Divisibility

A number **a** is **divisible** by another number **b** if the division **a** ÷ **b** is exact (no remainder).

For example, 18 ÷ 3 = 6. So, 18 is divisible by 3. Also, 18 is divisible by 6, because we can write the other division $18 \div 6 = 3$. So, 18 is divisible by both 6 and 3.

We say 6 and 3 are divisors or factors of 18.

You can use long division to check if a number is divisible by another.

 $67 \div 4 = 16$, R3. There is a remainder, so 67 is *not* divisible by 4.

4 6 7

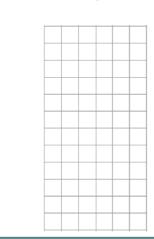
2 7

Also, from this we learn that neither 4 nor 16 is a factor (divisor) of 67.

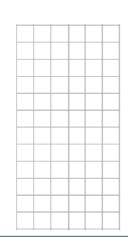
<u>-24</u>

1. Divide and determine if the numbers are divisible by the given number.

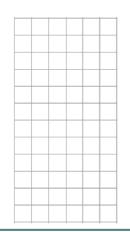
2. Answer the questions. You may need long division.



b. Is 603 divisible by 7?



c. Is 3 a factor of 1256?



In any multiplication, the numbers that are multiplied are called factors and the result is called a product.

factor product factor $7 \times 6 = 42$

So, since $6 \times 7 = 42$, 6 and 7 are **factors** of 42.

From this multiplication fact we can write two divisions: $42 \div 6 = 7$ and $42 \div 7 = 6$. So, this also means that 42 is divisible by both 6 and 7.

Yet one more new word that ties in with all of this: multiple.

We say 42 is a multiple of 6, because 42 is some number times 6, namely 7 × 6.

And of course 42 is also a multiple of 7, because it is some number times 7!

3. Fill in.

Here's a multiplication fact: 8 × 9 = 72. So, 8 is a ___ ____ of 8, and also 72 is and so is 9. Also, 72 is a _____ ____ of 9. And, 72 is _____ by 8 and also by 9.

4. Fill in.

a. Is 5 a factor of 55? b. Is 8 a divisor of 45?				
Yes, because × =	No, because ÷ =			
c. Is 36 a multiple of 6?	d. Is 34 a multiple of 7?			
, because × =	, because ÷ =			
e. Is 7 a factor of 46?	f. Is 63 a multiple of 9?			
, because	, because			

<u>Multiples of 6</u> are all those numbers we get when we multiply 6 by other numbers. For example, we can multiply 0×6 , 7×6 , 11×6 , 109×6 , and so on, and the resulting numbers are all multiples of

In fact, the skip-counting pattern of 6 gives us a list of multiples of 6:

0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, and so on.

- 5. a. Make a list of multiples of 11, starting at 0 and at least till 154.
 - b. Make a list of multiples of 111, starting at 0. Make it as long as you can in this space!

Divisibility by 2

Numbers that are divisible by 2 are called even numbers. Numbers that are NOT divisible by 2 are called odd numbers.

Even numbers end in 0, 2, 4, 6, or 8. Every second number is even.

Divisibility by 5

Numbers that end in 0 and 5 are divisible by 5.

For example, 10, 35, 720, and 3675 are such numbers.

6. Mark with "x" if the numbers are divisible by 2 or 5.

number	divis	sible	number	divisible		number	divisible	
Humber	by 2	by 5	number	by 2	by 5	number	by 2	by 5
750			755			760		
751			756			761		
752			757			762		
753			758			763		
754			759			764		

Divisibility by 10

Numbers that end in 0 are divisible by 10.

For example, 10, 60, 340, and 2570 are such numbers.

7. Mark an "x" if the numbers are divisible by 2 or 5 or 10.

number		divisibl	е	number	divisible		number	divisible			
number	by 2	by 5	by 10	number	by 2	by 5	by 10	number	by 2	by 5	by 10
860				865				870			
861				866				871			
862				867				872			
863				868				873			
864				869				874			

8. a. Write a list of numbers divisible by 2, fi	Trom U to 6U.
This is also a list of	of 2.
b. In the list above, <i>underline</i> those number What do you notice?	nbers that are divisible by 4.
c. In the list above, <i>color</i> those numbers What do you notice?	that are divisible by 6.
d. Which numbers are divisible by both 4	4 and 6?
9. a. Write a list of numbers divisible by 3, for	from 0 to 60.
This is also a list of	of 3.
b. In the list above, <i>underline</i> those number What do you notice?	nbers that are divisible by 6.
c. In the list above, <i>color</i> those numbers What do you notice?	that are divisible by 9.
10. Use the lists you made in (7) and (8). F	Find numbers that are divisible by <i>both</i> 2 and 9.
11. What number is a factor of every numb	ber?
12. Twenty is a multiple of 4. It is also a muother numbers. Which ones?	ultiple of 5. It is also a multiple of four
Who am I? (Hint: I am less than 50.)	Who am I? (Hint: I am less than 100.)

I am a multiple of 3, 4, 5, and 6. I am a factor of 120. Divided by 7, I leave a remainder of 4.

Divided by 9, I leave a remainder of 6. Divided by 4, I leave a remainder of 1. Divided by 10, I leave a remainder of 3.