

Algebra and Geometry 1. Homework 25.



1. Is the number $a = 25^2 \cdot 9^3$ is divisible by 3, 5, 15, 20, and 45.

Explain your answer.

2. It is known that the number a is divisible by number b . Are the following fractions reducible (can be simplified)?

$$a. \frac{a-b}{a+b} \qquad b. \frac{2a+3b}{5a-b}$$

3. There are 255 seats in a theater. 170 tickets were sold for a movie. Which percent of the total number of seats will be empty if only 90% of the people, who bought tickets will show up for the movie?
4. True or False?
- a. If a natural number a is not divisible by 3, $5a$ is not divisible by 3 either.
 - b. If $7c$ is divisible by 2, then c is divisible by 2.
 - c. If a natural number divisible by 48, its also divisible by 12.
 - d. Is one natural number is divisible by 9, and another is divisible by 8, their product is always divisible by 72.
 - e. If $15a + 3b$ is divisible by 15, then b is divisible by 5 ($a, b \in \mathbb{N}$)

Explain your answers.

5. Solve the quadratic equations:

$$\begin{array}{ll} a. x^2 + x - 6 = 0 & c. x^2 + 4x + 4 = 0 \\ b. 4x^2 - 8x + 3 = 0 & d. 5x^2 - 6x + 1 = 0 \end{array}$$

6. Simplify the expressions:

$$\begin{array}{ll} a. m^3 \cdot m^2 + m \cdot m^4; & c. 2x \cdot xy - 3x^2 \cdot \frac{1}{2}y; \\ b. (2mn^2)^3 - 3m^2n^6m; & d. b. (3x^2y^4)^3 + 7x^4y^3 \cdot \frac{1}{14}x^2y^9 \end{array}$$