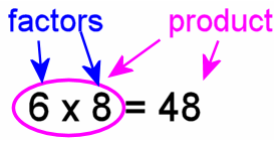
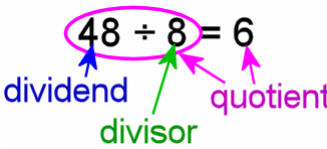


Divisibility Rules

Do you remember?	 Six is a factor of 48, because 48 is some number times 6. The product of 6 and 8 is <u>written</u> as 6×8. We can also solve it, and find that the product of 6 and 8 equals 48.	 We say that 8 is a divisor of 48, because the division $48 \div 8$ is even (there is no remainder).
The terms <i>factor</i> and <i>divisor</i> mean the same thing. For example, 7 is a divisor of 84 because $84 \div 7$ is an even division. But that means that $7 \times (\text{some number}) = 84$, so 7 is a factor of 84.		
If a number is a factor of another number, it is also its divisor.		

1. Answer the questions. Explain also why or why not it is so.

- Is 8 a factor of 100?
- Is 7 a factor of 3,500?
- Is 9 a divisor of 50?

A number is <u>divisible</u> by another number if the division is even (there is no remainder).	
Example 1. Is 7,854 divisible by 13? To check, divide 7,854 by 13 (either with long division or a calculator). You get 604.153846... The division is not even, so 7,854 is <i>not</i> divisible by 13.	Example 2. Is $2 \times 3 \times 17$ divisible by 10? By 6? $2 \times 3 \times 17$ is 6×17. The answer to this cannot end in 0 (it will end in 2, because $6 \times 7 = 42$ ends in 2), so the number is not divisible by 10. The number $2 \times 3 \times 17$ is divisible by 6, since it is six times some number (it is 6 times 17).

2. Answer. In each case, explain why or why not it is so (justify your answer).

- Is 283 divisible by 13?
- Is $13 \times 2,809$ divisible by 13?
- Is $3 \times 3 \times 3 \times 3 \times 3$ divisible by 2?
- Is 9,896 divisible by 7?
- Is $2 \times 758 \times 5$ divisible by 10?
- Is $2 \times 15 \times 2 \times 7$ divisible by 4?

Easy divisibility rules (You should already know these.)

A number is **divisible by 2** if it ends in 0, 2, 4, 6, or 8. Such a number is even.

A number is **divisible by 5** if it ends in 0 or 5. For example, 395 is divisible by 5.

A number is **divisible by 10** if it ends in 0. For example, 56,930 is divisible by 10.

A number is **divisible by 100** if it ends in “00”. For example, 450,000 is divisible by 100.

A number is **divisible by 1000** if it ends in “000”. For example, 450,000 is divisible by 1000.

3. Mark an “x” if the number is divisible by 2, 5, 10, 100, or 1,000.

Divisible by	2	5	10	100	1000
825					
400					
332					

Divisible by	2	5	10	100	1000
600,200					
56,000					
307,995					

A number is divisible by 3 if the sum of its digits is divisible by 3.

Example 3. To check if 93,025 is divisible by 3, add its digits:

$$9 + 3 + 0 + 2 + 5 = 19$$

Since 19 is *not* divisible by 3, neither is 93,025.

Tip: in adding the digits, you can totally *omit* any digits that are divisible by 3 (namely 3, 6, and 9). For example, to check if 993,768 is divisible by 3, just add $7 + 8 = 15$ and omit 9, 9, 3, and 6. Since 15 is divisible by 3, so is 993,768.

4. Divide using long division if these numbers are divisible by 3.

a. 539

b. 43,719

c. 9,032

5. Change one of the digits in the number 238,882 so that the number is divisible by 3, but *not* divisible by 2.

6.

	Who am I? “I am between 50 and 100. I am divisible by 3 and by 4. My tens digit is double my ones digit.”	Who am I? “You’ll find me between 110 and 140. I don’t end in a zero. And I am divisible by 12.”
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