

# 4-1 Factors and Monomials (Pages 170–174)

The **factors** of a whole number divide that number with a remainder of 0. For example, 4 is a factor of 12 because  $12 \div 4 = 3$ , and 7 is not a factor of 12 because  $12 \div 7 = 1$  with a remainder of 5. Another way of saying that 3 is a factor of 12 is to say that 12 is **divisible** by 3.

<b>Divisibility Rules</b>	<p>A number is divisible by</p> <ul style="list-style-type: none"> <li>• 2 if the ones digit is divisible by 2.</li> <li>• 3 if the sum of its digits is divisible by 3.</li> <li>• 4 if the last two digits are divisible by 4.</li> <li>• 5 if the ones digit is 0 or 5.</li> <li>• 6 if the number is divisible by 2 and 3.</li> <li>• 10 if the ones digit is 0.</li> </ul>
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An expression like  $5x$  is called a **monomial**. A monomial is an integer, a variable, or a product of integers or variables.

## EXAMPLES

**A** Is  $4y(5x)$  a monomial?

*Yes, this expression is the product of integers and variables.*

**B** Is  $4y + 5x$  a monomial?

*No, this expression is a sum. A sum or difference is not a monomial.*

## PRACTICE

**Using divisibility rules, state whether each number is divisible by 2, 3, 5, 6, or 10.**

- |         |         |           |            |
|---------|---------|-----------|------------|
| 1. 100  | 2. 342  | 3. 600    | 4. 215     |
| 5. 1200 | 6. 1693 | 7. 52,700 | 8. 987,321 |

**Determine whether each expression is a monomial. Explain why or why not.**

- |                         |              |              |             |
|-------------------------|--------------|--------------|-------------|
| 9. $3x$                 | 10. $-45$    | 11. $2y - 3$ | 12. $4(7m)$ |
| 13. $x \cdot y \cdot z$ | 14. $12 + p$ | 15. $2(ab)$  | 16. $m + n$ |

**17. Cake Decorating** If you are decorating a birthday cake using 16 candles, can you arrange all the candles in 6 equal rows? Explain.



**18. Standardized Test Practice** Which of the following is divisible by 3, but is not divisible by 6?

- A** 822                      **B** 833                      **C** 922                      **D** 933

**Answers:** 1. 2, 5, 10   2. 2, 3, 6   3. 2, 3, 5, 6, 10   4. 5   5. 2, 3, 5, 6, 10   6. none   7. 2, 5, 10   8. 3   9. Yes, it is the product of an integer and a variable.   10. Yes, it is an integer.   11. No, it involves subtraction.   12. Yes, it is the product of 4 and 7 times  $m$ .   13. Yes, it is the product of  $x$ ,  $y$ , and  $z$ .   14. No, it involves addition.   15. Yes, it is the product of 2 and  $a$  times  $b$ .   16. No, it involves addition.   17. no; 16 is not divisible by 6.   18. D