A2 *Using Fractions and Percentages* Activities

Activities

A2.1 Card Games with Decimals, Fractions and Percentages
(+ 2 pages of Decimal Cards
2 pages of Fraction Cards
2 pages of Percentage Cards
1 page Blank Cards)
A2.2 Percentages of Quantities
A2.3 Annual Percentage Rate (APR)

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ACTIVITY A2.1 *Card Games with Decimals, Fractions and Percentages*

The templates that follow consist of

- *decimal* cards 0.65 to 1.0 in steps of 0.5
- *fraction* cards 0.05 to 1 in steps of $\frac{1}{20}$
- *percentage* cards 5% to 100% in steps of 5%
- *blank* cards for other numbers.

The cards can be used for a variety of games, both as whole class activities and for both paired or individual tasks. Some suggestions are given below:

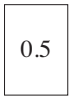
(A) *Conversions*

Here the teacher shows, at speed, one card (say, *fractions*), and asks pupils for the conversion (to *decimal* or *percentage*). (A good competition between pairs or rows, etc. of pupils.)

An exercise best done at pace, involving at some stage all the pupils.

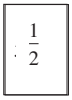
(B) *Sequences*

Put cards on the board (using Blu-Tack), e.g.

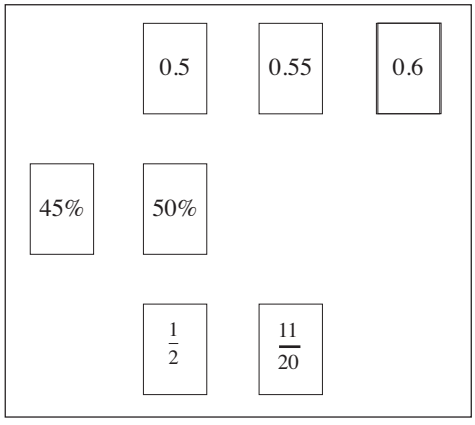




Deal out all the other cards to the class.



Taking turns around the class, pupils place a card in order on the board: they must forego their turn if they cannot place a card in sequence. After 4 turns the board might look like this:



(C) *Ordering*

Give out 6 cards at random to each pupil (you will need more copies of each sheet) and ask them to order them – quickest wins. (You could play this as a knockout competition, with an overall winner or winning team.)

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ACTIVITY A2.1 *Decimal Cards 1*

0.25	0.5
0.2	0.45
0.15	0.4
0.1	0.35
0.05	0.3

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ACTIVITY A2.1 *Decimal Cards 2*

0.75	1.0
0.7	0.95
0.65	0.9
0.6	0.85
0.55	0.8

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ACTIVITY A2.1 *Fraction Cards 1*

$\frac{1}{4}$	$\frac{1}{2}$
$\frac{1}{5}$	$\frac{9}{20}$
$\frac{3}{20}$	$\frac{2}{5}$
$\frac{1}{10}$	$\frac{7}{20}$
$\frac{1}{20}$	$\frac{3}{10}$

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ACTIVITY A2.1 *Fraction Cards 2*

$\frac{3}{4}$	1
$\frac{7}{10}$	$\frac{19}{20}$
$\frac{13}{20}$	$\frac{9}{10}$
$\frac{3}{5}$	$\frac{17}{20}$
$\frac{11}{20}$	$\frac{4}{5}$

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ACTIVITY A2.1 *Percentage Cards 1*

25%	50%
20%	45%
15%	40%
10%	35%
5%	30%

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ACTIVITY A2.1 *Percentage Cards 2*

75%	100%
70%	95%
65%	90%
60%	85%
55%	80%

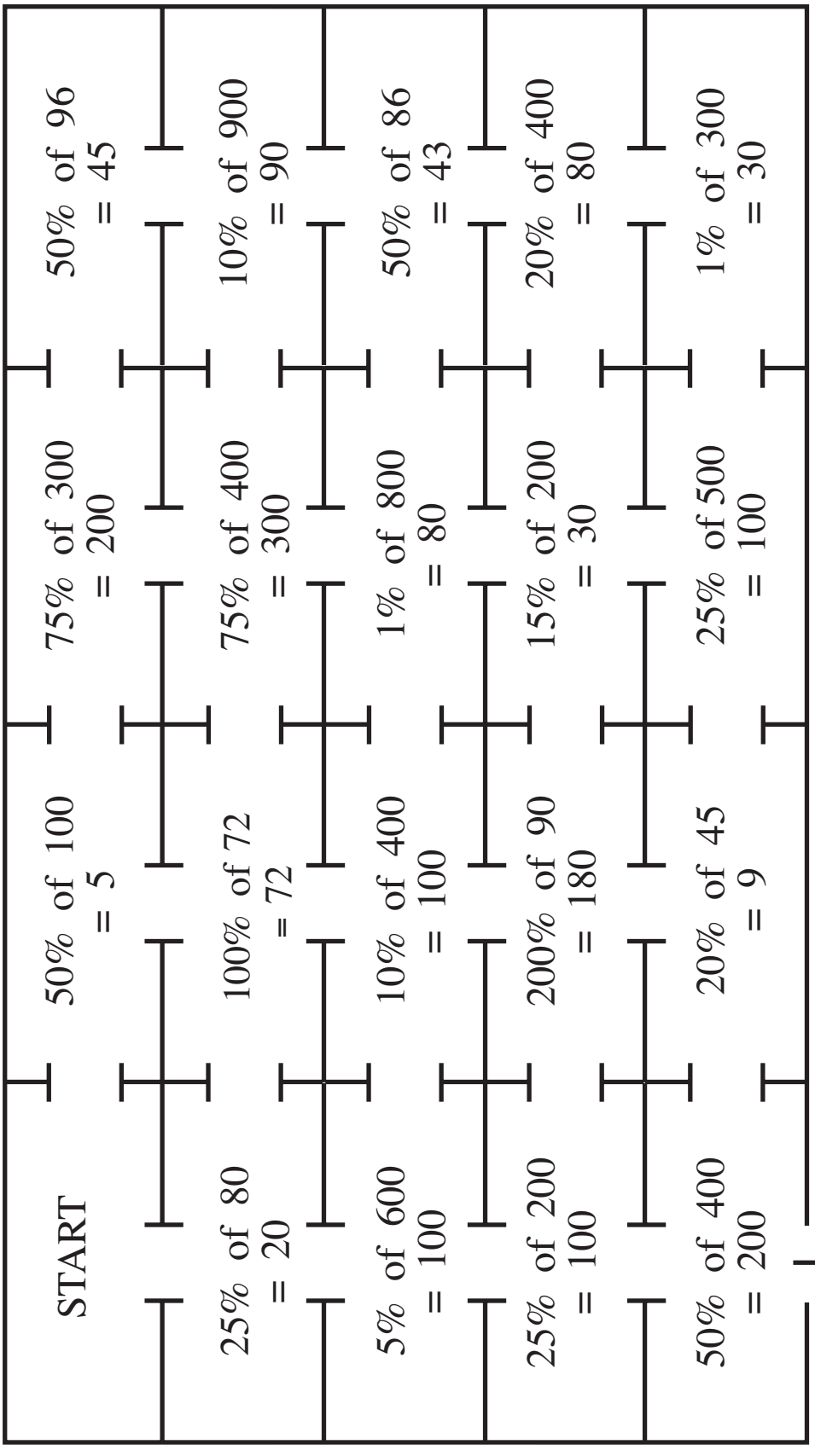
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ACTIVITY A2.1 *Blank Cards*

