

Money matters



UNIT A1

This unit contains straightforward simulation activities which provide pupils with a wealth of practice in adding, subtracting and finding 10% of sums of money whilst, at the same time, they are encouraged to think about their use of money.

A further activity includes simple ratios, percentages and fractions.

Using the unit

Pupils work in pairs to play the game.

Sections 1 and 2 are intended to go together and will take 1 to 2 hours.

Section 3 could form the basis of a shorter follow up lesson concentrating on percentages.

The unit will have much more impact if the class is given the opportunity to discuss the ideas it raises. This could take place after each activity but is particularly relevant after Sections 2 and 3.

The extension activities are optional and could form the basis for further work in class or homework.

Differentiation

Game Sheets A1 and A2 require simple addition and subtraction of pounds and pence and calculating 10% of a sum of money.

Game Sheets B1 and B2 contain harder money problems and could be used instead of Sheets A1 and A2 with more able pupils.

The instructions and questions can be used with either Game Sheets A or Game Sheets B but pupils will need the appropriate Recording Sheet (A or B).

Solutions for all possible combinations of throws are provided for both Game Sheet A1 and Game Sheet B1.



Resources needed for each pair of pupils

1 copy of the pupil worksheet.

1 copy of *either* Game Sheets A1 and A2 *or* Game Sheets B1 and B2.

2 copies of the appropriate Recording Sheet (A or B).

Paper and pen.

Dice.

Mathematical content

Number and algebra (AT2) (All work intended to be non-calculator)

Game Sheets A and B

- ◆ Recognising negative numbers in a money context (level 3)
- ◆ Using a range of methods of computation (level 4)
- ◆ Adding and subtracting decimals to two places (level 4)
- ◆ Using understanding of place value to divide by 10 (level 4)

Game Sheets B only

- ◆ Calculating percentage parts of quantities (level 5)
- ◆ Calculating using ratios (level 6)

Spiritual and moral development

The aims of this unit are to encourage pupils to reflect on the implications of spending first and giving later in contrast with giving first and spending later and to consider the idea of proportional giving.

Extensions to Task 3

The following additional tasks could be given to more able pupils:

- If you played the game over and over again, how many possible answers would there be?
- Design your own game. Keep the three columns but make up new descriptions for each box. Try to be realistic with the cost of food, drinks, giving, days out, etc. Decide which order to put your columns in.
- Do a survey of pupils to find out what percentage of their pocket money they spend, save or give away. Display your results clearly in tables and graphs and comment on your findings.
- If you have access to a computer, can you set up a spreadsheet to generate some of the results for you?

Answers

Task 1:

1. to 4. Answers will be varied. Complete sets of possible answers are provided for checking.
5. Yes. To church, sister and the homeless person (Sheet A1).
Yes. To sponsored walk, Children in Need, flood victims and sister (Sheet B1).

Task 2:

1. No (both A and B).
2. In the first case you could always spend but sometimes you could not give. Now you can always give but you cannot always spend.

Task 3:

1. a) £10.00
b) £7.50
c) £4.50
d) £12.37
e) £1.08
f) £2.46
2. Yes (both A and B).
3. For discussion.
4. This is also intended to provoke discussion.
Possible advantages are: always being able to support your favourite charity; easier to budget; you could give where regular support is needed, e.g. sponsoring a child or an animal at a zoo.

Possible disadvantages: you could run out of money for essentials; something unexpected may occur needing extra money; you may wish to change your charity.

Solutions for all possible sets of throws for Game Sheet A1

(Throw combinations are shown in bold)

