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Excerpt
More information

Number

Place value

Let's investigate

Raphael has eight digit cards.

He uses the cards to make two four-digit numbers.
He uses each card only once.

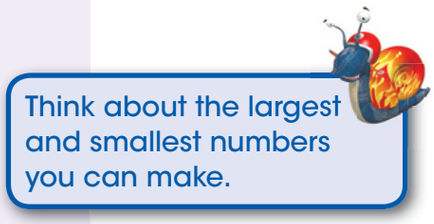
He finds the difference between his two numbers.

What is the largest difference he can make?

Vocabulary

million: equal to one thousand thousands and written as 1 000 000.

1 million = 10 × 10 × 10 × 10 × 10 × 10



1 Write the numbers shown on these charts in words and figures.

(a)

100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000
10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000
1000	2000	3000	4000	5000	6000	7000	8000	9000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

(b)

100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000
10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000
1000	2000	3000	4000	5000	6000	7000	8000	9000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

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(c)

100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000
10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000
1000	2000	3000	4000	5000	6000	7000	8000	9000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

2 Write these numbers in figures:

(a) one million

(b) five hundred thousand and five

(c) four hundred and three thousand, and thirty four point six six.

3 Write these numbers in words:

(a) 345 678 **(b)** 537 914 **(c)** 158 035.4 **(d)** 303 033.03

4 **(a)** Write half a million in figures.

(b) Add 10 to half a million. Write your answer in words and figures.

5 What value does the digit 7 have in these numbers?

(a) 670 346.5 **(b)** 702 138 **(c)** 606 456.7 **(b)** 234 560.07

6 Write these numbers in words and figures.

(a) 200 000 + 6000 + 300 + 2

(b) 900 000 + 90 000 + 900 + 9 + 0.9

(c) 100 000 + 20 000 + 5000 + 600 + 20 + 5 + 0.4 + 0.03

7 Noura has these cards.

(a) What is the largest even number she can make using all the cards.

(b) What is the smallest odd number she can make using all the cards.

Ordering, comparing and rounding numbers

Let's investigate

There are 1187 students in a large city school.

There are 42 classes in the school.

Approximately, how many students are in each class?

Explain to a friend how you made your decision.

1 Draw a line 10 centimetres long. Mark 0 and 10 000 at the end points.

Estimate the positions of the following numbers.
Mark each one with an arrow and its letter:
6000 marked A
3500 marked B
9050 marked C

2 Round these numbers to the nearest hundred.

(a) 45 678 (b) 24 055 (c) 50 505

3 Round these numbers to the nearest thousand.

(a) 147 950 (b) 65 507 (c) 157 846

4 Order the following sets of numbers from smallest to largest.

(a) 54 754 55 475 55 547 54 775 55 447

(b) 45 054 45 540 45 504 45 045 45 500

(c) 456 065 450 566 455 656 456 565 450 666

Use any of the numbers in part **(c)** to complete these inequalities.

? < ? ? > ?

5 The table shows the heights of mountain summits in five different continents.

Mountain summit	Continent	Height (in metres)
Kilimanjaro	Africa	5895
Everest	Asia	8848
Kosciuszko	Australia	2228
McKinley	North America	6194
Aconcagua	South America	6961

(a) Order the heights starting with the smallest.

(b) Round each height to the nearest hundred metres.

6 Choose one of these numbers to complete each inequality.

35 055 35 550 35 050 35 005 35 500 35 505

(a) ? > 35 055 **(b)** 35 500 > ? **(c)** ? < 35 505

7 Here is a number sentence.

? − 1300 > 6500

Which of these numbers will make the number sentence correct?

4000 5000 6000 7000 8000 9000

8 The table shows the lengths of some rivers in the United Kingdom.

River	Length (to the nearest km)
Dee	113
Severn	354
Thames	346
Trent	297
Wye	215

Write each length:

(a) to the nearest 10 km

(b) to the nearest 100 km.

(c) There is another river which is not on the list. It is 200 km to the nearest 100 km and 150 km to the nearest 10 km.
What are the possible lengths of this river?

Multiples and factors

Let's investigate

The sequence below uses the numbers 1 to 4 so that each number is either a factor or a multiple of the previous number.

Each number is used once only.

Find a similar sequence that uses the numbers 1 to 6.

