

## Number and Algebra - Exercise 1

1. In a 'magic square', all rows, columns and diagonals add up to the same 'magic number'.  
Copy and complete this magic square.

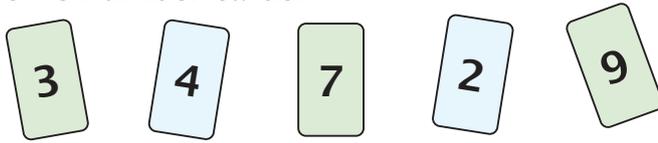
6		12	7
	4		
	16	13	2
10			11

2. Harminder has to visit a relative who lives 196 miles away. He stops for lunch after driving 117 miles. How much further does he still have to go?
3. In a new airport terminal, 25 new doors are required.  
(a) If each door is fastened by 3 hinges, how many hinges are needed altogether?  
(b) If each hinge requires 6 screws, what is the total number of screws required to fit all the doors?
4. A multi-storey office block has 104 offices altogether. If there are 8 offices on each floor, how many storeys does the building have?
5. Numbers are missing on four of these calculator buttons. Copy the diagram and write in numbers to make the answer 28.



6. (a) How many 12 centimetre pieces of string can be cut from a piece of string which is 1 metre in length?  
(b) How much string is left over?

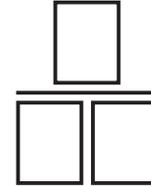
7. Here are some number cards.



(a) Use two cards to make a fraction which is equal to  $\frac{1}{2}$ .



(b) Use three of the cards to make the smallest possible fraction.



8. Look at this group of numbers.

**15, 9, 27, 24, 7**

- (a) Which of the numbers is a multiple of both 3 and 4 ?
- (b) Which of the numbers is a prime number ?
- (c) Which of the numbers is a square number ?

9. Write down these calculations and find the missing digits.

$$\begin{array}{r} 3 \square 4 \\ + 26\square \\ \hline 639 \end{array}$$

$$\begin{array}{r} 5\square 9 \\ + 38\square \\ \hline \square 25 \end{array}$$

$$\begin{array}{r} \square 2\square \\ + 3\square 4 \\ \hline 800 \end{array}$$

10. The rule for the number sequences below is 'double and add 2'. Write down each sequence and fill in the missing numbers.

(a)  $1 \rightarrow 4 \rightarrow 10 \rightarrow 22 \rightarrow \square$

(b)  $\square \rightarrow 6 \rightarrow 14 \rightarrow 30$

(c)  $\square \rightarrow 8 \rightarrow \square \rightarrow \square$

## Number and Algebra - Exercise 2

1. Charlie likes to use number patterns when he selects his lottery numbers.

(a) Write down the next two numbers in Charlie's pattern:

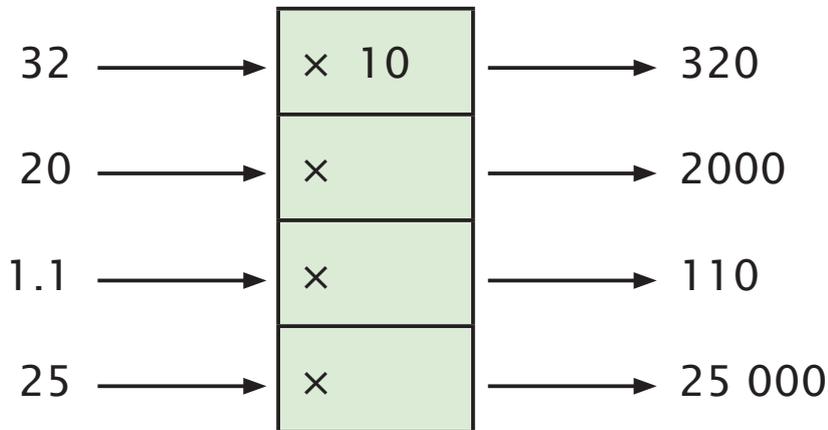
**1, 3, 6, 10, \_\_, \_\_.**

(b) Charlie won £10 with this pattern:

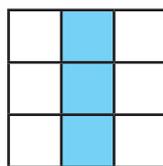
**1, 4, 9, \_\_, 25, 36.**

What was the missing number ?

