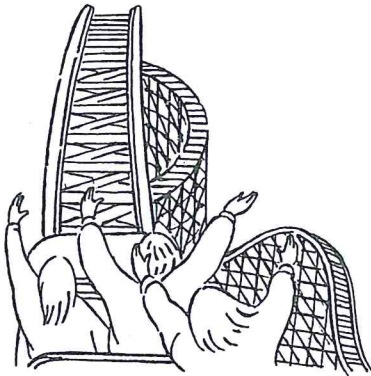


2 Carnival

Name _____

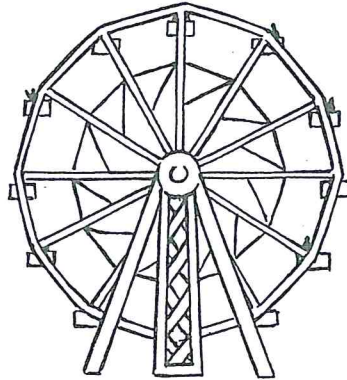


Joe only wants to go on these rides at the carnival.



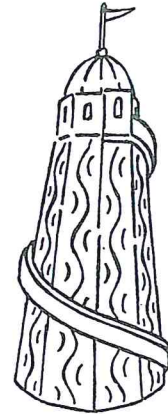
roller-coaster

£3



big wheel

£2



helter-skelter

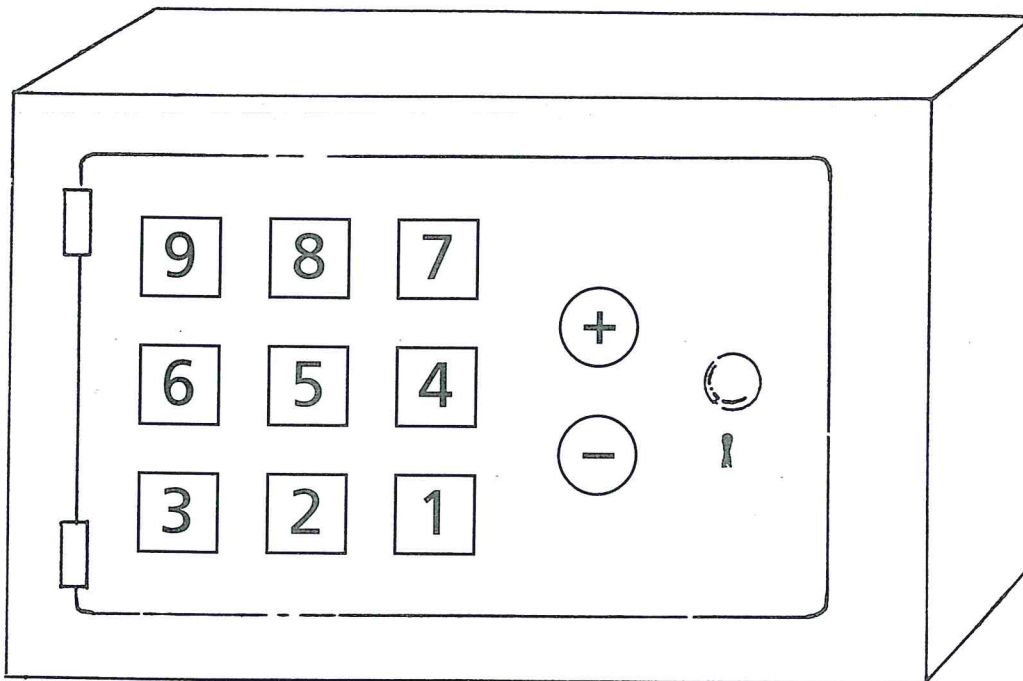
£1

Joe could spend exactly £10 by going on the roller-coaster three times and the helter-skelter once.