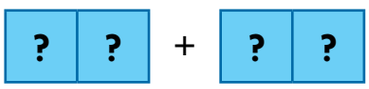
1 Which of these numbers are multiples of 8?

18 24 48 56 68 72

2 Which of these numbers are factors of 30?

4 5 6 10 20 60

3 Use each of the digits 5, 6, 7 and 8 once to make a total that is a multiple of 5.



4 Find all the factors of:

(a) 24 **(b)** 32 **(c)** 25.

5 My age this year is a multiple of 8.
My age next year is a multiple of 7.
How old am I?

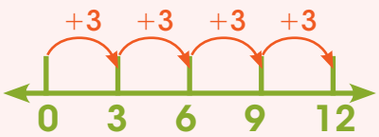
Vocabulary

factor: a whole number that divides exactly into another number. For example, 1, 2, 3 and 6 are the factors of 6.

$1 \times 6 = 6 \quad 2 \times 3 = 6$

factor factor factor factor

multiple: a number that can be divided exactly by another number is a multiple of that number. Start at 0 and count up in steps of the same size and you will find numbers that are multiples of the step size. For example,

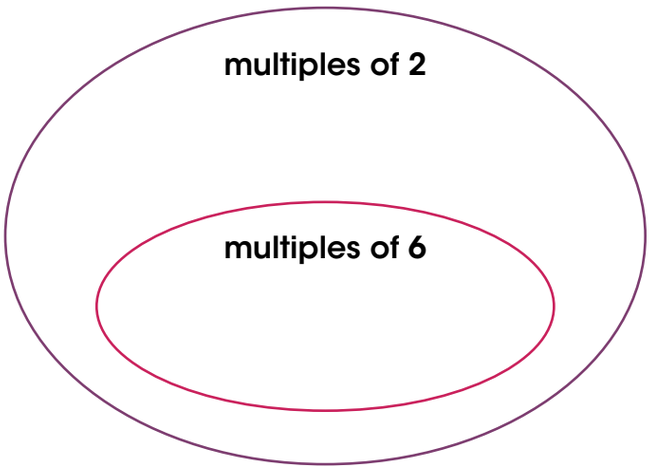


3, 6, 9, 12 . . . are multiples of 3.

6 Draw a sorting diagram like the one shown.
Write one number in each section of the diagram.

	less than 1000	not less than 1000
multiples of 25		
not multiples of 25		

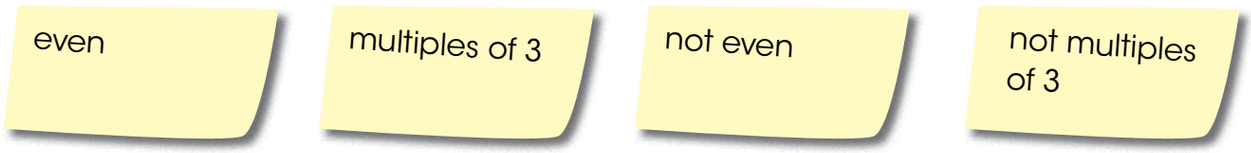
7 Draw the Venn diagram below. Write the numbers 8, 9, 10, 11, 12 and 13 in the correct places on your Venn diagram.



8 Use each of the digits 2, 3, 4, 5, 6 and 7 only once to make three two-digit multiples of 3.

?	?		?	?		?	?

9 Here are four labels.



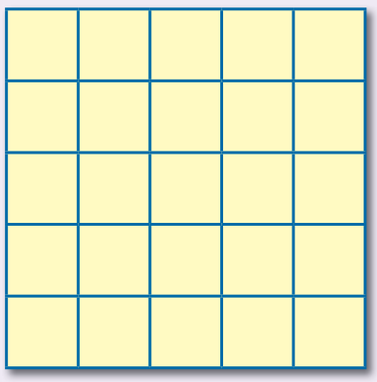
Draw the Carroll diagram below and add the labels.

	6 24	16 22
	15 27	17 7

Odd and even numbers

Let's investigate

You need 13 counters and a 5 by 5 grid.



- Place 13 counters on the grid so that there is an odd number of counters in each row, column and on both diagonals. Only one counter can be placed in each cell.
- Place 10 counters on the grid so that there is an even number of counters in each row, column and on both diagonals. Only one counter can be placed in each cell.