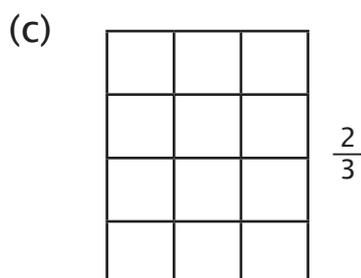
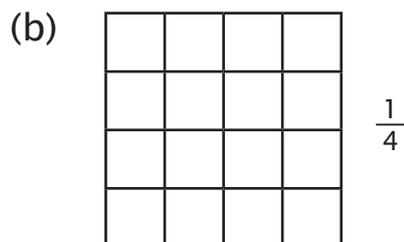
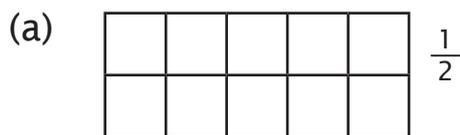
2. The numbers on the left have been multiplied either by 10, 100 or 1000. Write the correct numbers in the boxes. The first one has been done for you. Copy and complete.



3. This shape has  $\frac{1}{3}$  shaded.



Copy each diagram and shade the given fraction.



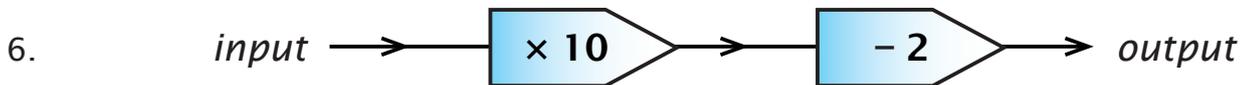
4. Look at the following numbers.

**-9, 4, 0, -2, 5**

- (a) Write down the positive numbers.
- (b) Write down the negative numbers.
- (c) Write the numbers in order, lowest to highest.
- (d) Write down the difference between the highest and lowest numbers.

5. Copy and complete this table showing equivalent fractions, decimals and percentages.

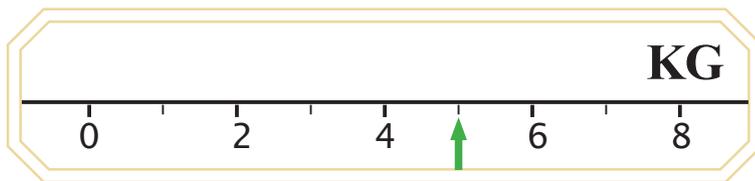
Fraction	Decimal	Percentage
	0.5	
$\frac{1}{4}$		
		75%



Copy and complete this table using the machine above.

	Input	Output
	3	28
(a)	4	
(b)	7	
(c)	10	
(d)		108
(e)		148

7. Bob the butcher was weighing a turkey.

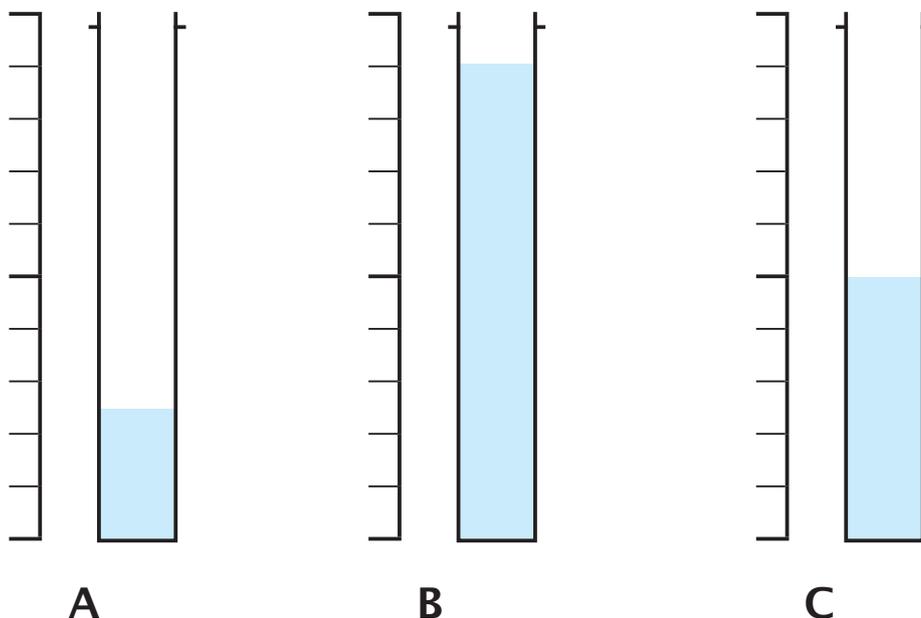


- (a) Write down the weight in kilograms of the turkey.
- (b) Bob is selling his turkeys at £1.35 a kilogram. What price ticket would Bob put on this turkey?