Complete the table to show all the other ways Joe could spend exactly £10.

roller-coaster (£3)	big wheel (£2)	helter-skelter (£1)
✓✓✓		✓

4 One hundred



This safe can be opened by pressing

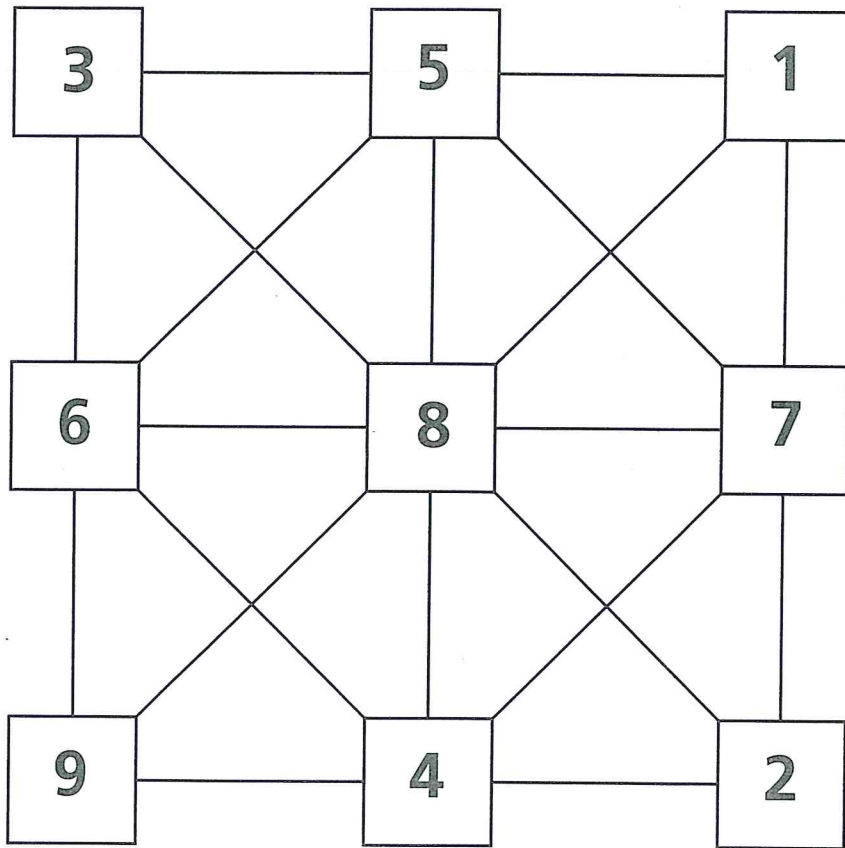
- each digit 1 to 9 once only
- $+$ and $-$ as often as you like.

The door will open if your key presses give an answer of **exactly 100**.

Find a way of opening the safe using the digits

- in any order
- in the order 1 to 9
- in the order 9 to 1.

5 Follow a path



- 1 Start with any number.
 - (a) Follow the paths to find five digits, in order, to make the **greatest** possible number. A digit may only be used once.
 - (b) Make the **smallest** possible five-digit number.
- 2 (a) Choose your own starting number.
Find a four-digit number which rounds to 7000 **to the nearest thousand**.
- (b) Choose a different starting number to find another number which rounds to 7000.
- 3 Find the four-digit number which is nearest to 2000.
- 4 Can you find
 - a three-digit number
 - a four-digit numberwhich is 1000 to the nearest thousand? Explain.
- 5 Find two three-digit numbers which add to 400.

7 Page numbers



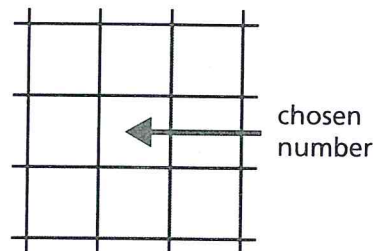
Jeremy Penrite, the author, has to type page numbers at the foot of each page of his new thriller. There are 250 pages altogether. How many **digits** must Jeremy type?