1,1,1	7.57	2,1,1	9.57	3,1,1	17.07	4,1,1	11.07	5,1,1	6.57	6,1,1	29.57
1,1,2	8.37	2,1,2	10.17	3,1,2	16.92	4,1,2	11.52	5,1,2	7.47	6,1,2	28.17
1,1,3	4.94	2,1,3	6.94	3,1,3	14.44	4,1,3	8.44	5,1,3	3.94	6,1,3	26.94
1,1,4	8.40	2,1,4	10.40	3,1,4	17.90	4,1,4	11.90	5,1,4	7.40	6,1,4	30.40
1,1,5	6.85	2,1,5	8.85	3,1,5	16.35	4,1,5	10.35	5,1,5	5.85	6,1,5	28.85
1,1,6	7.78	2,1,6	9.78	3,1,6	17.28	4,1,6	11.28	5,1,6	6.78	6,1,6	29.78
1,2,1	3.07	2,2,1	5.07	3,2,1	12.57	4,2,1	6.57	5,2,1	2.07	6,2,1	25.07
1,2,2	4.32	2,2,2	6.12	3,2,2	12.87	4,2,2	7.47	5,2,2	3.42	6,2,2	24.12
1,2,3	0.44	2,2,3	2.44	3,2,3	9.94	4,2,3	3.94	5,2,3	-0.56	6,2,3	22.44
1,2,4	3.90	2,2,4	5.90	3,2,4	13.40	4,2,4	7.40	5,2,4	2.90	6,2,4	25.90
1,2,5	2.35	2,2,5	4.35	3,2,5	11.85	4,2,5	5.85	5,2,5	1.35	6,2,5	24.35
1,2,6	3.28	2,2,6	5.28	3,2,6	12.78	4,2,6	6.78	5,2,6	2.28	6,2,6	25.28
1,3,1	8.57	2,3,1	10.57	3,3,1	18.07	4,3,1	12.07	5,3,1	7.57	6,3,1	30.57
1,3,2	9.27	2,3,2	11.07	3,3,2	17.82	4,3,2	12.42	5,3,2	8.37	6,3,2	29.07
1,3,3	5.94	2,3,3	7.94	3,3,3	15.44	4,3,3	9.44	5,3,3	4.94	6,3,3	27.94
1,3,4	9.40	2,3,4	11.40	3,3,4	18.90	4,3,4	12.90	5,3,4	8.40	6,3,4	31.40
1,3,5	7.85	2,3,5	9.85	3,3,5	17.35	4,3,5	11.35	5,3,5	6.85	6,3,5	29.85
1,3,6	8.78	2,3,6	10.78	3,3,6	18.28	4,3,6	12.28	5,3,6	7.78	6,3,6	30.78
1,4,1	10.37	2,4,1	12.37	3,4,1	19.87	4,4,1	13.87	5,4,1	9.37	6,4,1	32.37
1,4,2	10.89	2,4,2	12.69	3,4,2	19.44	4,4,2	14.04	5,4,2	9.99	6,4,2	30.69
1,4,3	7.74	2,4,3	9.74	3,4,3	17.24	4,4,3	11.24	5,4,3	6.74	6,4,3	29.74
1,4,4	11.20	2,4,4	13.20	3,4,4	20.70	4,4,4	14.70	5,4,4	10.20	6,4,4	33.20
1,4,5	9.65	2,4,5	11.65	3,4,5	19.15	4,4,5	13.15	5,4,5	8.65	6,4,5	31.65
1,4,6	10.58	2,4,6	12.58	3,4,6	20.08	4,4,6	14.08	5,4,6	9.58	6,4,6	32.58
1,5,1	1.67	2,5,1	3.67	3,5,1	11.17	4,5,1	5.17	5,5,1	0.67	6,5,1	23.67
1,5,2	3.06	2,5,2	4.86	3,5,2	11.61	4,5,2	6.21	5,5,2	2.16	6,5,2	22.86
1,5,3	-0.96	2,5,3	1.04	3,5,3	8.54	4,5,3	2.54	5,5,3	-1.96	6,5,3	21.04
1,5,4	2.50	2,5,4	4.50	3,5,4	12.00	4,5,4	6.00	5,5,4	1.50	6,5,4	24.50
1,5,5	0.95	2,5,5	2.95	3,5,5	10.45	4,5,5	4.45	5,5,5	-0.05	6,5,5	22.95
1,5,6	1.88	2,5,6	3.88	3,5,6	11.38	4,5,6	5.38	5,5,6	0.88	6,5,6	23.88
1,6,1	0.97	2,6,1	2.97	3,6,1	10.47	4,6,1	4.47	5,6,1	-0.03	6,6,1	22.97
1,6,2	2.43	2,6,2	4.23	3,6,2	10.98	4,6,2	5.58	5,6,2	1.53	6,6,2	22.23
1,6,3	-1.66	2,6,3	0.34	3,6,3	7.84	4,6,3	1.84	5,6,3	-2.66	6,6,3	20.34
1,6,4	1.80	2,6,4	3.80	3,6,4	11.30	4,6,4	5.30	5,6,4	0.80	6,6,4	23.80
1,6,5	0.25	2,6,5	2.25	3,6,5	9.75	4,6,5	3.75	5,6,5	-0.75	6,6,5	22.25
1,6,6	1.18	2,6,6	3.18	3,6,6	10.68	4,6,6	4.68	5,6,6	0.18	6,6,6	23.18

