the player thinks that the next card would take them over the limit and then sticks.
- or, until they unintentionally go over the limit, when the player is 'bust' and out of the game.

The next player(s) then take a turn.

The dealer is the last person to go. *All* of the dealers' cards are placed *face upwards* and the dealer then plays in the same way as other players.

**KS3 and upwards  
science and food  
technology**

**Timing - various**

*Eight I1 master sheets for the playing cards accompany these activities. They should be photocopied onto card. The corresponding food name should be stuck or written onto the reverse side and then the cards cut out. There are blank cards, should you wish to add other foods.*

*The information on the cards is adapted from the MAFF Manual of Nutrition (HMSO publication ISBN 011 2411126).  
Strictly: 1 kcal = 4.2 KJ*

### Energy pontoon

**Game 1a.  
2 - 4 players  
simplest  
version**

*Twist: player takes another card  
Stick: player takes no more cards  
Bust: score is more than  
1000kcal/4200kJ  
and the player is out.*

*The winner is the person who is not 'bust' and whose total is the nearest to 1000kcal/4000kJ.*

*A '5-card trick' beats any other hand. If anyone ties with the dealer, the dealer wins.  
The winner becomes the dealer.*

**Game 1b. A 'blind' version**

The dealer deals two cards *face down* to each player .

Player 1 has to *estimate* the energy value from *the back of the cards only*.

Player 1 is allowed to see the *back* of the next card on the pile and must decide whether to twist or not from the name of the next food and the information on the *back* of the original two cards. If the player decides to twist, the next card is dealt but still only with the back facing. The player sticks when they feel their limit is reached.

Players *do not* look at the value of the cards yet. Player 2 then has a turn in a similar way. When each player has stuck, the value of the cards is added up. The winner is decided as described before.

**Food whist****Game 2a.**

Only *one* of the categories of information on the cards is used. If the players use the 'fat' category then the winner has the *lowest* value. If the other categories have been chosen, the winner has the *highest* value. The aim is to win *tricks*.

For example, using the *protein* category; imagine there are 2 players.

Shuffle the cards.

7 cards are dealt *face down* to each player. The players pick up their cards to look at protein values.

The first player chooses a card from his/her hand and places it *face down* on the desk.

The second player looks at the name of the food and then at their own hand. They choose a card to play, making an *educated guess* as to which of their cards may beat the protein value of the card that was played initially.

The second card is placed with the original card and then both cards are examined.

The winner of the trick is the person who played the card with the highest protein value.

These cards are removed, ready to play the next trick. The winner of the trick leads the next card. The game continues until all 7 tricks have been played.

**Game 2b. A 'knock-out' version**

The rules to win a trick are the same as above, but the game is played with the following modifications:

First round: *energy values* are compared.

The player to the left of the dealer goes first and places a card *face down* in front of the players.

The next player plays a card which they think may beat the energy value of the original card (or they 'throw away' a card) by placing the card *face down* next to the original card.

**Game 2a for 2 - 6 players simplest version**

*The person winning the greatest number of tricks is the winner.*

*If the second player does not think that they have a card to beat the original card, they can throw away a low value card.*

*Two cards played which happen to have the same value for the category results in a void trick and the trick is discarded.*

**Game 2b for 2 - 4 players**

Other players play cards in a similar way.

When each player has played, the cards are turned over to find the card with the greatest energy value.

The player of this card is the winner of that trick and begins the next trick in the same way as the first.

Tricks are played for all 7 cards.

The person who wins the greatest number of tricks in this round becomes the dealer.

Second round: the winner of the first round deals 6 cards to the players.

The winner looks at his/her hand and decides which category (s)he wants as the category for comparison and declares this.

The game continues as before until six cards have been played.

The person who wins the greatest number of tricks becomes the dealer.

The game continues with 5 then 4 then 3, 2, 1 cards being dealt in subsequent rounds. In each case, the person who wins the greatest number of tricks in the previous round becomes the dealer and chooses the category for comparison.

