

Key

Prime Time Review

- Find the prime factorization of 90. Write the prime factorization in **expanded** and **exponential** form.

$$\begin{array}{r}
 90 \\
 \wedge \\
 3 \quad 30 \\
 \quad \wedge \\
 \quad 3 \quad 10 \\
 \quad \quad \wedge \\
 \quad \quad 2 \quad 5
 \end{array}$$

$2 \times 3 \times 3 \times 5$ } expanded
 $2 \times 3^2 \times 5$ } exponential

- Find the prime factorization of 108. Write the prime factorization in **expanded** and **exponential** form.

$$\begin{array}{r}
 108 \\
 \wedge \\
 2 \quad 54 \\
 \quad \wedge \\
 \quad 2 \quad 27 \\
 \quad \quad \wedge \\
 \quad \quad 3 \quad 9 \\
 \quad \quad \quad \wedge \\
 \quad \quad \quad 3 \quad 3
 \end{array}$$

$2 \times 2 \times 3 \times 3 \times 3$ } Expanded
 $2^2 \times 3^3$ } Exponential

- What is the **greatest common factor** of 90 and 108? Show work.

$$\begin{array}{r}
 90 \mid (2) \times (3) \times (3) \times (5) \\
 108 \mid (2) \times (2) \times (3) \times (3) \times (3)
 \end{array}$$

GCF: $2 \times 3 \times 3 = 18$
 (product of common prime factors)

- What is the **least common multiple** of 90 and 108? Show work.

$$\begin{array}{r}
 2 \cdot 3 \cdot 5 \cdot 18 \\
 \quad \vee \\
 \quad 6 \cdot 5 \cdot 18 \\
 \quad \quad \vee \\
 \quad \quad 30 \cdot 18 = 540
 \end{array}$$

LCM: 540
 (multiply the unique prime factors by the GCF.)

OR:
 90: 90, 180, 270, 360, 450, 540, 630
 108: 108, 216, 324, 432, 540, 648

- What is another **common multiple** of 90 and 108?

$540; 1,080; 1,620; 2,160 \dots$
 (multiples of the LCM)

Look for powers of ten!

6. What number has the prime factorization $2^3 \times 5^3 \times 11$?

Remember...

$$2 \times 5 = 10$$

$$2^2 \times 5^2 = 100$$

$$2^3 \times 5^3 = 1,000$$

$$2^4 \times 5^4 = 10,000$$

$$2^5 \times 5^5 = 100,000$$

$$1,000 \times 11$$

$$11,000$$

7. Find the value of the expression $10 - (8 \div 2) + 5^2$. Show all steps.

Order of operations

Parentheses ()

Exponents $5^2 = 25$

Multiplication } Left to right!

Division

Addition } Left to right!

Subtraction

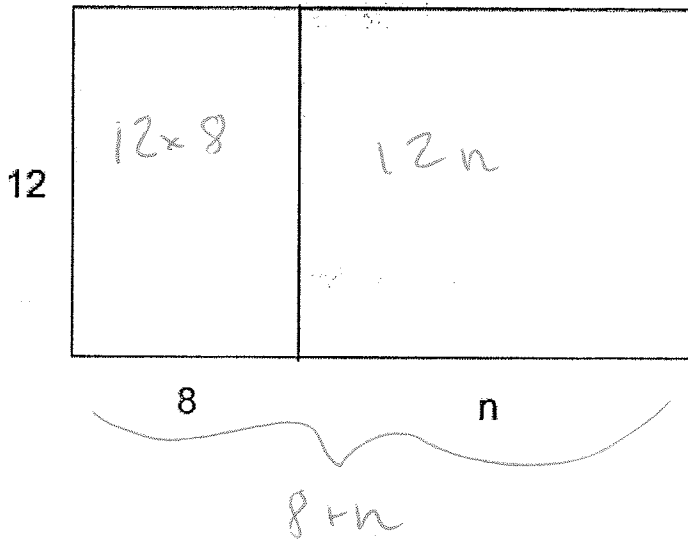
$$10 - 4 + 5^2$$

$$10 - 4 + 25$$

$$6 + 25$$

$$31$$

8. Write two expressions which could be used to determine the area of the following figure. * Distributive Property



Find the area of each rectangle and then add them

OR
add the sides together and then multiply to find the total area.

$$12 \times 8 + 12n$$

or

$$12(8 + n)$$

9. A bookstore is giving prizes out for its grand opening. Every 12th customer receives a gift card, while every 15th customer receives a free book. Which customer will be the first customer to get both the gift card and the free book?

We are counting up, so we are finding the LCM

12, 24, 36, 48, 60, 72
 15, 30, 45, 60, 75

The 60th customer

or

12
 ^
 3 4
 ^
 2 2

15
 ^
 3 5

12 | 2 x 2 x 3
 15 | 3 x 5

LCM: 3 x 2 x 2 x 5
 6 10
 60

10. Maria is making chocolate chip and M&M cookies. She wants every cookie to have the same amount of chocolate chips and M&Ms with no leftovers. Maria has 120 chocolate chips and 72 M&Ms. What is the greatest number of cookies Maria can make? How many chocolate chips and M&Ms will be on each cookie?

We are dividing the numbers to find a greatest common factor (GCF)

120
 ^
 10 12
 ^ ^
 2 5 2 6
 ^
 2 3

72
 ^
 2 3 6
 ^
 2 18
 ^
 2 9
 ^
 3 3

GCF = 2 · 2 · 2 · 3
 4 6
 24

24 cookies

72 | 2 x 2 x 2 x 3 x 3
 120 | 2 x 2 x 2 x 3 x 5

120 ÷ 24 = 5 Choc. Chips

72 ÷ 24 = 3 M & Ms

11. How can you tell if the sum of two numbers will be even or odd?

$$\text{Even} + \text{Even} = \text{Even}$$

$$\text{Even} + \text{Odd} = \text{Odd}$$

$$\text{Odd} + \text{Odd} = \text{Even}$$

12. How can you tell if the product of two numbers will be even or odd?

$$\text{Even} \times \text{Even} = \text{Even}$$

$$\text{Even} \times \text{Odd} = \text{Even}$$

$$\text{Odd} \times \text{Odd} = \text{Odd}$$