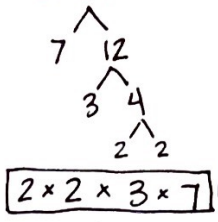
~~ANSWER KEY~~

Prime Time Unit Test Review

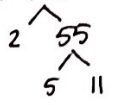
1. Find the prime factorization of each number, show your work:

a. 84



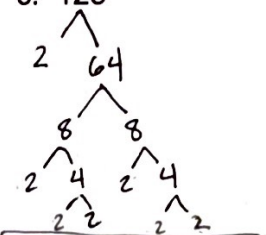
$2 \times 2 \times 3 \times 7$ $2^2 \times 3 \times 7$

b. 110



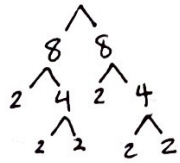
$2 \times 5 \times 11$

c. 128



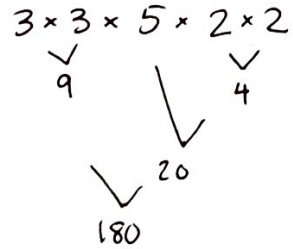
$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$ 2^7

d. 64



$2 \times 2 \times 2 \times 2 \times 2 \times 2$ 2^6

2. What number has a prime factorization of $3^2 \times 5 \times 2^2$? Show how you found the number.



180

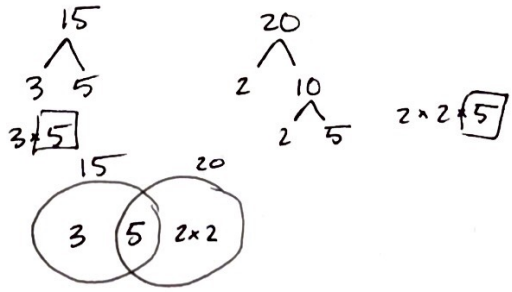
3. Two busses both leave from the same station. The blue bus leaves every 15 minutes, and the red bus leaves every 20 minutes. If both busses leave the station at 9:15 AM, what time will it be when both busses leave at the same time again? Show your work.

Method 1 → Blue 15min: 15, 30, 45, 60

Red 20min: 20, 40, 60

LCM = 60 minutes so 10:15am

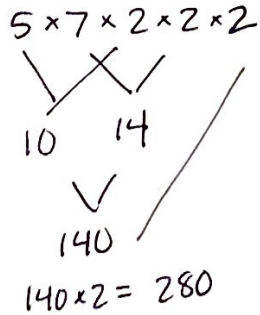
Method 2 →



LCM = $3 \times 5 \times 2 \times 2 = 60$

60min = 10:15am

4. What number has a prime factorization of $5 \times 7 \times 2^3$? Show how you found the number.



$140 \times 2 = 280$

280

5. Greg and Charles are listening to music. Greg taps his foot every 15 seconds, Charles taps his foot every 9 seconds. They tap their foot together when a song starts. How many seconds will pass before they tap their feet at the exact same time again?

15: 15, 30, (45), 60, 75, 90
9: 9, 18, 27, 36, (45)

LCM = 45

45 seconds

6. Lucy is making treat bags for all the students in her class. Each treat bag has exactly the same treats in it. She is putting granola bars and fruit snacks in each bag. She has 56 granola bars and 84 fruit snacks.

a. What is the greatest number of treat bags Lucy can make? Show your work.

Method 1

56: 1 × 56, 2 × 28, 4 × 14, 7 × 8

84: 1 × 84, 2 × 42, 3 × 28, 4 × 21, 6 × 14

GCF = 28

28 snack bags

Method 2

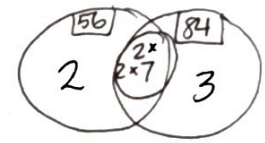
GCF = 2×2×7

GCF = 28

56 = 7 × 8 = 7 × 2 × 4 = 7 × 2 × 2 × 2

84 = 7 × 12 = 7 × 3 × 4 = 7 × 3 × 2 × 2

2×2×7



b. How many of each kind of treat is one sack? Show your reasoning.

56 ÷ 28 = 2

84 ÷ 28 = 3

2 granola bars
3 fruit snacks
> in each bag

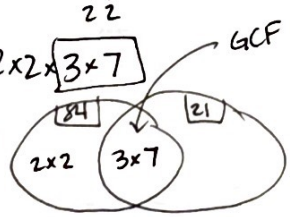
7. Find the greatest common factor (GCF) and least common multiple (LCM) for each pair of numbers. Show your work.

a. 84 and 21

84 = 7 × 12 = 7 × 3 × 4 = 7 × 3 × 2 × 2

21 = 3 × 7

2×2×3×7



LCM = 2×2×3×7 = 84

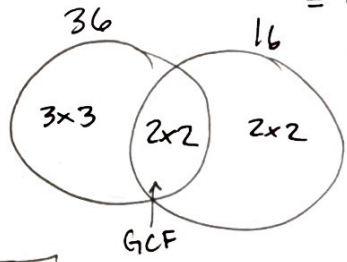
GCF = 21
LCM = 84

b. 36 and 16

36 = 2 × 18 = 2 × 2 × 9 = 2 × 2 × 3 × 3

16 = 2 × 8 = 2 × 2 × 4 = 2 × 2 × 2 × 2

2×2×2×2



LCM = 3×3×2×2×2×2
= 9×4×4
= 36×4
= 144

GCF = 4
LCM = 144

8. Write the following prime factorizations in exponential form.

a. 5 × 5 × 3 × 5

3×5^3

b. 3 × 7 × 3 × 2 × 11 × 5 × 7

$2 \times 3^2 \times 5 \times 7^2 \times 11$