**Game 2c.**

The game is as above, but with only one 7 card round played as follows:

first trick - energy values

second - protein

third - fat (*lowest value wins*)

fourth - carbohydrate

fifth - calcium

sixth - iron

the seventh - vitamin C.

A 'thinking' period after the cards are dealt, for players to decide which card to play for each trick, will be helpful. Decisions may be altered in the light of the outcomes of previous tricks.

**Game 3. "My card can beat yours" (similar to 'Top trumps')**

The cards are shuffled.

All of the cards are dealt equally to the two players.

Each player holds all of their cards in a pile with the information on the first card only facing them.

The player who was *not* the dealer goes first. (S)he looks at the information on the first card and decides which of the categories has a possible 'winning' value.

The player declares 'energy' and the *name* of the food at which (s)he is looking. The second player looks at the *energy* category on their first card and reads out the value.

The person who has the card with the greatest value wins both cards and puts them on a pile in front of them.

Whoever wins the cards looks at their next card to choose the category, and the game continues until all cards have been compared.

The cards in the winning piles for each player are counted. The person with the greatest number of cards is the winner.

*If two people win the same number of tricks, they cut the cards. The person with the greatest energy value on their card is the winner. This is the procedure for any round that ends in a tie.*

*Remember - the category for the first round is energy; subsequent categories are chosen by the dealer; the category **cannot** be changed in the middle of a round.*

**Game 2c.  
2 players**

**requires thought!**

*The player who wins the most tricks is the winner.*

**Game 3.  
2 players**

*Example, if they are looking at the 'Chips' card they might decide that an energy value of 250 kcal (1000 kJ) has a good chance of beating many other cards in this category.*

Coca Cola

White Bread

Lettuce

Chips

White Sugar

Cottage Cheese

Cauliflower

Bananas

Fresh Peaches

Apple Pie

Tomato Soup

Blackcurrants

Carrots

Cheddar Cheese

White Fish

Cooking Oil

Raw Cabbage

Chocolate  
Biscuits

Cornflakes

Sweetcorn

Boiled Frozen  
Peas

Milk Chocolate

Roasted Peanuts

Madeira Cake

Low Fat Spread

Jam

Honey

Fresh Tomatoes

Fried Cod  
in Batter

Rice

Pork Sausage

Oranges

Cooked Bacon

Milk

Butter

Rich Fruit Cake

Baked Beans

Wholemeal Bread

Cream Crackers

Boiled Sprouts

Fresh Eggs

Apples

Boiled Potatoes

Roast Chicken

Spaghetti

Fried Liver

Strawberries

Onions

Potato Crisps

Roast Potatoes

Cooked Stewing  
Beef

Vanilla Ice Cream

**100g of Coca Cola**

energy (kcal)	40
energy (kJ)	160
protein (g)	0
fat (g)	0
carbohydrate (g)	0.5
calcium (mg)	4
iron (mg)	0
vitamin C	0

**100g of White Bread**

energy (kcal)	225
energy (kJ)	900
protein (g)	7.8
fat (g)	1.7
carbohydrate (g)	49.7
calcium (mg)	100
iron (mg)	1.7
vitamin C	15

**100g of Lettuce**

energy (kcal)	10
energy (kJ)	40
protein (g)	1
fat (g)	0
carbohydrate (g)	1.2
calcium (mg)	23
iron (mg)	0.9
vitamin C	15

**100g of Chips**

energy (kcal)	250
energy (kJ)	1000
protein (g)	3.8
fat (g)	10.9
carbohydrate (g)	37.3
calcium (mg)	14
iron (mg)	0.9
vitamin C	15

**100g of Boiled Peas**

energy (kcal)	40
energy (kJ)	160
protein (g)	5.4
fat (g)	7.7
carbohydrate (g)	4.3
calcium (mg)	31
iron (mg)	1.4
vitamin C	13

**100g of Carrots**

energy (kcal)	20
energy (kJ)	80
protein (g)	0.7
fat (g)	0
carbohydrate (g)	5.4
calcium (mg)	48
iron (mg)	0.6
vitamin C	6