Solutions for all possible sets of throws for Game Sheet B1

(Throw combinations are shown in bold and answers are rounded to the nearest penny when necessary.)

1,1,1	13.62	2,1,1	11.67	3,1,1	25.67	4,1,1	9.82	5,1,1	8.32	6,1,1	29.17
1,1,2	15.36	2,1,2	13.61	3,1,2	26.21	4,1,2	11.94	5,1,2	10.59	6,1,2	29.36
1,1,3	11.38	2,1,3	10.08	3,1,3	19.41	4,1,3	8.85	5,1,3	7.85	6,1,3	21.75
1,1,4	16.12	2,1,4	14.17	3,1,4	28.17	4,1,4	12.32	5,1,4	10.82	6,1,4	31.67
1,1,5	11.57	2,1,5	9.62	3,1,5	23.62	4,1,5	7.77	5,1,5	6.27	6,1,5	27.12
1,1,6	11.47	2,1,6	9.52	3,1,6	23.52	4,1,6	7.67	5,1,6	6.17	6,1,6	27.02
1,2,1	3.95	2,2,1	2.00	3,2,1	16.00	4,2,1	0.15	5,2,1	-1.35	6,2,1	19.50
1,2,2	6.66	2,2,2	4.91	3,2,2	17.51	4,2,2	3.24	5,2,2	1.89	6,2,2	20.66
1,2,3	4.93	2,2,3	3.63	3,2,3	12.97	4,2,3	2.40	5,2,3	1.40	6,2,3	15.30
1,2,4	6.45	2,2,4	4.50	3,2,4	18.50	4,2,4	2.65	5,2,4	1.15	6,2,4	22.00
1,2,5	1.90	2,2,5	-0.05	3,2,5	13.95	4,2,5	-1.90	5,2,5	-3.40	6,2,5	17.45
1,2,6	1.80	2,2,6	-0.15	3,2,6	13.85	4,2,6	-2.00	5,2,6	-3.50	6,2,6	17.35
1,3,1	13.60	2,3,1	11.65	3,3,1	25.65	4,3,1	9.80	5,3,1	8.30	6,3,1	29.15
1,3,2	15.35	2,3,2	13.59	3,3,2	26.19	4,3,2	11.93	5,3,2	10.58	6,3,2	29.34
1,3,3	11.37	2,3,3	10.07	3,3,3	19.40	4,3,3	8.83	5,3,3	7.83	6,3,3	21.73
1,3,4	16.10	2,3,4	14.15	3,3,4	28.15	4,3,4	12.30	5,3,4	10.80	6,3,4	31.65
1,3,5	11.55	2,3,5	9.60	3,3,5	23.60	4,3,5	7.75	5,3,5	6.25	6,3,5	27.10
1,3,6	11.45	2,3,6	9.50	3,3,6	23.50	4,3,6	7.65	5,3,6	6.15	6,3,6	27.00
1,4,1	15.35	2,4,1	13.40	3,4,1	27.40	4,4,1	11.55	5,4,1	10.05	6,4,1	30.90
1,4,2	16.92	2,4,2	15.17	3,4,2	27.77	4,4,2	13.50	5,4,2	12.15	6,4,2	30.92
1,4,3	12.53	2,4,3	11.23	3,4,3	20.57	4,4,3	10.00	5,4,3	9.00	6,4,3	22.90
1,4,4	17.85	2,4,4	15.90	3,4,4	29.90	4,4,4	14.05	5,4,4	12.55	6,4,4	33.40
1,4,5	13.30	2,4,5	11.35	3,4,5	25.35	4,4,5	9.50	5,4,5	8.00	6,4,5	28.85
1,4,6	13.20	2,4,6	11.25	3,4,6	25.25	4,4,6	9.40	5,4,6	7.90	6,4,6	28.75
1,5,1	12.90	2,5,1	10.95	3,5,1	24.95	4,5,1	9.10	5,5,1	7.60	6,5,1	28.45
1,5,2	14.72	2,5,2	12.96	3,5,2	25.56	4,5,2	11.30	5,5,2	9.95	6,5,2	28.71
1,5,3	10.90	2,5,3	9.60	3,5,3	18.93	4,5,3	8.37	5,5,3	7.37	6,5,3	21.27
1,5,4	15.40	2,5,4	13.45	3,5,4	27.45	4,5,4	11.60	5,5,4	10.10	6,5,4	30.95
1,5,5	10.85	2,5,5	8.90	3,5,5	22.90	4,5,5	7.05	5,5,5	5.55	6,5,5	26.40
1,5,6	10.75	2,5,6	8.80	3,5,6	22.80	4,5,6	6.95	5,5,6	5.45	6,5,6	26.30
1,6,1	6.85	2,6,1	4.90	3,6,1	18.90	4,6,1	3.05	5,6,1	1.55	6,6,1	22.40
1,6,2	9.27	2,6,2	7.52	3,6,2	20.12	4,6,2	5.85	5,6,2	4.50	6,6,2	23.27
1,6,3	6.87	2,6,3	5.57	3,6,3	14.90	4,6,3	4.33	5,6,3	3.33	6,6,3	17.23
1,6,4	9.35	2,6,4	7.40	3,6,4	21.40	4,6,4	5.55	5,6,4	4.05	6,6,4	24.90
1,6,5	4.80	2,6,5	2.85	3,6,5	16.85	4,6,5	1.00	5,6,5	-0.50	6,6,5	20.35
1,6,6	4.70	2,6,6	2.75	3,6,6	16.75	4,6,6	0.90	5,6,6	-0.60	6,6,6	20.25

