Grade 4 Essentials for GCSE Maths
Handouts for section N1
Key terms, number types and properties 1

What do these terms mean? Can you give two examples for each?

sum

difference

product

multiple

factor

integer

Key terms, number types and properties 2

square number

cube number

square root

cube root

prime number

triangular number

Key terms, number types and properties 3

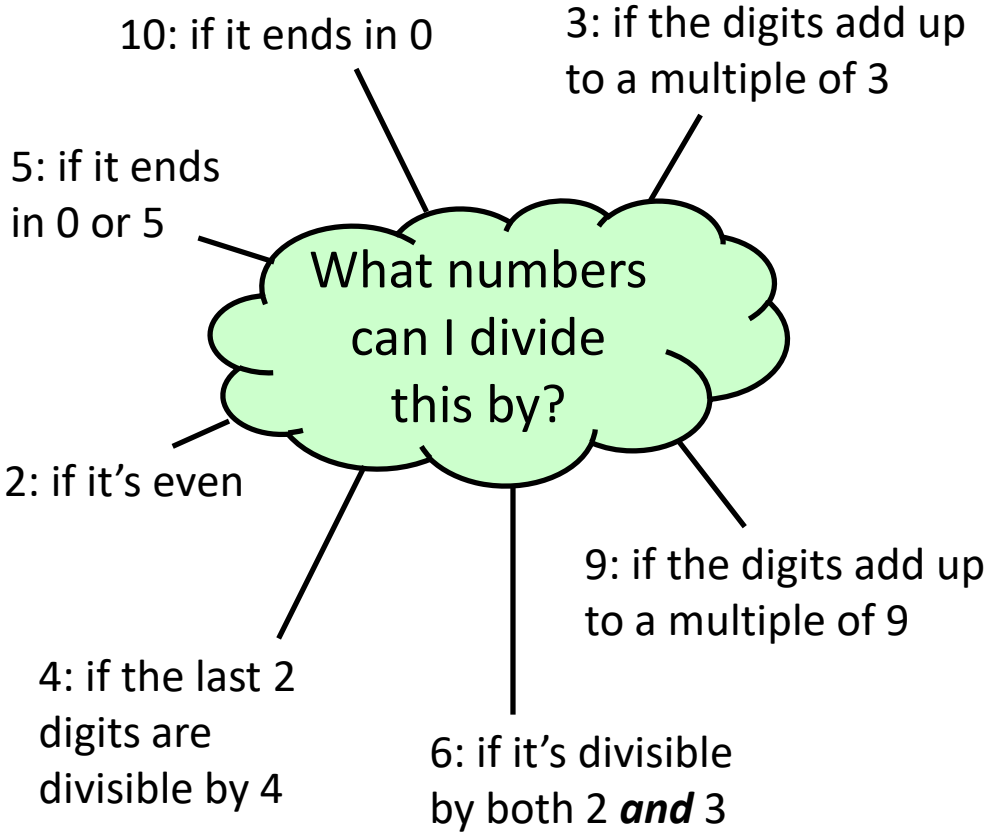
Put all these numbers into the grid, one per square, so that each statement is true.

1, 2, 3, 5, 6, 7, 9, 10, 11, 15, 16, 21, 28, 30, 35, 49

	Odd number	Multiple of 3	Multiple of 7	Even number
Prime				
Triangular number				
Multiple of 5				
Square number				

Rules of divisibility

It's often useful to be able to tell whether you're going to be able to divide by a particular number. These tricks can help you to do that…



Are the numbers across the top divisible by the numbers down the side? Put YES or NO in the boxes.

	46	80	129	468	2835
2					
3					
4					
5					
6					
9					
10					

Place value and ordering

What is the place value of each column?

