

7.3 PC1 practice set 3

1. Given that m and n are positive integers such that

$$2 \times 2 \times 4 \times 4 \times 4 \times 4 \times \underbrace{8 \times 8 \times \cdots \times 8}_{8 \text{ 8s}} \times \underbrace{16 \times 16 \times \cdots \times 16}_{16 \text{ 16s}} \times \underbrace{5 \times 5 \times \cdots \times 5}_{m \text{ 5s}} = 1 \underbrace{0 \dots 0}_{n \text{ 0s}},$$

find m and n .

2. At Paul Bunyan's tree farm they sell Fraser firs and blue spruce trees. They plant saplings of these two kinds of trees that are 8 inches and 5 inches tall, respectively. The Fraser firs grow at a constant rate of 12 inches per year, and the blue spruce trees grow at a constant rate of 14 inches per year. After how many years will these trees be the same height? Express your answer as a common fraction.

3. Solve the following equations for x .

(a) $26 - 7(3x - 5) - 4x = 3x - 8(5 + 2x) - 19$ (b) $\frac{6x - 12}{5} = \frac{9x - 18}{7}$

4. How many different ways can 34 identical marbles be separated into three piles in which the number of marbles in each pile is a prime number?

5. Combine

$$\frac{1}{2} - \frac{3 - 2x}{5} + \frac{2(3x - 5y) - 3(3y - 2x)}{3}$$

over a common denominator and simplify.