Money matters



UNIT A1

“It’s all mine!” Is this how you feel about your money? This unit looks at how we spend our money and helps you to practise money calculations.

What you need

Each pair will need:

1 copy of the Getting-Spending-Giving Game Sheet; 1 copy of the Getting-Giving-Spending Game Sheet; 2 copies of the Recording Sheet; Dice; Pen and paper for calculations.

How to play the Getting-Spending-Giving Game

Each player starts with £10.



First Player

Throw the dice and move to that number in the first column (Getting).

Add the amount you get to your £10.

Throw the dice again and move to that number in the second column (Spending).

Subtract the amount you spend from your current total.

Throw the dice again and move to that number in the third column (Giving).

Subtract the amount you give from your current total.

Second Player

Repeat as for first player.

Keep a clear record of the numbers you throw and the amounts of money you have on the Recording Sheet. Examples have been done for you at the top of the Recording Sheet.



1

Play the Getting-Spending-Giving Game at least 3 times each.

Now answer the following questions.

1. Which throws left you with the most money?
2. Which throws left you with the least money?
3. Write down 3 different sets of throws that would leave you with less than £5.

There are several combinations of throws that leave you with too little money to give away. Look at the second example done for you at the top of the Recording Sheet.

4. Find two other combinations of throws where you have too little money to give away. Work out how much money you are short each time. Keep a clear record on the Recording Sheet.
5. Is it possible to help a neighbour, have a day out with friends and still give some money away?
If yes, what could you give the money to?
If no, how much money are you short?

2

Many of us will spend our pound coins quite happily but only put a few pennies into a collecting tin. Let's see what happens if we put giving before spending. Take the Getting-Giving-Spending Game Sheet. The order of the last two columns has been reversed.

Play the Getting-Giving-Spending Game at least three times each.

Record your results on the second table on the Recording Sheet.

1. Are there any times when you don't have enough money to give something away?
2. Compare your results with your first set of results. What difference does changing the last two columns make?

3

Many people give away a proportion of their earnings. For example, some Christians believe that it is right to give 10% of their money away.

To find 10% of £50: $(10 \div 100) \times £50 = 0.1 \times £50 = £5$

To find 10% of £70: $(10 \div 100) \times £70 = 0.1 \times £70 = £7$

(Do you know a quicker way to find 10% of your money?)