**100g of Fresh Peaches**

energy (kcal)	40
energy (kJ)	160
protein (g)	0.6
fat (g)	0
carbohydrate (g)	9.1
calcium (mg)	5
iron (mg)	0.4
vitamin C	8

**100g of White Sugar**

energy (kcal)	400
energy (kJ)	1600
protein (g)	0
fat (g)	0
carbohydrate (g)	100
calcium (mg)	0
iron (mg)	0
vitamin C	0

**100g of Apple Pie**

energy (kcal) 300  
 energy (kJ) 1200  
 protein (g) 3.2  
 fat (g) 14.4  
 carbohydrate (g) 40.4  
 calcium (mg) 42  
 iron (mg) 0.8  
 vitamin C 2

**100g of Cottage Cheese**

energy (kcal) 100  
 energy (kJ) 400  
 protein (g) 13.6  
 fat (g) 4  
 carbohydrate (g) 1.4  
 calcium (mg) 60  
 iron (mg) 0.1  
 vitamin C 0

**100g of Fried Cod in Batter**

energy (kcal) 200  
 energy (kJ) 800  
 protein (g) 19.6  
 fat (g) 10.3  
 carbohydrate (g) 7.5  
 calcium (mg) 80  
 iron (mg) 0.5  
 vitamin C 0

**100g of Low Fat Spread**

energy (kcal) 350  
 energy (kJ) 1400  
 protein (g) 0  
 fat (g) 40.7  
 carbohydrate (g) 0  
 calcium (mg) 0  
 iron (mg) 0  
 vitamin C 0

**100g of Rice**

energy (kcal) 375  
 energy (kJ) 1500  
 protein (g) 6.5  
 fat (g) 1  
 carbohydrate (g) 86.8  
 calcium (mg) 4  
 iron (mg) 0.5  
 vitamin C 0

**100g of Jam**

energy (kcal) 250  
 energy (kJ) 1000  
 protein (g) 0.5  
 fat (g) 0  
 carbohydrate (g) 69.2  
 calcium (mg) 18  
 iron (mg) 1.2  
 vitamin C 10

**100g of Milk Chocolate**

energy (kcal) 525  
 energy (kJ) 2100  
 protein (g) 8.4  
 fat (g) 30.3  
 carbohydrate (g) 59.4  
 calcium (mg) 220  
 iron (mg) 1.6  
 vitamin C 0

**100g of Cheddar Cheese**

energy (kcal) 400  
 energy (kJ) 1600  
 protein (g) 26  
 fat (g) 33.5  
 carbohydrate (g) 0  
 calcium (mg) 800  
 iron (mg) 0.4  
 vitamin C 0

**100g of Tomato Soup**

energy (kcal)	50
energy (kJ)	200
protein (g)	0.8
fat (g)	3.3
carbohydrate (g)	5.9
calcium (mg)	17
iron (mg)	0.4
vitamin C	0

**100g of Cooked Bacon**

energy (kcal)	450
energy (kJ)	1800
protein (g)	24.5
fat (g)	38.8
carbohydrate (g)	0
calcium (mg)	12
iron (mg)	1.4
vitamin C	0

**100g of Raw Cabbage**

energy (kcal)	20
energy (kJ)	80
protein (g)	2.8
fat (g)	0
carbohydrate (g)	2.8
calcium (mg)	57
iron (mg)	0.6
vitamin C	53

**100g of Cauliflower**

energy (kcal)	15
energy (kJ)	60
protein (g)	1.9
fat (g)	0
carbohydrate (g)	1.5
calcium (mg)	21
iron (mg)	0.5
vitamin C	64

**100g of Chocolate Biscuit**

energy (kcal)	550
energy (kJ)	2200
protein (g)	5.7
fat (g)	27.6
carbohydrate (g)	67.4
calcium (mg)	110
iron (mg)	1.7
vitamin C	0

**100g of White Fish**

energy (kcal)	80
energy (kJ)	320
protein (g)	17.4
fat (g)	0.7
carbohydrate (g)	0
calcium (mg)	16
iron (mg)	0.3
vitamin C	0

