



Study Guide and Intervention

Divisibility Patterns

A whole number is **divisible** by another number if the remainder is 0 when the first is divided by the second. A whole number is **even** if it is divisible by 2. A whole number is **odd** if it is not divisible by 2.

Rule

A whole number is divisible by:

- 2 if the ones digit is divisible by 2.
- 3 if the sum of the digits is divisible by 3.
- 4 if the number formed by the last two digits is divisible by 4.
- 5 if the ones digit is 0 or 5.
- 6 if the number is divisible by both 2 and 3.
- 9 if the sum of the digits is divisible by 9.
- 10 if the ones digit is 0.

Examples

- 2, 4, 6, 8, 10, 12, 14, 16, ...
- 3, 6, 9, 12, 15, 18, 21, 24, ...
- 4, 8, 12, ..., 104, 108, 112, ...
- 5, 10, 15, 20, 25, 30, ...
- 6, 12, 18, 24, 30, 36, ...
- 9, 18, 27, 36, 45, ...
- 10, 20, 30, 40, 50, ...

EXAMPLE 1 Tell whether 112 is divisible by 2, 3, 4, 5, 6, 9, or 10. Then classify the number as *even* or *odd*.

- 2: Yes; the ones digit is divisible by 2.
3: No; the sum of the digits, 4, is not divisible by 3.
4: Yes; the number formed by the last two digits, 12, is divisible by 4.
5: No; the ones digit is not a 0 or a 5.
6: No; the number is not divisible by 2 and 3.
9: No; the sum of the digits, 4, is not divisible by 9.
10: No; the ones digit, 2, is not 0.

The number 112 is even because it is divisible by 2.

EXERCISES

Tell whether each number is divisible by 2, 3, 4, 5, 6, 9, or 10. Then classify the number as even or odd.

- | | | |
|-----------|-----------|------------|
| 1. 80 | 2. 93 | 3. 324 |
| 4. 81 | 5. 650 | 6. 23,512 |
| 7. 48 | 8. 268 | 9. 665 |
| 10. 3,579 | 11. 7,000 | 12. 24,681 |

Tell whether each sentence is *sometimes*, *always*, or *never* true.

13. A number that is divisible by both 2 and 3 is also divisible by 6.
14. Any number that is divisible by 10 is also divisible by 2 and 5.

Notes- Math 6- Mrs. Alman

Divisibility Rules

A number is divisible by...	When...	Example
2	...the ones digit is divisible by 2 or when it is an even number.	2; 8; 10; 124; 3,496; 10,458
3	...the sum of the digits is divisible by 3.	36- $3+6=9$; 9 is divisible by 3 570- $5+7+0=12$; 12 is divisible by 3
4	...the digits in the tens and ones place is divisible by 4	1,4 <u>48</u> - 48 is divisible by 4 10 <u>4</u> - 4 is divisible by 4
5	...the digit in the ones place is a 0 or 5	50; 55; 850; 9,875
6	...the number is divisible by both 2 and 3	6; 12; 18; 24; 30
9	... the sum of the digits is divisible by 9.	18- $1+8=9$; 9 is divisible by 9 2,628- $2+6+2+8=18$; 18 is divisible by 9
10	...the ones digit is a 0.	10; 50; 610; 8,450; 98,750