Worksheet 2

Try these questions on separate paper. Show methods where needed.

Factors and multiples

1) Find all the factors of 48
   How many different factors does 48 have?

2) Find all the factors of 36
   How many different factors does 36 have?

3) Write down all the factors of 16. Write down all the factors of 20. Write down all the factors of 25. Write down all the factors of 12.

4) Write a sentence about what is special with numbers with an odd number of factors.

5) Write down a number larger than 100 that has 12 as a factor

6) Write down a number between 50 and 60 that has 17 as a factor
   Hint: 17 is an old math teacher's favourite

7) Write down the first six multiples of 12 starting with 12

8) Write down the first five multiples of 15 starting with 15

9) Write down a number larger than 100 that has both 12 and 15 as a factor

10) The sum of two numbers is 13 and the product of the same two numbers is 42. Find the numbers.

11) A rectangle has an area of 12 cm² and a perimeter of 14 cm.
    Find the length and width of the rectangle.

12) Look at this list of numbers: 3, 4, 12, 15, 20, 25, 75, 100
    a)   Write down all the multiples of 5 in the list
    b)   The product of two numbers in the list is equal to a third. Find the numbers

HCF and LCM

1) Find all the factors of 72

2) Write down all the factors of 60

3) What is the highest common factor of 72 and 60?

4) Write down the highest common factor of 15 and 20

5) Find the highest common factor of35 and 21

6) Write down the highest common factor of 8 and 12

7) Find the highest common factor of 200 and 250

8) Write down the first 6 multiples of 15

9) Write down the first 5 multiples of 25

10) Find the lowest common multiple of 15 and 25

11) Write down the lowest common multiple of 12 and 18

12) Write down the lowest common multiple of 8 and 12

13) The X51 bus leaves the bus stop every 12 minutes.
    The 33 bus leaves the same bus stop every 18 minutes
    Both buses leave together at 10:30 am one morning.
    At what time will they leave together again?

14) Lighthouse A flashes every 90 seconds
    Lighthouse B flashes every 100 seconds
    A sailor in a fishing boat sees both lighthouses flash at 22:33:00
    When will the sailor see both lighthouses flash together again?

15) Algernon says "you can find the LCM of two numbers A and B by
    multiplying them together and dividing by the HCF"
    Does Algernon's recipe work?
    Try finding the LCM of 48 and 36 using Algernon's method.

16) A pair of numbers have an LCM 108 and an HCF of 3.
   What were the numbers?

Prime numbers and prime factors

1) List all the prime numbers under 30

2) Write down two prime numbers that lie between 50 and 60

3) Find two prime numbers add to give 16.

4) Find two prime numbers that add to give 32

5) Find the prime factors of 24 using the factor tree or repeated division method

6) Write 72 as a product of its prime factors.
   Write your answer in index form for any repeated prime factors

7) Find the prime factors of 420 and write them in a list

8) Find the prime factors of 550 and write them in a list

9) Copy and complete the Venn diagram below to show the prime factors of 420 and 550. Use the completed diagram to calculate the highest common factor and the lowest common multiple of 420 and 550.

420

550

ξ = whole numbers
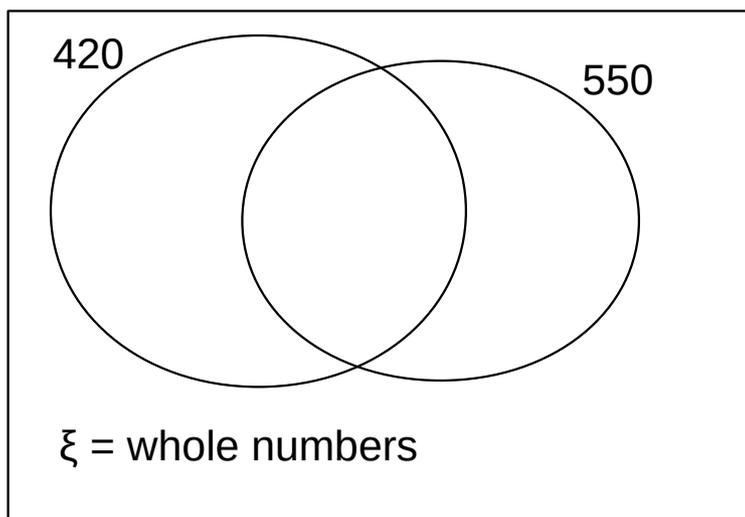
10) Puzzle: A number has exactly four prime factors, all different. The prime factors add up to 25. Find the number.
    Hint: the number is larger than 500

Powers and roots

1) Write down the value of 4^2 and the value of 5^3

2) Write down the value of $\sqrt{25}$

3) Write down the value of $\sqrt[3]{27}$

4) The square below has an <u>area</u> of 36cm².
   Find the <u>perimeter</u> of the square.

   Square
   Area = 36cm²

   $\longleftarrow \quad x \quad \longrightarrow$
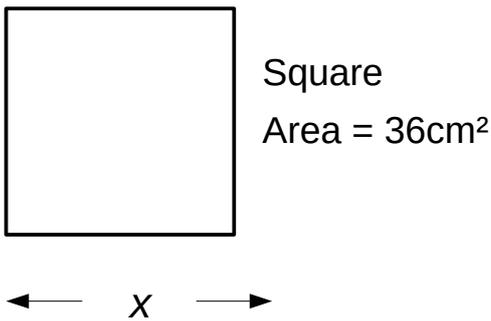
5) Each of the squares in the diagram below has an area of 4 cm².
   Work out the value of the length x.

   X
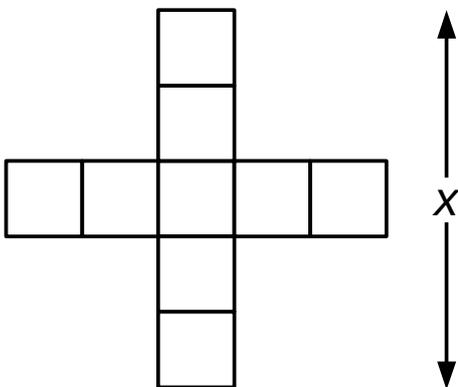
6) Work out $5^6 \times 5^7$ and write your answer as a power of 5.

7) Work out $3^7 \div 3^5$ and write your answer as a power of 3.

8) Work out the value of $4^2 + 5^3$
   Hint: you just have to work each power out and then add them!

9) Work out $\dfrac{2^{10} \times 2^6}{2^{12}}$ and write your answer as a power of 2.