9 Means



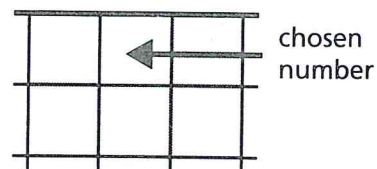
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- 1 (a) Choose a number on the grid which is surrounded by **eight** other numbers. Find the mean of the **eight** numbers.
- (b) Choose other numbers and repeat part (a).
- (c) Write a formula for **M** where
M is the mean of the eight numbers
N is the number you chose.

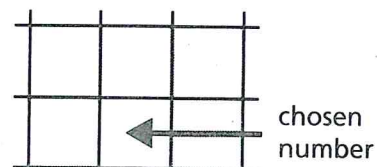


- 2 (a) Choose a number in the top row with **only five** numbers around it. Find the mean of the **five** numbers.
- (b) Investigate for other numbers in the top row.
- (c) Make a table of your results. Write a **new** formula for **M**.

Number (N)	Mean (N)

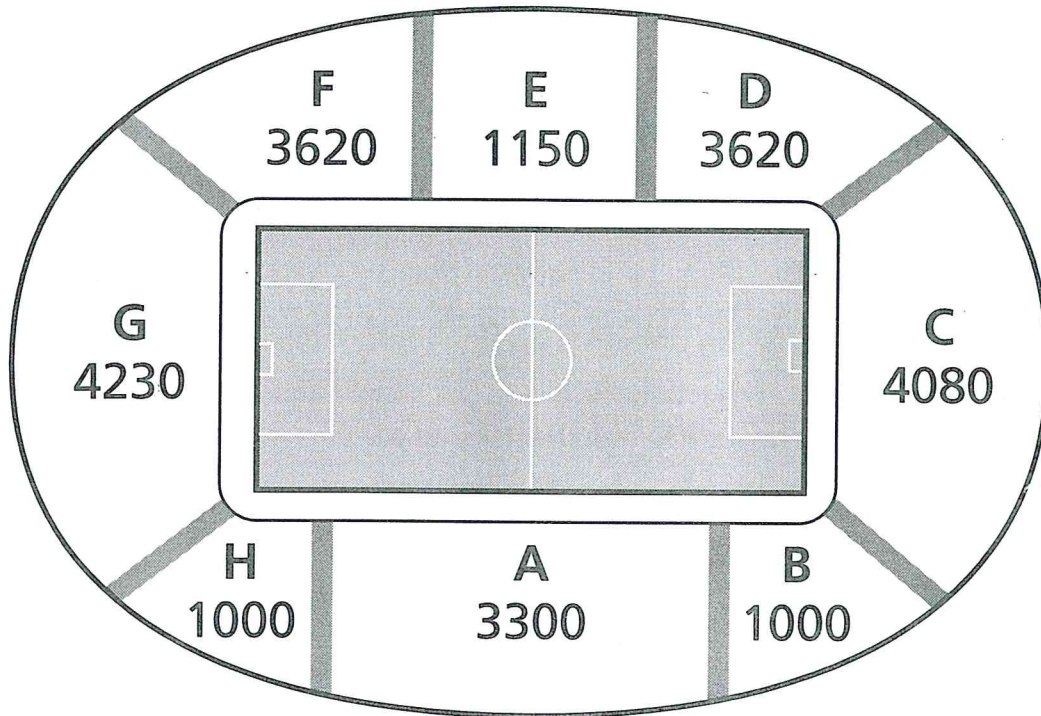


- 3 (a) Investigate numbers in the bottom row with **five** numbers around them.
- (b) Write another formula for **M**.





The plan shows **Waverley United's** football ground.
The numbers show how many seats there are in Sections A to H.



For United's next match with **Marston Rovers**,

- Rover's fans must
 - occupy 25% of the total number of seats on the plan
 - sit in sections which are next to each other.
(The sections need not be full.)
 - not mix with United fans
 - have an empty section between them and any United fans.
- Section G must be no more than $\frac{2}{3}$ full.

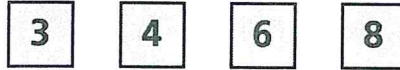
- 1 What is the **greatest** number of **United** fans who could attend the match? Explain.
- 2 Tickets for the Rovers match cost £20 for sections A, D, E and F and £12 for all the other sections. Find the **greatest** amount of money which could be raised by the sale of tickets.