1. a) Find 10% of £100
- b) Find 10% of £75
- c) Find 10% of £45
- d) Find 10% of £123.70
- e) Find 10% of £10.80
- f) Find 10% of £24.60



Go back to the Getting-Giving-Spending Game Sheet. Replace all the 'Giving' boxes with 'Give away 10%'.

You will only have to throw the dice twice but, in the 'Giving' column, you must subtract 10% of the amount you have after the first throw. Play the game three times and record your results in the table below:

Starting amount	First throw	(Amount after 1st throw)	10% of amount after 1st throw	(Amount left after giving 10%)	Second throw	Final amount
£10.00						
£10.00						
£10.00						

2. Will you always have enough money to spend in the last column?
3. Which do you think is fairer:
 - a) everyone gives away the same amount;
 - b) everyone gives away a percentage of what they have?
4. Give one advantage and one disadvantage of giving 10% away *before* spending your money.

Multimillionaire Bob Edmiston, Britain's second best-paid company director, has given around £30 million to a Christian charity. His decision to make giving a central part of his life came 12 years ago when he imagined a conversation at the gates of Heaven:
 "God asks me what I did with my life and I tell Him I made loads of money. Then God asks what I did next and I said I made loads more money. I could see this conversation heading in a very bad direction."

GAME SHEET A1
(getting-spending-giving)

start here
At the start of this game each person has **£10**
Throw the dice to move to each column in turn, working out how much money you have after each throw.

getting boxes

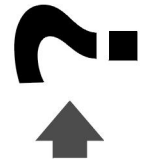
- 1. Wash car. Earn £3
- 2. Uncle gives you £5
- 3. Do a paper round. Get paid £12.50
- 4. Get some pocket money £6.50
- 5. Help a neighbour. She gives you £2
- 6. Have a birthday. Grandmother sends £25

spending boxes

- 1. Cinema trip £1.60 for bus fare £2.10 for ticket
- 2. Bald tyre on bike. New tyre costs £8.20
- 3. Go to Macburger for a snack £2.70
- 4. Buy an ice-cream 90p
- 5. Buy a CD £9.60
- 6. Have a day out with your friends £10.30

giving boxes

- 1. Pay a friend money for a sponsored event £1.73
- 2. Give 10% to a charity or church
- 3. See a famine appeal. Send £4.36
- 4. Your sister is broke. Buy her an ice-cream 90p
- 5. Help feed a child in Africa by giving £2.45
- 6. Give loose change to a homeless person in street £1.52



GAME SHEET A2

(getting-giving-spending)

getting boxes

giving boxes

spending boxes

1. Wash car. Earn £3

2. Uncle gives you £5

3. Do a paper round. Get paid £12.50

4. Get some pocket money £6.50

5. Help a neighbour. She gives you £2

6. Have a birthday. Grandmother sends £25

1. Pay a friend money for a sponsored event £1.73

2. Give 10% to a charity or church

3. See a famine appeal. Send £4.36

4. Your sister is broke. Buy her an ice-cream 90p

5. Help feed a child in Africa by giving £2.45

6. Give loose change to a homeless person in street £1.52

1. Cinema trip £1.60 for bus fare £2.10 for ticket

2. Bald tyre on bike. New tyre costs £8.20

3. Go to Macburger for a snack £2.70

4. Buy an ice-cream 90p

5. Buy a CD £9.60

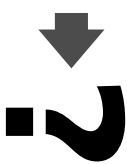
6. Have a day out with your friends £10.30

start here

At the start of this game each person has

£10

Throw the dice to move to each column in turn, working out how much money you have after each throw.



Recording Sheet for game sheet A1 (getting-spending-giving)

Starting amount	First throw	(Amount after 1st throw)	Second throw	(Amount after 2nd throw)	Third throw	Final amount
£10.00	1	(£13.00)	4	(£12.10)	3	£7.74
£10.00	1	(£13.00)	5	(£3.40)	3	-£0.96
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						

In the second worked example at the top of the table above, I need to give away £4.36 but I only have £3.40. $£3.40 - £4.36 = -£0.96$, so I am 96p short.