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ACTIVITY A2.2 *Percentages of Quantities*

Look at the diagram below. START from the top left box and enter the next box which displays a correct statement. Carry on in the same manner until you EXIT.



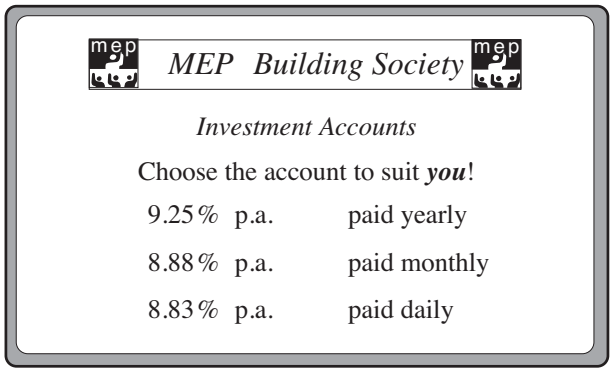
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ACTIVITY A2.3 *Annual Percentage Rate (APR)*

Interest on investment money, and interest on loans such as credit cards, can be offered in a confusing variety of ways (see opposite). To help compare different accounts or loans, the concept of

Annual Percentage Rate (APR)

was developed.



For an account paying interest at $r\%$ per annum once a year, the APR is $r\%$. But for an account paying interest of, say, 10% per annum, every six months, the APR will be more than 10%.
Suppose you invest £100 at the beginning of the year. After six months, the interest payable is

$$£100 \times \left(10 \times \tfrac{1}{2}\right)\% = £100 \times \frac{5}{100} = £5$$

This is added to the account, to give a balance after 6 months of £105. After the next 6 months, i.e. after one year from the start of the investment, the interest payable is

$$£105 \times \left(10 \times \tfrac{1}{2}\right)\% = £105 \times \frac{5}{100} = £5.25$$

giving an end-of-year balance of £110.25. So the APR is 10.25%. This is not much more that the advertised yearly rate, but significant if you are borrowing or investing a large sum of money.

1. Find the APR for the following investment accounts:
   (a) 9% p.a. paid monthly (the monthly rate will be $\frac{1}{12} \times 9\%$)
   (b) 12% p.a. paid monthly.

The method of finding the APR generalises to accounts paying interest monthly, weekly or even daily.

2. Find the APR for the following investment account:
   (a) 20% p.a. paid monthly (b) 19% p.a. paid weekly (c) 18.5% p.a. paid daily.
3. One savings account advertises a yearly rate of interest but states that it is *paid daily*. They claim this gives an APR of 10%. What rate is given in the advertisement?
4. Go back to the advertisement at the top of this sheet. Does it matter which account you choose to invest in?

Extension
The table opposite gives three ways of buying an *MEP iComputer*.

Explain how the APR values quoted are calculated.

MEP iComputer	price **£10156**		
Payment over	**24 months**	**36 months**	**48 months**
Flat rate	0 %	3.4%	4.9 %
APR	0 %	7.7%	9.6 %
Initial deposit	50 %	20 %	10 %
Initial payment	£5078.00	£2031.20	£1015.60
Monthly payments	£211.57	£252.04	£227.75
Administration fee	NIL	£35.25	£35.25
Total Payment	**£10156.00**	**£11139.89**	**£11982.85**

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ACTIVITY A2.3 *Notes and Solutions*

Notes and solutions are given only where appropriate.

A2.3 1. (a) 9.38% (b) 12.68%

2. (a) 21.94% (b) 20.88% (c) 20.31%

3. 9.53% per annum

4. First two accounts are slightly better (APR 9.25% compared to 9.23%).

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