**100g of Cornflakes**

energy (kcal)	375
energy (kJ)	1500
protein (g)	8.6
fat (g)	1.6
carbohydrate (g)	85.1
calcium (mg)	3
iron (mg)	0.6
vitamin C	0

**100g of Milk**

energy (kcal)	60
energy (kJ)	240
protein (g)	3.3
fat (g)	3.8
carbohydrate (g)	4.7
calcium (mg)	120
iron (mg)	0.1
vitamin C	2



**100g of Fresh Tomatoes**

energy (kcal)	15
energy (kJ)	60
protein (g)	0.9
fat (g)	0
carbohydrate (g)	2.8
calcium (mg)	13
iron (mg)	0.4
vitamin C	20

**100g of Madeira Cake**

energy (kcal)	450
energy (kJ)	1800
protein (g)	7.1
fat (g)	24
carbohydrate (g)	49.7
calcium (mg)	67
iron (mg)	1.4
vitamin C	0

**100g of Cooking Oil**

energy (kcal)	900
energy (kJ)	3600
protein (g)	0
fat (g)	100
carbohydrate (g)	0
calcium (mg)	0
iron (mg)	0
vitamin C	0

**100g of Blackcurrants**

energy (kcal)	30
energy (kJ)	120
protein (g)	0.9
fat (g)	0
carbohydrate (g)	6.6
calcium (mg)	60
iron (mg)	1.3
vitamin C	200

**100g of Rich Fruit Cake**

energy (kcal)	350
energy (kJ)	1400
protein (g)	3.7
fat (g)	11
carbohydrate (g)	58.3
calcium (mg)	75
iron (mg)	1.8
vitamin C	0

**100g of Sweetcorn**

energy (kcal)	75
energy (kJ)	300
protein (g)	2.9
fat (g)	0.5
carbohydrate (g)	16.1
calcium (mg)	3
iron (mg)	0.6
vitamin C	15

**100g of Butter**

energy (kcal)	750
energy (kJ)	3000
protein (g)	0.4
fat (g)	82
carbohydrate (g)	0
calcium (mg)	15
iron (mg)	0.2
vitamin C	0

**100g of Oranges**

energy (kcal)	35
energy (kJ)	140
protein (g)	0
fat (g)	0
carbohydrate (g)	8.5
calcium (mg)	41
iron (mg)	0.3
vitamin C	50

**100g of Cream Crackers**

energy (kcal)	450
energy (kJ)	1800
protein (g)	9.5
fat (g)	16.3
carbohydrate (g)	68.3
calcium (mg)	110
iron (mg)	1.7
vitamin C	0

**100g of Boiled Potatoes**

energy (kcal)	80
energy (kJ)	320
protein (g)	1.4
fat (g)	0
carbohydrate (g)	19.7
calcium (mg)	4
iron (mg)	0.3
vitamin C	10

**100g of Strawberries**

energy (kcal)	30
energy (kJ)	120
protein (g)	0.6
fat (g)	0
carbohydrate (g)	6.2
calcium (mg)	22
iron (mg)	0.7
vitamin C	60

**100g of Baked Beans**

energy (kcal)	60
energy (kJ)	240
protein (g)	5.1
fat (g)	0.5
carbohydrate (g)	10.3
calcium (mg)	45
iron (mg)	1.4
vitamin C	0

**100g of Potato Crisps**

energy (kcal)	525
energy (kJ)	2100
protein (g)	6.3
fat (g)	35.9
carbohydrate (g)	49.3
calcium (mg)	37
iron (mg)	2.1
vitamin C	17

**100g of Stewing Beef**

energy (kcal)	220
energy (kJ)	880
protein (g)	30.9
fat (g)	11
carbohydrate (g)	0
calcium (mg)	15
iron (mg)	3
vitamin C	0

**100g of Spaghetti**

energy (kcal)	375
energy (kJ)	1500
protein (g)	13.6
fat (g)	1
carbohydrate (g)	84
calcium (mg)	23
iron (mg)	1.2
vitamin C	0