Recording Sheet for game sheet A2 (getting-giving-spending)

Starting amount	First throw	(Amount after 1st throw)	Second throw	(Amount after 2nd throw)	Third throw	Final amount
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						

GAME SHEET B1
(getting-spending-giving)

getting boxes

spending boxes

giving boxes

1. Wash 3 cars. Earn £3.65 for each.

2. Uncle divides £15 between you and your brother in the ratio 3:2.

3. Do paper round. Get paid £12.50. Deliver 1500 leaflets at 70p per 100.

4. Get some pocket money: £6.50 plus a rise of 10%.

5. Do neighbour's shopping. Take £20, spend £14.35 and she gives you the change.

6. Grandmother invested £25 on your birthday last year. She gives it to you plus interest at 6%.

1. Cinema trip: £1.60 for bus fare; £2.40 for cinema ticket less a 5% off voucher from magazine.

2. Bike service: 2 tyres at £6.20 each; brake cable £1.15.

3. Go to Maccburger. You have 3 Mags, your friend has 1. Bill is £5.20. Pay your share.

4. Buy an ice-cream at 90p and a hot dog at £1.25.

5. Buy a CD at £9.60 less token for £5.

6. Have a day out with your friends. Total cost is £42.60. You pay $\frac{1}{4}$.

1. Pay a friend money for a sponsored walk at 15p per mile. Distance walked: 23 miles.

2. Give 10% of your money to Children in Need.

3. See flood victims appeal. Send one third of your money.

4. Your sister is broke. Buy her an ice-cream. Cost 95p.

5. Give £5.50 towards a vaccination programme.

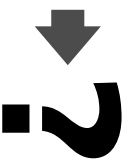
6. Sponsor a hungry child for a week. It costs 80p per day.

start here

At the start of this game each person has

£10

Throw the dice to move to each column in turn, working out how much money you have after the third column.



GAME SHEET B2
(getting-giving-spending)

start here

At the start of this game each person has **£10**

Throw the dice to move to each column in turn, working out how much money you have after the third column.

getting boxes

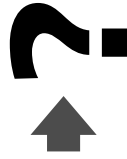
- 1. Wash 3 cars. Earn £3.65 for each.
- 2. Uncle divides £15 between you and your brother in the ratio 3:2.
- 3. Do paper round. Get paid £12.50. Deliver 1500 leaflets at 70p per 100.
- 4. Get some pocket money: £6.50 plus a rise of 10%.
- 5. Do neighbour's shopping. Take £20, spend £14.35 and she gives you the change.
- 6. Grandmother invested £25 on your birthday last year. She gives it to you plus interest at 6%.

giving boxes

- 1. Pay a friend money for a sponsored walk at 15p per mile. Distance walked: 23 miles.
- 2. Give 10% of your money to Children in Need.
- 3. See flood victims appeal. Send one third of your money.
- 4. Your sister is broke. Buy her an ice-cream. Cost 95p.
- 5. Give £5.50 towards a vaccination programme.
- 6. Sponsor a hungry child for a week. It costs 80p per day.

spending boxes

- 1. Cinema trip: £1.60 for bus fare; £2.40 for cinema ticket less a 5% off voucher from magazine.
- 2. Bike service: 2 tyres at £6.20 each; brake cable £1.15.
- 3. Go to Macburger. You have 3 Macs, your friend has 1. Bill is £5.20. Pay your share.
- 4. Buy an ice-cream at 90p and a hot dog at £1.25.
- 5. Buy a CD at £9.60 less token for £5.
- 6. Have a day out with your friends. Total cost is £42.60. You pay $\frac{1}{4}$.



Recording Sheet for game sheet B1 (getting-spending-giving)

Starting amount	First throw	(Amount after 1st throw)	Second throw	(Amount after 2nd throw)	Third throw	Final amount
£10.00	1	(£20.95)	4	(£18.80)	3	£12.53
£10.00	5	(£15.65)	2	(£2.10)	5	-£3.40
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						

In the second worked example at the top of the table above, I need to give away £5.50 but I only have £2.10. $£2.10 - £5.50 = -£3.40$, so I am £3.40 short.

Recording Sheet for game sheet B2 (getting-giving-spending)

Starting amount	First throw	(Amount after 1st throw)	Second throw	(Amount after 2nd throw)	Third throw	Final amount
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						
£10.00						