

Lesson 4-1

Example 1 Use Divisibility Rules

Determine whether 282 is divisible by 2, 3, 5, 6, or 10.

Number	Divisible?	Reason
2	yes	The ones digit is 2, and 2 is divisible by 2.
3	yes	The sum of the digits is $2 + 8 + 2$ or 12, and 12 is divisible by 3.
5	no	The ones digit is 2, not 0 or 5.
6	yes	282 is divisible by 2 and 3.
10	no	The ones digit is not 0.

So, 282 is divisible by 2, 3, and 6.

Example 2 Use Divisibility Rules to Solve a Problem

LUNCHTIME A school has tables which seat 5, 6, or 10 students for use in the cafeteria. If there are 156 students who need to eat lunch, only one size table can be used at a time and all tables need to be full, which size table should the school use?

Seats Per Table	Yes/No	Reason
5	no	The ones digit of 156 is not 0 or 5, so 156 is not divisible by 5. There would be tables which are not full.
6	yes	156 is divisible by 2 and 3, so it is also divisible by 6. Therefore, all tables would be full.
10	no	The ones digit of 156 is not 0, so 156 is not divisible by 10. There would be tables which are not full.

The school should use tables that seat 6 students.

Example 3 Find Factors of a Number**List all factors of 96.**

Use the divisibility rules to determine whether 96 is divisible by 2, 3, 5, and so on. Then use division to find other factors of 96.

Number	96 Divisible by Number?	Factor Pairs
1	yes	$1 \cdot 96$
2	yes	$2 \cdot 48$
3	yes	$3 \cdot 32$
4	yes	$4 \cdot 24$
5	no	-----
6	yes	$6 \cdot 16$
7	no	-----
8	yes	$8 \cdot 12$
9	no	-----

So, the factors of 96 are 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, and 96.

Example 4 Identify Monomials**Determine whether each expression is a monomial.****a. $12ab$**

This expression is a monomial because it is the product of integers and variables.

b. $-6(3 + y)$

$$\begin{aligned} -6(3 + y) &= -6(3) + (-6)y \\ &= -18 + (-6y) \\ &= -18 - 6y \end{aligned}$$

Distributive Property
Simplify.
Definition of subtraction

This expression is not a monomial because it has two terms involving subtraction.