1 2, 3 4 5 . 6 7 8

The value of the 4 is…

The value of the 2 is…

The value of the 7 is…

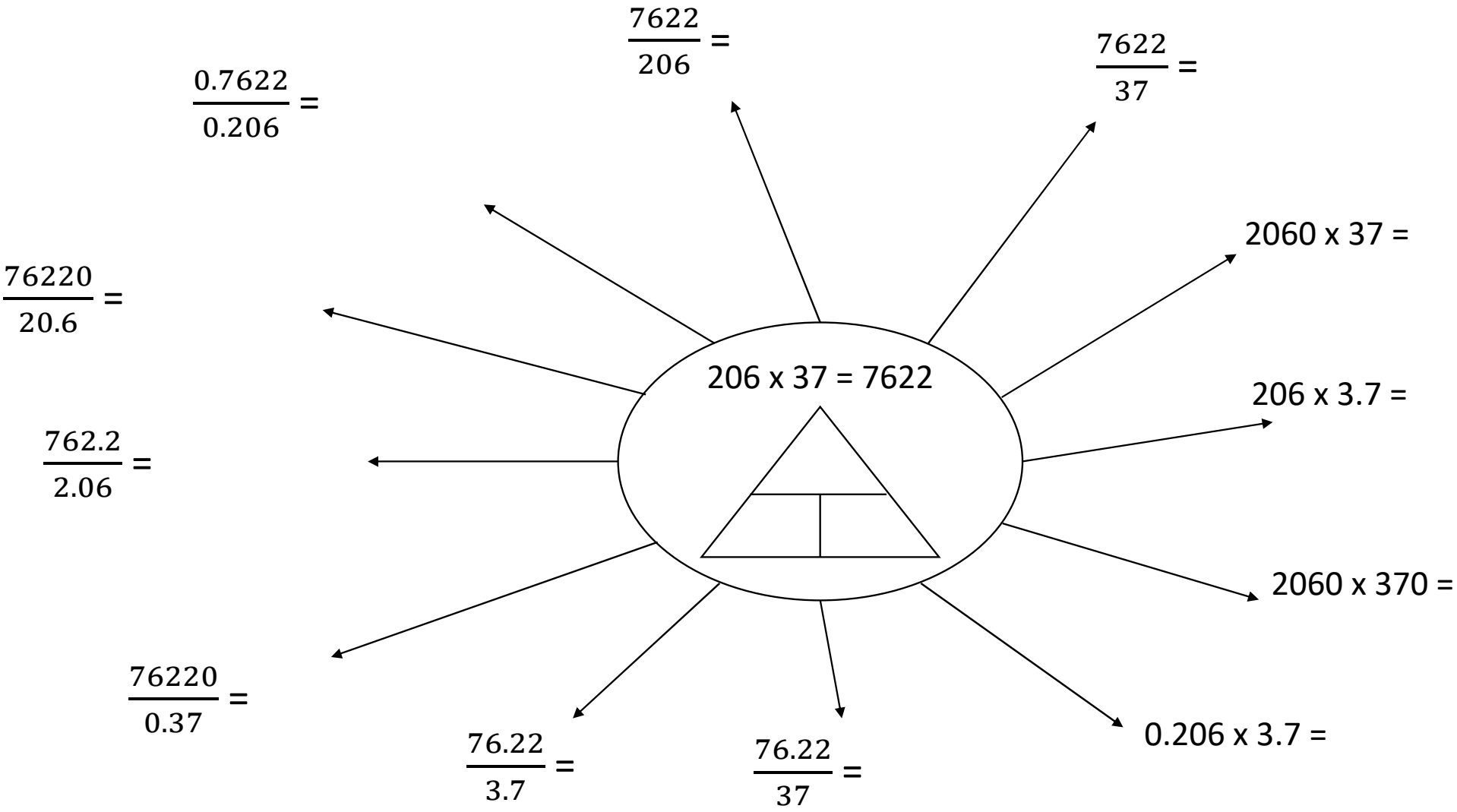
Sort these numbers into descending order.

323.3
2023.3
332
23.03
2203.3
23.3

Ascending order = increasing, lowest to highest
Descending order = decreasing, highest to lowest

Deductions from known results

We can use one result to deduce others. For example, if we know that 206 x 37 = 7622 then we can deduce:



Using a calculator

If you square a negative number then you MUST put it in brackets!

You need to be able to do these things on your calculator:

- Reset it (SHIFT 9 3 =)
- Adjust the contrast (SHIFT MODE/SETUP then last menu option)
- Enter calculations correctly using either natural display or brackets (or both!)
- Find powers and roots, and use the Ans button
- Enter and convert between decimals, improper fractions and mixed numbers
- Use standard form (use the $x10^x$ button)
- Use the sin, cos and tan buttons (for SOHCAHTOA – top end of Foundation)

To enter a mixed number

To convert mixed/ improper

Powers and roots
(+ recurring decimals)

Other functions that are useful to know, though not essential:

- The TABLE function (e.g. for plotting points on a graph)
- The FACT function for prime factorisation

- The deg-min-sec button (converts between decimal hours and hours/mins/secs)
- Ratio mode (if you have the Casio Classwiz fx-85GT X)
- How to store and recall values using the memory

For any of these that you're not sure of, take a look at https://thecalculatorguide.com/ and

- Corbettmaths video 352
- https://www.maths4everyone.com/maths/using-a-calculator-t175.html (mostly the more basic stuff)
- My video series at https://www.facebook.com/watch/1340508019295704/1155506088178245

Indices 2: Laws of indices and negative indices

Write each calculation out in full. What can you conclude?

a) $2^2 \times 2^3$ b) $2^5 \div 2^2$ c) $(2^2)^3$

d) $(2^3)^2$ e) $2^3 \div 2^3$ f) $2^3 \div 2^4$

1st law of indices: $x^a \times x^b =$

2nd law of indices: $\frac{x^a}{x^b} =$

3rd law of indices: $(x^a)^b =$

From the 2nd and 3rd laws, it also follows that

$x^0 =$ $x^{-1} =$ $x^{-n} =$

Simplify and evaluate:

1) $2^{-3} \times 2^7$
2) $3^5 \div 3^3$
3) $(2^2)^3$
4) 3^{-2}
5) $\left(\frac{3}{5}\right)^{-2}$
6) $2^3 \div 2^{-2}$
7) $(2^3)^{-2} \times 2^4$
8) $(3^{-2})^2 \div (3^3)^{-2}$