**100g of Fresh Eggs**

energy (kcal)	150
energy (kJ)	600
protein (g)	12.3
fat (g)	10.9
carbohydrate (g)	0
calcium (mg)	52
iron (mg)	2
vitamin C	0

**100g of Boiled Sprouts**

energy (kcal) 20  
 energy (kJ) 80  
 protein (g) 2.8  
 fat (g) 0  
 carbohydrate (g) 1.7  
 calcium (mg) 25  
 iron (mg) 0.5  
 vitamin C 41

**100g of Roast Chicken**

energy (kcal) 140  
 energy (kJ) 560  
 protein (g) 26.5  
 fat (g) 4  
 carbohydrate (g) 0  
 calcium (mg) 9  
 iron (mg) 0.5  
 vitamin C 0

**100g of Onions**

energy (kcal) 25  
 energy (kJ) 1000  
 protein (g) 0.9  
 fat (g) 0  
 carbohydrate (g) 5.2  
 calcium (mg) 31  
 iron (mg) 0.3  
 vitamin C 10

**100g of Wholemeal Bread**

energy (kcal) 225  
 energy (kJ) 900  
 protein (g) 8.8  
 fat (g) 2.7  
 carbohydrate (g) 41.8  
 calcium (mg) 23  
 iron (mg) 2.5  
 vitamin C 0

**100g of Roast Potatoes**

energy (kcal) 150  
 energy (kJ) 600  
 protein (g) 2.8  
 fat (g) 4.8  
 carbohydrate (g) 27.3  
 calcium (mg) 10  
 iron (mg) 0.7  
 vitamin C 15

**100g of Vanilla Ice Cream**

energy (kcal) 175  
 energy (kJ) 700  
 protein (g) 3.5  
 fat (g) 7.4  
 carbohydrate (g) 22.8  
 calcium (mg) 130  
 iron (mg) 0.3  
 vitamin C 1

**100g of Fried Liver**

energy (kcal) 250  
 energy (kJ) 1000  
 protein (g) 24.9  
 fat (g) 13.6  
 carbohydrate (g) 5.6  
 calcium (mg) 14  
 iron (mg) 8.8  
 vitamin C 12

**100g of Apples**

energy (kcal) 50  
 energy (kJ) 200  
 protein (g) 0.3  
 fat (g) 0  
 carbohydrate (g) 11.9  
 calcium (mg) 4  
 iron (mg) 0.3  
 vitamin C 5

100g of

energy (kcal)

energy (kJ)

protein (g)

fat (g)

carbohydrate (g)

calcium (mg)

iron (mg)

vitamin C

100g of

energy (kcal)

energy (kJ)

protein (g)

fat (g)

carbohydrate (g)

calcium (mg)

iron (mg)

vitamin C

100g of Honey

energy (kcal) 300

energy (kJ) 1200

protein (g) 0.4

fat (g) 0

carbohydrate (g) 76.4

calcium (mg) 5

iron (mg) 0.4

vitamin C 0

100g of Roasted Peanuts

energy (kcal) 575

energy (kJ) 2300

protein (g) 24.3

fat (g) 49

carbohydrate (g) 8.6

calcium (mg) 61

iron (mg) 2

vitamin C 0

100g of

energy (kcal)

energy (kJ)

protein (g)

fat (g)

carbohydrate (g)

calcium (mg)

iron (mg)

vitamin C

100g of

energy (kcal)

energy (kJ)

protein (g)

fat (g)

carbohydrate (g)

calcium (mg)

iron (mg)

vitamin C

100g of Bananas

energy (kcal) 80

energy (kJ) 320

protein (g) 1.1

fat (g) 0

carbohydrate (g) 19.2

calcium (mg) 7

iron (mg) 0.4

vitamin C 10

100g of Pork Sausages

energy (kcal) 375

energy (kJ) 1500

protein (g) 10.6

fat (g) 32.1

carbohydrate (g) 9.5

calcium (mg) 41

iron (mg) 1.1

vitamin C 0