11 How many fractions?

Name _____

- 1 (a) Use these numbers to make as many fractions as possible – for example, $\frac{4}{6}$, $\frac{8}{8}$...



List all the fractions:

- (b) How many of them are **improper fractions**? _____

- 2 Some of the fractions are **equal fractions**. They have the same value. Write all your fractions on this grid so that fractions in the same box have the same value.

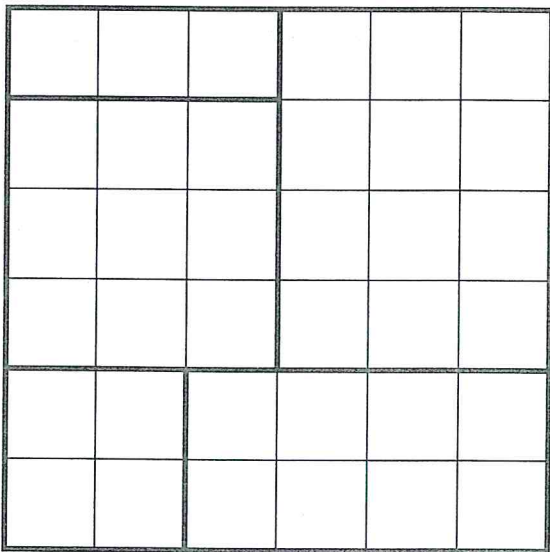
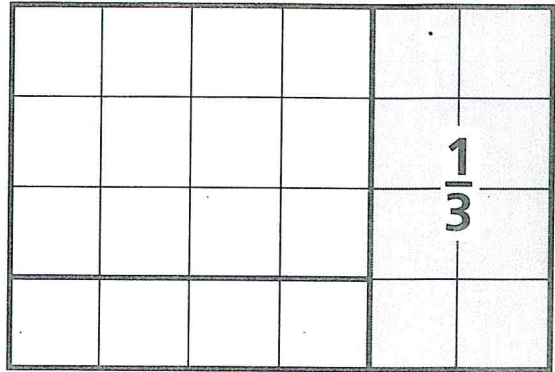
12 Which fraction?

Name _____

1 The shaded area is $\frac{1}{3}$ of this whole shape.

Find, and simplify, a fraction for each of the other two rectangular areas.

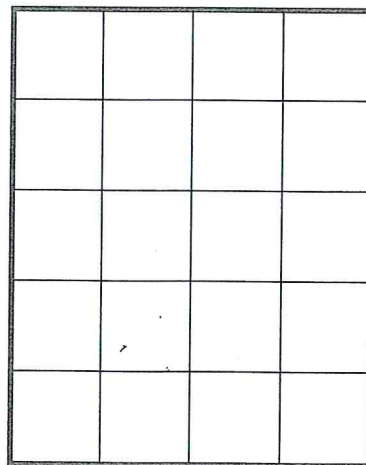
Write the fractions on the diagram.



2 Write a simplified fraction on each rectangular area.

3 Divide this grid into rectangular areas which are

$\frac{1}{4}$, $\frac{3}{10}$, $\frac{1}{5}$, $\frac{1}{5}$ and $\frac{1}{20}$ of the whole shape.



13 Magic grids

- 1 (a) Choose three numbers from the grid. Each must be in a **different row and column**. Find their total.

3.5	5.8	4.9
7.0	9.3	8.4
2.9	5.2	4.3

- (b) Choose another three numbers, each in a different row and column. Find their total. What do you notice?

- (c) Choose another three numbers. What do you **think** their total will be? Check.

This is called a **magic grid**.

- 2 (a) Make your own grid like this:

- put 3 numbers **above** the columns

→ 1.6 2.8 3.4

- put 3 numbers **alongside** the rows

2.5

4.1

1.3

- complete the grid by adding like this:

$1.6 + 4.1$

1.6 2.8 3.4

2.5

4.1

1.3

5.7		

- rub out the numbers **outside** the grid.