There is more than one answer.

Vocabulary

odd: odd numbers are not divisible by 2. They end in 1, 3, 5, 7 or 9. For example, 7689 is an odd number.

even: even numbers are divisible by 2. They end in 2, 4, 6, 8 or 0. For example, 6578 is an even number.

1 Which of these numbers are even?

9 11 26 33 57 187 2002

Explain to a partner how you know.

2 Andre makes a three-digit number.
All the digits are odd.
The sum of the digits is 7.
What could Andre's number be?

3 Ollie makes a three-digit number using the digits 2, 3 and 6.
His number is odd.
The hundreds digit is greater than 2.
What could Ollie's number be?

4 Sara makes a four-digit even number.
The sum of the digits is 4.
The thousands digit and the units digit are the same.
The hundreds digit and the tens digit are the same.
The hundreds digit is 0.
What is Sara's number?

5 Copy the Carroll diagram for sorting numbers.
Write these numbers in the diagram:

27 235 7004 43 660

	odd	**not odd**
three-digit number		
not a three-digit number		

6 Three different numbers add up to 50.

? + **?** + **?** = 50

The numbers are all even.
Each number is greater than 10.
What could the numbers be?

7 Erik has a set of number cards from 1 to 20.
He picks four different cards.

Exactly three of his cards are multiples of 5.
Exactly three of his cards are even numbers.
All four of the numbers add up to less than 40.
What cards could Erik pick?

8 Which number satisfies all of these conditions:
it is a multiple of 25
it is even
it is greater than 550 but less than 700
it is not 600.

Prime numbers

Let's investigate

Look at this statement.

Every even number greater than 2 is the sum of two prime numbers.

Here are two examples:

$6 = 3 + 3$ (3 is a prime number)

$12 = 5 + 7$ (5 and 7 are prime numbers)

- Check if the statement is true for all the even numbers to 30.
- Can you find an even number that does not satisfy the rule? Try some numbers greater than 30.

Vocabulary

prime number: a prime number has exactly two different factors; itself and 1.

NOTE: 1 is **not** a prime number. It has only one factor (1).

Examples of prime numbers: 2, 3, 5, 7, 11 ...

1 List all the prime numbers between 10 and 20.

2 Identify these prime numbers from the clues.

(a) It is less than 30.
The sum of its digits is 8.

(b) It is between 30 and 60.
The sum of its digits is 10.

3 Copy and complete these number sentence by placing a prime number in each box.

$\boxed{?} \times \boxed{?} \times \boxed{?} = 30$

$\boxed{?} \times \boxed{?} \times \boxed{?} = 50$

$\boxed{?} \times \boxed{?} \times \boxed{?} = 70$

4 Identify the prime numbers represented by $\boxed{?}$ and $\boxed{?}$.

(a) $\boxed{?}^2 = 49$

(b) $\boxed{?} + 1 = 2 \times 9$

(c) $\boxed{?} + 2 = 5^2$

(d) $\boxed{?} + \boxed{?} = 20$

Multiplying and dividing by 10, 100 and 1000

Let's investigate

Cheng is thinking of a number.
What number is Cheng thinking of?

I multiply my number by 100, then divide by 10, then multiply by 1000. My answer is one hundred and seventy thousand.

1 Copy and complete this set of missing numbers.

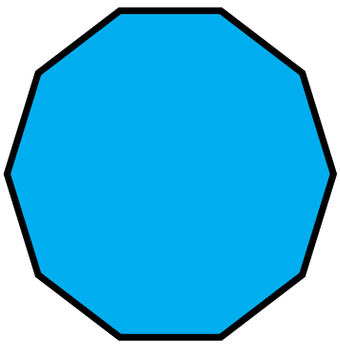
$25 \times 100 = \boxed{?}$ $\boxed{?} \div 100 = 250$

$\boxed{?} \times 10 = 2500$ $250 \div 10 = \boxed{?}$

2 What is the missing number?

$100 \times 10 = 10\,000 \div \boxed{?}$

3 A decagon has 10 sides.



What is the perimeter of a regular decagon with sides 17 centimetres long?

4 Milly says, "Every multiple of 1000 is divisible by 100."
Is she right?
Explain your answer.

For more questions, turn the page ...