Bob tells his customers that the cooking time for the turkey is 20 minutes per kilogram plus 20 minutes.

- (c) For how long will the turkey on the scales above have to be cooked?
- (d) What is the cooking time required for an 8 kg turkey?
- (e) Convert your answer to (d) into hours.

8. The diagrams below show three test tubes containing a liquid.



- (a) Which of the test tubes above is 0.9 full?
- (b) Which of the test tubes is  $\frac{1}{4}$  full?
- (c) Which of the test tubes is 50% full?

9. Here is a series of diagrams showing an arrangement of counters.

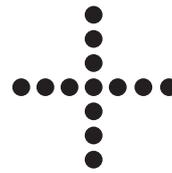
Diagram 1



Diagram 2



Diagram 3



(a) Draw diagram number 4.

(b) Copy and complete this table for the diagrams so far.

Diagram Number	Counters used
1	5
2	
3	
4	

(c) Without drawing, how many counters will be needed for diagram number 5?

(d) Write in words how you found your answer without drawing.

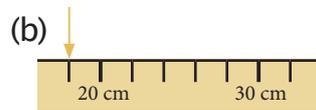
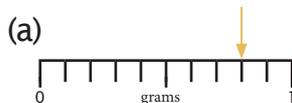
10. Which is larger...

(a)  $\frac{3}{10}$  of £50

or

(b) 25% of £40

11. Write down the reading from each side?



12. Find the number I am thinking of in each part.

(a) If I take away 13 from it, I get 50.

(b) If I double it, I get 250.

(c) If I divide it by 10, I get 6.5.

## KS2 Number & Algebra Answers

### Exercise 1

1. 

6	9	12	7
15	4	1	14
3	16	13	2
10	5	8	11

      2. 79 miles      3. (a) 75 (b) 450      4. 13

5.  $28 + 28 - 28 = 28$

6. (a) 8 (b) 4 cm

7. (a)  $\frac{2}{4}$  (b)  $\frac{2}{97}$

8. (a) 24 (b) 7 (c) 9

9. a) 
$$\begin{array}{r} 3 \ 7 \ 4 \\ +2 \ 6 \ 5 \\ \hline 6 \ 3 \ 9 \end{array}$$

b) 
$$\begin{array}{r} 5 \ 3 \ 9 \\ +3 \ 8 \ 6 \\ \hline 9 \ 2 \ 5 \end{array}$$

c) 
$$\begin{array}{r} 4 \ 2 \ 6 \\ +3 \ 7 \ 4 \\ \hline 8 \ 0 \ 0 \end{array}$$

10. (a) 46 (b) 2 (c)  $3 \rightarrow 8 \rightarrow 18 \rightarrow 38$

### Exercise 2

1. (a) 15, 21 (b) 16

2. (a) 100 (b) 100 (c) 1000

3. (a) shade any 5 out of 10 (b) shade any 4 out of 16 (c) shade any 8 out of 12

4. (a) 4, 5 (b) -2, -9 (c) -9, -2, 0, 4, 5 (d) 14

5.

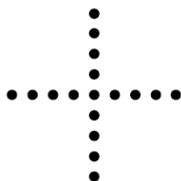
Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$	0.75	75%

6. (a) 38 (b) 68 (c) 98 (d) 11 (e) 15

7. (a) 5 kg (b) £6.75 (c) 120 mins (d) 180 mins (e) 3 hours

8. (a) B (b) A (c) C

9. (a)



(b)

Diagram Number	Counters used
1	5
2	9
3	13
4	17

(c) 21

(d) diagram number  $\times 4 + 1$

10. (a)

11. (a) 0.8 g (b) 18 cm (c) 2.4kg

12. (a) 63 (b) 125 (c) 65