- (b) Test your magic grid with a partner.

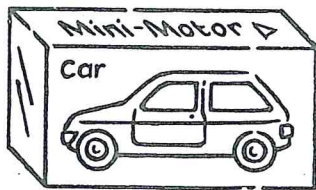
- 3 Design and test a magic grid which has

(a) 4 rows and 4 columns

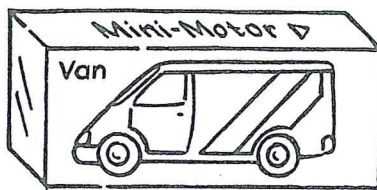
(b) numbers with 2 decimal places.

16 Mini-motors

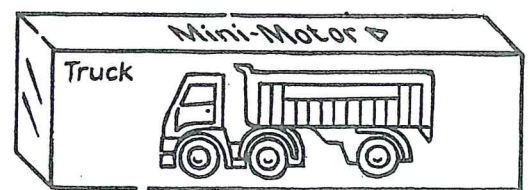
There are three different sizes of Mini-motor boxes.



4 cm

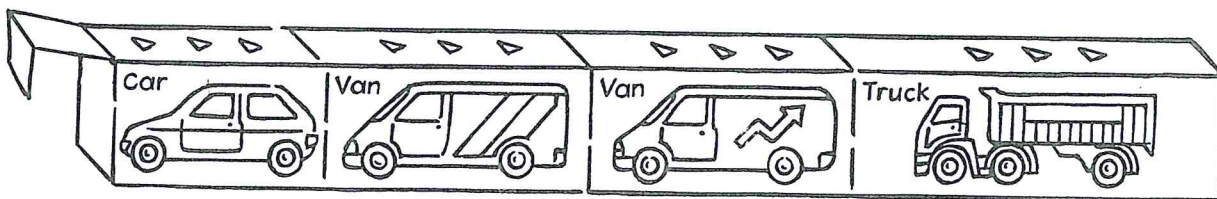


5 cm



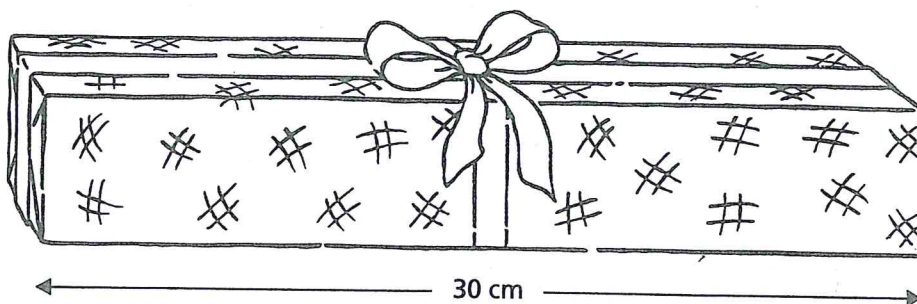
7 cm

1 Mini-motor boxes are also put in gift boxes like this.



How long is this gift box?

- 2 Show one way of making up a gift box which has a length of
 - 17 cm
 - 23 cm
 - 45 cm.
- 3 Find three different selections of Mini-motors to make up a gift box which is 20 cm long.
- 4 Find as many ways as you can of making up a gift box which is 30 cm long.



Jerry and Barbara each work part time in a supermarket.

- Jerry works one day and then has 3 days off before he works again.
- Barbara works one day and then has 4 days off before she works again.

One Sunday they are both working.

What is the **next** day when they are both working?



29 Birdwatching

Some children were observing the school bird table.



- The children saw 3 fewer robins than finches.
- The number of finches seen was 25% of the number of blackbirds.
- The number of sparrows was 9 times the number of robins.
- They saw 8 more sparrows than starlings.

- 1 How many birds did the children see **altogether** if they saw 19 starlings?
- 2 Which of these pie charts shows the birds seen by the children?

